



FINAL REPORT FOR CHEDOKE CREEK WORK PLAN IMPLEMENTATION

CITY OF HAMILTON
71 MAIN STREET WEST, HAMILTON, ONTARIO L8P 4Y5

FINAL REPORT

DATE: JULY 12, 2024

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July 12, 2024

Mr. Tim Crowley
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Public Works/Hamilton Water
City of Hamilton
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Hamilton, ON L8P 1A2

Re: Final Report for Chedoke Creek Work Plan Implementation, City of Hamilton

Dear Sir,

WSP Canada Inc. (WSP) is pleased to submit the attached updated final report for the City of Hamilton for its submission to the Ministry of the Environment, Conservation, and Parks (MECP) in fulfilment of Item #7 in Director's Order # 1-PE3L3. The updated report has addressed those comments received from MECP on May 22, 2024 and confirmed during the meeting with MECP, the City and WSP on June 11, 2024. Should you have any comments or questions, please feel free to contact any of the undersigned.

Sincerely,

Per: Lance Lumbard, MS, MBA, CLP
Assistant Vice President
WSP USA Inc.

Per: Ron Scheckenberger, M.Eng., P.Eng.
President
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Per: Dale Klodnicki, M.E.Sc., CET, PMP
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Revision History

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FINAL

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Prepared by	Reviewed by	Approved by
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Signatures

Approved¹ by (must be reviewed for technical accuracy prior to approval)

Approved

July 12, 2024

Per: Dale Klodnicki, M.E.Sc., CET, PMP
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July 12, 2024

Per: Lance Lumbard, MS, MBA, CLP
Assistant Vice President /
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TABLE OF CONTENTS

1	Introduction	1
1.1	SUMMARY OF DIRECTOR'S ORDER.....	1
1.2	CHEDOKE WORK PLAN OVERVIEW.....	2
1.2.1	<i>Contaminant Loading Summary</i>	6
1.2.2	<i>Water Quality Summary</i>	6
1.2.3	<i>Stream Conditions</i>	7
1.2.4	<i>Benthic Invertebrates</i>	7
1.2.5	<i>Fish Community</i>	8
1.2.6	<i>Sediment Conditions Summary</i>	10
1.2.7	<i>Sediment Nutrients</i>	10
1.2.8	<i>Comparison of Preliminary In-Situ Sediment Conditions and Spill Quantities</i>	11
1.2.9	<i>Sediment Contaminants</i>	11
1.3	TIMELINES.....	12
2	SUMMARY OF WORK UNDERTAKEN	13
2.1	DATA COLLECTION.....	13
2.2	ASSESSMENT	13
2.3	DESIGN AND BID SPECIFICATIONS.....	18
2.4	PERMITTING	23
2.4.1	<i>Hamilton Conservation Authority</i>	23
2.4.2	<i>Royal Botanical Gardens</i>	23
2.4.3	<i>Ministry of Transportation</i>	23
2.4.4	<i>Ministry of Natural Resources and Forestry</i>	23
2.4.5	<i>Ministry of the Environment, Conservation and Parks</i>	23
2.4.6	<i>Ministry of Heritage, Sport, Tourism, and Culture Industries</i>	24
2.4.7	<i>Transport Canada</i>	24
2.4.8	<i>Fisheries and Oceans Canada</i>	24
2.4.9	<i>Impact Assessment Agency of Canada</i>	24
2.4.10	<i>Construction Dewatering Sewer Discharge Permit</i>	24
2.5	PREQUALIFICATION	25
2.6	TENDERING	25
2.7	CONSTRUCTION.....	25
3	Construction Monitoring Results and Analysis	28
3.1	PERMITTING REQUIREMENTS.....	28

3.1.1	<i>DFO Species at Risk Act Completed Requirements (pre/during dredging)</i>	28
3.1.2	<i>MECP Overall Benefit Permit Completed Requirements (pre/during)</i>	30
3.1.3	<i>Erosion & Sediment Control Monitoring</i>	31
3.1.4	<i>Turbidity Results (during dredging)</i>	32
3.1.5	<i>Permit to Take Water Results (during dredging)</i>	32
3.1.6	<i>Construction Dewatering Sewer Discharge Permit Results (during dredging)</i>	33
HYDROGRAPHIC SURVEYS AND SEDIMENT VOLUMES		36
3.1.7	<i>Sediment Disposal Quantities</i>	39
3.1.8	<i>Sediment Quality</i>	39
4	Post-Construction Monitoring & Actions	42
4.1	WATER QUALITY	42
4.2	MECP OVERALL BENEFIT PERMIT REMAINING REQUIREMENTS	50
4.3	COMPLEMENTARY MONITORING.....	50
5	Main/King Combined Sewer Overflow Tank Corrective Actions Summary	51
6	Offsetting Works Assessment Review	53
7	Summary/Conclusions	56

TABLES

TABLE 1.1:	ESTIMATED CONTAMINANT LOADINGS FOR PERIOD FROM JANUARY 28, 2014 TO JULY 18, 2018 (REF. HATCH 2018)	6
TABLE 2.1:	ORIGINAL ZONE 2 AND 3 DREDGE AREAS AND ASSOCIATED IN-SITU TOTAL KJELDAHL NITROGEN AND TOTAL PHOSPHORUS MASS	17
TABLE 2.2:	SUBMITTAL REGISTER	19
TABLE 3.1:	TURBIDITY EXCEEDANCE DATES AND COMMENTS FROM MILESTONE DURING CHEDOKE CREEK DREDGING ACTIVITY.....	32
TABLE 3.2:	PERMIT TO TAKE WATER PROJECT SUMMARY	33
TABLE 3.3:	WATER QUALITY SAMPLING COLLECTION DATES	33
TABLE 3.4:	SANITARY SEWER AND COMBINED SEWER DISCHARGE LIMITS.....	34
TABLE 3.5:	TOTAL MONTHLY WATER VOLUME DISCHARGE TO THE SEWER SYSTEM.	35
TABLE 3.6:	TOTAL VOLUME DREDGED FROM ZONE 2 AND 3 AND ASSOCIATED TOTAL KJELDAHL NITROGEN AND TOTAL PHOSPHORUS MASS REMOVAL.....	38
TABLE 3.7:	TCLP GUIDELINE LIMITS	40
TABLE 4.1:	CC-SW2/SP-11 PERIOD OF RECORD FOR WATER QUALITY PARAMETERS OF CONCERN.....	44
TABLE 4.2:	PRE-EVENT, DURING EVENT AND POST EVENT MEDIAN WATER QUALITY DATA *	45

FIGURES

FIGURE 1.1:	MAP OF CHEDOKE CREEK AND COOTES PARADISE MONITORING STATIONS.....	7
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FIGURE 1.2:	SEDIMENT, BENTHIC INVERTEBRATE AND FISH SAMPLING LOCATIONS.....	9
FIGURE 2.1:	PHASE 1 SEDIMENT THICKNESS AND ADDITIONAL AREAS INVESTIGATED AS PART OF PHASE 2.....	14
FIGURE 2.2:	FIVE ZONES INVESTIGATED AS PART OF PHASE 2.....	15
FIGURE 2.3:	RECOMMENDED DREDGE ZONES 2 AND 3.....	16
FIGURE 2.4:	CHEDOKE CREEK PLAN AND PROFILE VIEW.....	21
FIGURE 2.5:	DREDGE MATERIAL MANAGEMENT AREA IN KAY DRAGE PARK.....	22
FIGURE 2.6:	CHEDOKE CREEK PLAN AND PROFILE VIEW (AS DREDGED)	27
FIGURE 3.1:	MUSSEL SEARCH AND RESTORATION MAP.....	29
FIGURE 4.1:	CHEDOKE CREEK MONITORING STATIONS	43
FIGURE 4.2:	CHEDOKE CREEK AT CC-SW2/CP-11 TP CONCENTRATIONS (2009 THROUGH 2024)	47
FIGURE 4.3:	CHEDOKE CREEK AT CC-SW2/CP-11 <i>E. COLI</i> COUNTS (2009 THROUGH 2024).....	47
FIGURE 4.4:	CHEDOKE CREEK AT CC-SW2/CP-11 PH (2009 THROUGH 2024)	48
FIGURE 4.5:	CHEDOKE CREEK AT CC-SW2/CP-11 AMMONIA CONCENTRATIONS (2009 THROUGH 2024).....	48
FIGURE 4.6:	CHEDOKE CREEK AT CC-SW2/CP-11 DO CONCENTRATIONS (2009 THROUGH 2024)	49
FIGURE 4.7:	CHEDOKE CREEK AT CC-SW2/CP-11 TSS CONCENTRATIONS (2009 THROUGH 2024)	49

APPENDICES

APPENDIX A:	DIRECTORS ORDER
APPENDIX B:	CONSULTATION SUMMARY
APPENDIX C:	SEDIMENT TECHNICAL MEMORANDA
APPENDIX D:	TENDER DRAWINGS
APPENDIX E:	SEDIMENT & EROSION CONTROL
APPENDIX F:	TURBIDITY RESULTS
APPENDIX G:	PERMIT TO TAKE WATER
APPENDIX H:	CONSTRUCTION DEWATERING SEWER DISCHARGE PERMIT RESULTS
APPENDIX I:	PRE POST DREDGE SURVEY
APPENDIX J:	DESIGN VS PRE-DREDGE SEDIMENT VOLUME
APPENDIX K:	SEDIMENT QUALITY & DISPOSAL

1 INTRODUCTION

This report has been prepared to summarize the actions the City of Hamilton has undertaken to comply with the Ontario's Ministry of the Environment, Parks, and Conservation (MECP) Director's Order 1-PE3L3, provided in **Appendix A**, specifically in response to the Main/King Combined Sewer Overflow (CSO) tank discharge into Chedoke Creek and the execution of the Targeted Dredge Project. The report includes a summary of the following key items:

- Directors Order 1-PE3L3;
- Chedoke Creek Work Plan including spill event pollutant loadings and water quality impairments which prompted the order.
- Efforts undertaken by the City and its consultants to understand and remediate the spill event and develop the Chedoke Creek Work Plan.
- Chedoke Creek permitting and design process.
- Contractor selection and bidding.
- Site and construction monitoring.
- Total material and nutrients removed.
- Remaining work to be completed.
- City's Surface Water Quality Program (SWQP)
- Pre/During/Post Water quality comparison (CP11)
- Future water quality monitoring.
- Additional offsetting works.

The draft report was provided to MECP in February, 2024 for review and comments received May 14, 2024. A meeting was held with MECP to review those comments on May 29, 2024, and the report has been updated accordingly to address the comments and input from MECP.

1.1 Summary of Director's Order

Director's Order 1-PE3L3 (Order) issued by the MECP required the City of Hamilton, under item #7, to submit the following items pertaining to the Chedoke Creek Remediation work.

Within one (1) month of the completion of the of the work undertaken pursuant to the approved Chedoke Creek Workplan, submit to the Director, a report prepared by the Qualified Person confirming that the natural environment has been restored to pre-spill conditions and that further impairment to the natural environment will not occur as a result of the spill to the Chedoke Creek as detailed in the attached Provincial Officer's report, and at a minimum contain the following:

- Workplan requirements specified by MECP and the details of the work undertaken to complete the Chedoke Creek Workplan.***
- Any monitoring results completed before, during and after the work undertaken in accordance with the Chedoke Creek Workplan.***
- Analysis of the results in Item 7(ii) above for the purposes of the intended monitoring; and***
- Determination if any requirement for on-going monitoring is required to verify the effectiveness or maintenance of the remedial actions undertaken is necessary.***

1.2 Chedoke Work Plan Overview

The Chedoke Creek Work Plan was prepared by WSP Canada Inc. (WSP; formerly Wood Environment & Infrastructure Solutions Canada Limited), on behalf of the City of Hamilton to address the requirements outlined in the MECP Director's Order: 1-PE3L3 (the "Order", December 4, 2020), specific to the Targeted Dredge Plan for the Lower Chedoke Creek. The Chedoke Creek Work Plan was submitted to the MECP by the City of Hamilton on February 22, 2021, and was approved by the MECP on June 11, 2021. A summary of the Order requirements is provided below.

The Order contained numerous components (**ref. Appendix A**) which were addressed in the Chedoke Creek Work Plan (Work Plan) and are summarized in this section. Notably, Order requirements #1 and 2, were fulfilled once the City retained WSP and provided the MECP with confirmation of same on January 15, 2021. WSP was assigned as the City's representative in the capacity of Qualified Person (QP). WSP was also responsible for the preparation of earlier reporting to address the requirements associated with the initial Order (ref. Provincial Officer's Order, #1-J25YB), including:

- Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report (Wood, January 24, 2019)
- Chedoke Creek – Implementation and Costing Report (Wood, January 24, 2019)

The following excerpts from the Order (in ***bold italics***) and Wood's responses (in non-***bold italics***) have been provided below, as necessary, to summarize the specific elements of the Work Plan which were included to meet the requirements of the MECP.

3. ***By February 22, 2021, submit to the Director, for approval, a remediation work plan for Chedoke Creek that is developed by the Qualified person to undertake the targeted dredging of Chedoke Creek based on the recommendation identified in section 5.2.5 of the Wood report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 ("Chedoke Creek Workplan"). The Chedoke Creek Workplan shall be prepared in accordance with the requirements set out in Items 4 and 5 below.***

This item specifies the subject work plan prepared by Wood with the City of Hamilton, based on consultation with MECP (ref. Appendix B). With specific reference to the recommendations identified in Section 5.2.5 of the Wood report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019, the following is the relevant excerpt from the subject report:

"Direct Removal

Physical removal of the organic sediment within Chedoke Creek will directly address the three primary sources of potential impairment including nutrient contamination, bacteriological contamination, and habitat loss. Dredging can be accomplished either through mechanical means or by use of hydraulic dredge equipment. Hydraulic dredging is recommended in Chedoke Creek over mechanical means for several reasons. Mechanical dredging would not be practicable due to the limited width of the creek, the density of riparian vegetation, and lack of continuous access. Hydraulic dredging provides nearly complete containment of the dredge slurry along the pumping route, which reduces exposure of the sediments to the atmosphere that could cause odour or other problems, if the material were to be handled by an excavator. Additionally, the dredge slurry from a hydraulic dredge can be easily routed to the wastewater system for dewatering and ultimate treatment and disposal, thus avoiding potential issues related to dredged material storage, dewatering, and handling operations, which are generally space intensive and costly. Complete removal of

this material by hydraulic dredging is recommended as the primary means of remediation. The recommended hydraulic dredge concept plan is further discussed in the following sections.”

4. The Chedoke Creek Workplan shall, at a minimum:

- ii. Contain a detailed timeline setting out critical milestones and checkpoints with the Ministry for carrying out the Chedoke Creek Workplan;**

An overall schedule has been prepared on the basis of current understanding of field work requirements, Species at Risk protocols and Regulator input associated with approvals for permits.

- iii. Contain a Species at Risk assessment plan and associated timelines for Chedoke Creek downstream of the spill and including potential impacted areas downstream of Chedoke Creek that may be impacted by targeted dredging;**
- iv. Undertake consultation with the Species at Risk Branch within the Ministry in respect of any identified items pursuant to 4 iii) and incorporate this feedback and outcome into the workplan for any species at risk;**

The Wood Team has consulted with the MECP Species at Risk (SAR) Team to determine the associated species at risk as well as associated protocols and approval requirements and timelines.

- v. Provide a description of any anticipated approvals needed to implement the Chedoke Creek Workplan, initial consultation and proposed timelines to obtain such approvals, if required, for the Workplan to be implemented;**
- vi. The consultation in iv) and v) shall include the Regional Technical Support Section of the Ministry;**

Appendix B details the consultation undertaken by the Wood Team regarding permits and approval requirements associated with the targeted dredge operation. Further the Regional Technical Support Section of the Ministry has been consulted for input.

- vii. Contain a description of the identified areas and the extent (depth, location) of the targeted dredging with a description of how the items outlined in Item 5 below were addressed and a description of any methods for refining identified areas in Item 5 including the impacted areas identified in the Wood reports and SLR reports and timing as needed, in the Chedoke Creek Workplan;**

As discussed herein, and outlined in various recent consultation with MECP staff, the information on the amount, location and composition of contaminated material is not known at present. It has been proposed to fill this information gap with field data collection including bathymetry and sediment sampling of the Lower Chedoke Creek, Princess Point Embayment and outlet zone of Cootes Paradise. The intent of these field activities is to provide insights in to the “extent (depth and location)” for the targeted dredging. The approach to targeted dredging will be led by a decision-making process which will adapt to field conditions once these are better defined.

- viii. Contain a description of the approximate volume of material to be removed;**

The Hatch Report (ref. “Quantification of Volume and Contaminant Loadings”, Hatch, September 28, 2018), indicated that 2,375 +/- tonnes of total suspended solids (TSS) were discharged during the spill event. Wood’s “Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report” included an evaluation of a range of possible in-situ sediment volumes based on the TSS discharged during the spill event. The soft sediment volume of 5,600 m³ present within Chedoke Creek in 2018 approximates the

estimated volume of wastewater TSS that was discharged during the spill event if it were consolidated to 40% solids. This solids content is considerably higher than typical gravity thickening processes for wastewater sludges which produce a maximum sludge concentration of around 10% solids. Wastewater solids generally undergo thickening processes for only a few days before they are moved to a secondary dewatering process for finishing. Given the extended time wastewater solids may have been resident in Chedoke Creek following the spill, it is reasonable to assume that significant self-compaction beyond normal thickening processes may have occurred. It is also reasonable to assume that a portion of the wastewater solids may have been transported beyond Chedoke Creek and more may have decomposed naturally.

The removal of sediment mass is an important consideration for the proposed remediation efforts within Chedoke Creek and downstream. The current extent of organic sediment volume is likely to have changed since 2018 and will be reassessed as part of this work plan to determine the current volume and nutrient content of organic sediments within the creek and downstream in Cootes Paradise. Based on Wood's findings, additional sediment volume may be identified within Cootes Paradise that could present suitable remediation benefits if removed.

- ix. Identify and contain a description of proposed mitigation measures for any short-term impact(s) that may arise from implementing the Chedoke Creek Workplan for Chedoke Creek, its shoreline and connected waterways/natural environment, on any species at risk and other potentially impacted uses. Mitigation measures may include, but are not limited to: exclusion measures for local aquatic uses; limit recreational uses in the area; total suspended solids control as required for carrying out the targeted dredging; and proposed monitoring during any remediation to monitor effectiveness of mitigation measures during dredging identified in iv); and**

The overall conditions of Chedoke Creek during Wood's 2018 ecological investigations indicated no significant submerged or emergent vegetation and poor water and sediment quality which reduced the potential for significant presence of pollution tolerant species. The 2018 field effort was intended to provide a preliminary assessment of potential ecological or recreational impacts. Additional effort will be required to assess the presence of Species at Risk or other potential ecological impacts to the Chedoke Creek system and downstream in Cootes Paradise. Utilizing construction best management practices, such as fish exclusion techniques (e.g., deploying silt curtain from shore to extent of dredge area thereby excluding fish from work limits) and fish salvage and relocation protocols to remove fish from with the isolated work areas will be used. Prior to any dredging work being conducted within Chedoke Creek, fish will be removed and excluded from the work area. Additional wildlife exclusion measures and mussel relocation plans will be developed as needed to ensure local biota are avoided, excluded, or removed from the dredging activities, as best possible.

Recreational use of Chedoke Creek is already restricted by the City of Hamilton. Additional restrictions may be necessary particularly during the dredge operation depending on the potential for a revised project footprint to include portions of Cootes Paradise.

While the specific type of dredging technology is still under consideration, hydraulic dredging generally provides the most effective and economic turbidity control measures in a flowing system such as Chedoke Creek. Furthermore, it is anticipated that fine organic sediments will be pumped into the City's wastewater system which will significantly reduce the potential for turbid water returning to Chedoke Creek. Furthermore, once the plan is prepared, a construction monitoring program will be detailed and implemented.

- x. Contain a proposed monitoring plan to monitor the recovery of the natural environment and effectiveness of the Chedoke Creek Workplan once dredging is complete**

The Wood Team has developed an outline of a proposed monitoring plan which focuses on key indicators related to the natural environment, which would be expected to be tied to the planned improvements associated with the dredging program and the removal of contaminated material. The monitoring program will ultimately also need to reflect any specific conditions associated with the permitting of the works. For example, the anticipated Fisheries Act authorization typically includes post-construction performance monitoring to ensure the site and any enhancement features are functioning as intended and meeting the target success criteria as identified in the authorization. Similarly, the SAR Overall Benefit Permit as per the Endangered Species Act will specify post-enhancement performance monitoring with target success criteria. These post-construction monitoring events can occur within the short-term (e.g., years 1, 2 and 3 post-construction), as well as longer term studies (e.g., years 5 and 10+ post-construction) depending on the species, offset/benefit feature and expected timeframe for use and measures of performance.

5. With respect to the area from the Main/King CSO outfall to the mouth of Chedoke Creek, the Chedoke Creek Workplan shall take into consideration the scope of targeted dredging work necessary to restore the natural environment to pre-spill conditions, as to be agreed upon by the Ministry, and to mitigate any impairments or potential impairments from the spill, in relation to the following, but not limited to:

- i. Sediment areas identified as impacted, in consultation with the Ministry, by the sewage spill;**
- ii. Sediment areas identified as containing elevated organic material consistent with sewage sludge;**
- iii. Sediment areas identified as elevated nutrients (particularly TP, TAN, and TKN);**
- iv. Sediment areas identified as had, may have, or continuing to have reduced dissolved oxygen (DO) levels in the water column from historical levels;**
- v. Sediment areas identified as having elevated parameters as identified by the ERA carried out by SLR ("Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" dated February 12, 2020) to have moderate or high risk for impacts, or otherwise identified by the reports or in comments by the Ministry; and**
- vi. Addressing any ecological flow path requirements and connectivity within the creek in any remedial action plan that may impact low flow path and connectivity.**

Wood's "Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" included a preliminary evaluation of items 5.i. through 5.iv. These items and Items 5.v. and 5.vi. are reviewed in detail in Section 2 of this plan. These data will be supplemented with additional field efforts collected by Wood as part of this plan.

The following reports were used in preparing the Work Plan:

- "Quantification of Volume and Contaminant Loadings", Hatch, September 28, 2018
- "Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" (Wood, January 24, 2019)
- "Chedoke Creek – Implementation and Costing Report" (Wood, January 24, 2019)
- "Peer Review Report - Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report", May 15, 2019, SLR Consulting (Canada) Ltd
- "Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario", SLR Consulting (Canada) Ltd., February 12, 2020

- "Cootes Paradise: Environmental Cootes Evaluation Hamilton, Ontario" by SLR Consulting (Canada) Ltd., April 22, 2020
- "Response to Ministry of Environment, Conservation and Parks May 28, 2020, letter entitled Chedoke Creek Spill Response – District Comments" SLR Consulting (Canada) Ltd., June 12, 2020
- Memo entitled "Chedoke Creek Project, Wood Commentary on SLR Peer Review Comments, City of Hamilton" dated May 23, 2019 by Wood Environment & Infrastructure Solutions.
- Letter from the City entitled "Response to Director's Order 1-MRRCX" Items 1 & 2 submitted on February 14th, 2020.
- Report entitled "Main-King CSO Tank Overflow Volume Estimates" by HATCH Limited dated April 14th, 2020.
- Letter from the City entitled "Response to Order No.1-MRRCX, Items 3 and 4" submitted on April 30, 2020, with the following attachments:
 - Letter from the City of Hamilton entitled "Director Order Number; Item No. 4, Surface Water Monitoring Program" dated April 30, 2020.
 - Report entitled "Cootes Paradise: Environmental Cootes Evaluation Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated April 22, 2020.
- "Chedoke Creek Water Quality Improvement Study", GM BluePlan and Wood, (Draft), February 2021

1.2.1 Contaminant Loading Summary

The Order was based on the estimated spill volume and contaminant loadings which were provided by Hatch (2018) as shown in **(Table 1.1)**. Total phosphorus (TP) and total Kjeldahl nitrogen (TKN) loading estimates were used to develop targeted restoration strategies including dredging.

Table 1.1. Estimated Contaminant Loadings for Period from January 28, 2014 to July 18, 2018 (ref. Hatch 2018)

Flow Component	Spill Volume (GL)	Estimated Total Contaminant Loading (Tonnes)				
		TSS	TP	Ammonia	TKN	cBOD
DWF (2018)	2.9	771	13	63	101	502
WWF (2014-2018)	21.1	1,604	34	96	211	871
TOTAL (2014-2018)	24.0	2,375	47	159	312	1,373

1.2.2 Water Quality Summary

The Work Plan included a summary of water quality in Chedoke Creek and downstream which began to degrade downstream of the Main/King CSO after the initial gate failure on January 28, 2014. *Escherichia coli* (*E. coli*) counts during the January 28, 2014, through December 31, 2017, were about an order of magnitude higher than prior to the beginning of the spill event. Median TP concentration was 2.2 times higher than the pre-spill period. Median ammonia concentrations were similar to pre-spill conditions although the maximum concentrations were higher after the start of the spill event. DO concentration following the first gate failure was similar to the pre-spill condition.

Water quality decreased dramatically after the failure of the second gate on January 1, 2018. TP concentration increased steadily from less than 1 mg/L at the beginning of the second gate failure to over 2.5 mg/L through mid-summer of 2018. Median *E. coli* counts increased by three orders of magnitude following the second gate failure. Median ammonia concentration was approximately an order of magnitude higher (5.89 mg/L) than both the pre-spill period and period between the first and second gate failures.

Water quality at the CP-11 station (**Figure 1.1**) appeared to improve rapidly following correction of the first and second gates on July 18, 2018. TP concentrations at CP-11 decreased to background levels, and similar to pre CSO levels. Median ammonia concentration following gate corrections was 0.28 mg/L or about half of the median concentration during the spill event.

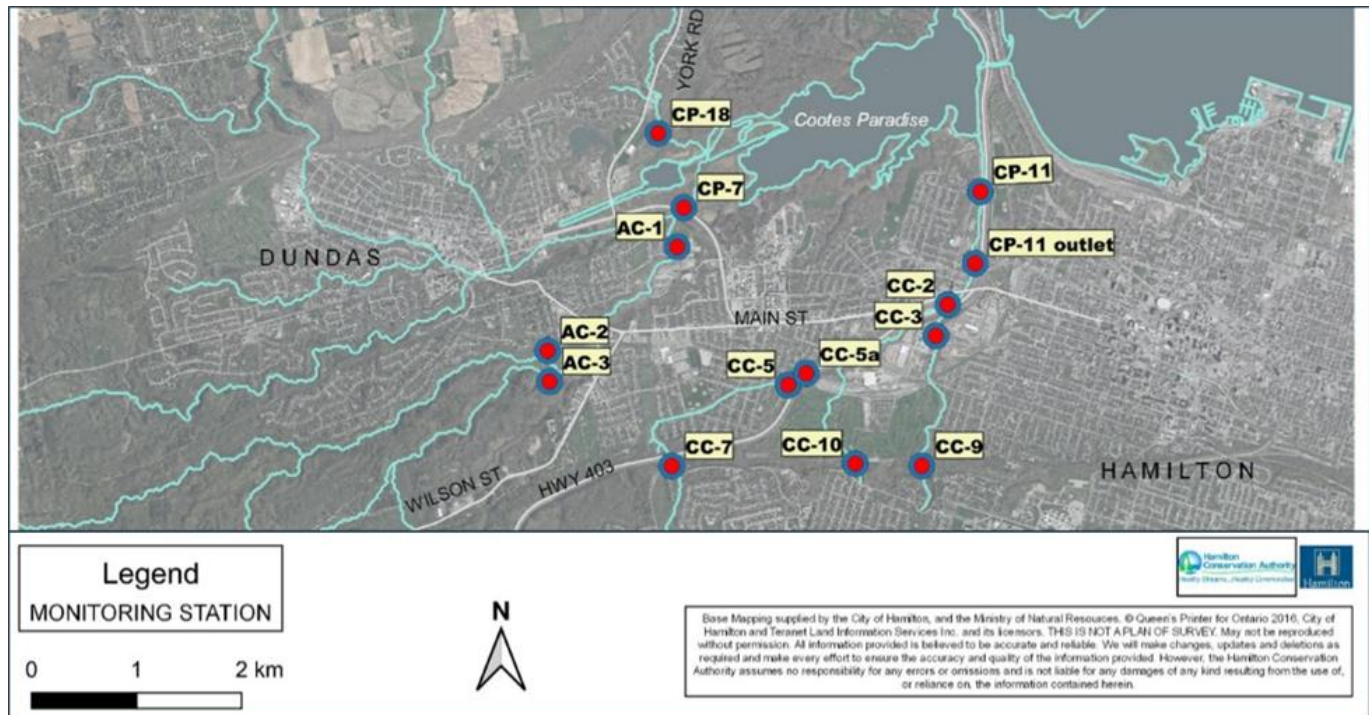


Figure 1.1: Map of Chedoke Creek and Cootes Paradise Monitoring Stations

1.2.3 Stream Conditions

The 2018 stream survey indicated no submerged aquatic vegetation, limited riparian vegetation, and an armored streambank. Some instream habitat (e.g., woody debris) was observed. An algae bloom was observed at Transect C-3/G-5 as shown in **Figure 1.2**. Stream sediments were generally muddy, and the soft sediment thickness layer increased from 0.1 m to about 0.7 m from upstream to downstream. The substrate within the upper half of the creek was sandy and rocky. Soft sediment fractions increased from 13 to 41% from upstream to downstream. Water velocity was highest within the shallow upstream half of the creek and slowed as the water depth became deeper within the downstream half largely due to backwater from Cootes Paradise.

1.2.4 Benthic Invertebrates

Aquatic invertebrates were sampled in 2018 at the locations identified in **Figure 1.2**. Invertebrate abundance and diversity generally decreased from upstream to downstream, reflecting the reduction in habitat quality, as defined by sediment condition. The overall benthic community was dominated by pollutant-tolerant organisms typically found in

poor habitats. The most abundant of these organisms were taxa including chironomids and *Tubificidae* worms. The benthic invertebrate community of Chedoke Creek indicated a pollution-tolerant community which indicates poor environmental conditions typical of urban streams.

1.2.5 Fish Community

Fish data collected by the Royal Botanical Garden (RBG) from 2001 through August 2018 were evaluated, along with fish sampling data collected by WSP, from areas shown in **Figure 1.2** as part of the 2018 *Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation* Report. Data were normalized to catch per unit area. Fish abundance was variable over the period of record, but was, on average, highest at station C1, located about 250 m upstream of the outflow to Cootes Paradise. Fish abundance was also high at station M5, west of the Chedoke Creek discharge to Cootes Paradise. The greatest number of species, on average, was also found at C1.



Figure 1.2: Sediment, Benthic Invertebrate and Fish Sampling Locations

Fish abundance of 6.1 fish/50 m was higher at C1 in 2013 than the 0.1 fish/50 m observed in 2014. A reduction in fish abundance was also observed at station M5 during this same period. Fish abundance increased in 2015 but declined for the next three years relative to the pre-spill abundances. The number of fish species also decreased at C1 after 2014 and similar conditions were found until 2018 when the number of species increased. The number of stress-tolerant fish also appeared to increase from 2014 until 2018 when they declined. Fish sampling results appear to indicate the fish community of Chedoke Creek responded negatively during the spill event and positively following the end of the spill event.

1.2.6 Sediment Conditions Summary

WSP, conducted preliminary sediment core and/or sediment grab sampling within Chedoke Creek at ten (10) locations between September 18th and 19th of 2018 as shown in **Figure 1.2**. Soft sediment thickness across the sample location transects showed greater accumulation of sediments along the west shoreline throughout the creek. Measured sediment thickness ranged from 0.10 to 0.70 m (mean thickness 0.37 m) along the west shoreline compared to 0.04 to 0.59 m (mean thickness 0.26) along the east shoreline and 0.03 to 0.66 m (mean thickness 0.32 m), near the centre of the creek.

In general, the upstream sample locations including C-1, C-2, G-1 and G2 contained less soft sediment (thickness range 0.06 to 0.37 m) compared to the most downstream sample locations C-5/G-6 and C-6/G-7 (thickness range 0.44 to 0.70 m).

1.2.7 Sediment Nutrients

Sediment quality nutrients of interest included ammonia+ammonium, total phosphorus (TP) and total Kjeldahl nitrogen (TKN), all of which were found in the highest concentration within the surface strata (0 to 15 cm) at the C-3/G-5 sample transect, specifically the C-3C sample location (**Figure 1.2**).

The next highest surface strata nutrient concentrations were found at the C-4C sample location, and both locations were positioned near the west shoreline, in areas of soft organic sediment. These sample locations were situated between the Kay Drage Park and Princess Point bridges, showing higher nutrient concentrations were present within this reach and were mostly higher than the surface strata within the Cootes Paradise sample location (C-6/G-7). Nearly all TKN concentrations in surface strata were above the Provincial Sediment Quality Guidelines (PSQG) Lowest Effect Level (LEL) of 550 µg/g, suggesting these sediments contain a level of contamination that can be tolerated by the majority of sediment-dwelling organisms, but not necessarily stress-intolerance taxa as discussed above. Total phosphorus concentrations in all sediment strata samples were greater than the PSQG LEL (600 µg/g) between transects C-4 and C-6/G-7, with the highest concentrations observed at transect C-5/G-6. The phosphorus PSQG Severe Effect Level. (SEL) of 2,000 µg/g was not exceeded by any sample concentration.

Previous sediment quality studies conducted by the RBG in 2006 and 2013 documented nutrient parameters at two locations (CC-1 and CC-2) positioned further northwest from the 2018 C-6/G-7 sample location (**Figure 1.2**). Pre-spill RBG data suggest that TKN enrichment had already occurred downstream in Cootes Paradise. Similarly, TP enrichment was found to have occurred downstream in Cootes Paradise prior to the event. The means and timeframe of TKN and TP enrichment remain unclear.

The mid and lower strata aliquot samples collected from Chedoke Creek showed nutrient concentrations were mostly higher than the surface strata concentrations at sample transects C-5/G-6 and C-6/G-7. These nutrient concentrations within deeper sediment strata suggested legacy nutrient enrichment had occurred where organic sediments were accumulating in the slower-flowing, lower reaches of the creek and within Cootes Paradise.

Nutrient concentrations were high in most samples collected from less than 30 cm in depth. Samples collected from portions of the creek that were sandy (C-1 through C-3) and deep (> 30 cm) had the lowest total Kjeldahl nitrogen and total phosphorus concentrations. Deeper sediment samples (> 30 cm) collected downstream of C-3 were

generally nutrient-enriched which was consistent with the depth of soft sediments in these areas. Presumably, a sandy sediment stratum with lower nutrient concentrations existed downstream of C-3, but further sampling at deeper intervals was needed to identify the vertical elevation of this layer.

1.2.8 Comparison of Preliminary In-Situ Sediment Conditions and Spill Quantities

WSP, estimated a layer of soft organic material approximately 16 m wide with a mean thickness of approximately 0.27 m (+/-) along roughly 1,275 m (+/-) of the creek bed between the Main King CSO and Cootes Paradise. The volume of organic material within Chedoke Creek was initially estimated in 2018 to be approximately 5,600 m³ (+/-).

Soft sediment collected from Chedoke Creek indicated a moisture content of approximately 40% which suggested that this material was relatively dense and consistent with settling and consolidation of suspended particulate material in the wastewater stream. This material would likely include a portion of the TSS discharged during the spill event which would have subsequently consolidated over the duration of the spill event and thereafter.

WSP estimated that the 2,375 tonnes of TSS discharged during the spill event, per Hatch 2018, would occupy a volume of approximately 5,260 m³ at 40% solids. This volume was similar to the approximate in-situ soft sediment volume of 5,600 m³ estimated above.

While removal of solids mass was important, it was equally important to identify the potential TP and TKN mass removal that could be accomplished with a dredging project. As part of the Work Plan, WSP estimated the mass of TKN present within the Chedoke Creek soft sediments was 3 to 4 tonnes compared to 312 tonnes that were discharged during the spill. TP mass within the Chedoke Creek soft sediments was estimated to be 3.3 tonnes while total loading from the event was estimated to be 47 tonnes. The majority of TP and TKN mass load were likely solubilized and transported downstream.

Because the initial mass removal estimates were considerably less than the mass load transported downstream during the spill event, the potential dredge area was expanded to include the Princess Point embayment which is located immediately downstream of Chedoke Creek within Cootes Paradise. This is consistent with the relatively high concentrations of TP observed in the water column in Chedoke Creek and downstream in Cootes Paradise between 2014 and 2018.

1.2.9 Sediment Contaminants

While sediment contaminants including heavy metals and polycyclic aromatic hydrocarbons (PAH) were not the primary focus of the Work Plan, they were a significant consideration from an exposure and dredge material disposal perspective. This was explored in further detail by SLR as part of a 2020 Environmental Risk Assessment (ERA). The ERA indicated a relatively low sediment exposure risk under existing conditions. Exposure of underlying sediment layers with higher concentrations of heavy metals and PAHs was evaluated through subsequent sampling by WSP, and the design of the targeted dredge project was revised to ensure sediments exposed following dredging would not increase the exposure risk of the current sediments.

1.3 Timelines

Date	Event
December 4, 2020	The City receives Director's Order 1-PE3L3 from MECP
February 22, 2021	The City submits the Chedoke Creek Work Plan to MCEP
March 22, 2021	The City submits the Cootes Paradise Report to the MECP
April 2021	A topographic survey is completed via Genius Drone LiDAR system
April-August 2021	Sediment investigations are conducted, and bathymetry data is collected
June 11, 2021	The City receives MECP approval of Chedoke Creek Work Plan and Cootes Paradise Report
April-June 2021	Species At Risk (SAR) investigations take place
July 23, 2021	The City submits the Cootes Paradise Work Plan to the MECP
June-July 2021	Pre-qualifications of contractors take place
August 13, 2021	The City receives MECP approval of Cootes Paradise Work Plan
September 2021	The City installs a small-scale aeration system upstream of Kay Drage Park bridge and 800 square feet of floating treatment wetlands within the Princess Point embayment
September-November 2021	Hydrologic and hydraulic modelling takes place to ensure no flooding impacts during and after targeted dredging construction activities
January-March 2022	100% design and technical specifications for tendering are prepared for permitting and consultation with interested community partners
June 2022	Approval is received from all seven permitting bodies
June 2022	Kay Drage Park and adjoining trail are closed in preparation for targeted dredge activities
May-June 2022	Tendering to the four pre-qualified contractors takes place
June 2022	Lilliput mussels, as identified during the Species at Risk investigations, are searched, collected and relocated within Cootes Paradise
July 8, 2022	Targeted Dredging Construction Tender is awarded to Milestone Environmental Contracting Inc.
August 5, 2022	Lilliput mussel habitat enhancements are completed for the bluegill and sunfish
August 2022	Milestone Environmental Contracting Inc. begin site preparations
August 2022	The City paused preparatory targeted dredge work to continue discussions with the Indigenous community and the MECP
December 2022	The City requests a 12-month extension to the December 31, 2022, Order deadline which is subsequently granted by the MECP
March 2023	MECP amends the Order requiring the City to complete in-water targeted dredging work on or before October 31, 2023
May 2023	The City reaches an agreement with the Indigenous community and the MECP
July 2023	Milestone Environmental Contracting Inc. resumes site preparations and mobilizes the hydraulic dredger
October 13, 2023	The City requests a 1-month extension to the in-water work completion date
October 30, 2023	MECP grants the revised deadline of November 30, 2023, for in-water works
November 17, 2023	In-water targeted dredging activities are completed
December 1, 2023	Transportation of dried sediment to an approved landfill begins
December 30, 2023	Transportation of dried sediment to an approved landfill is completed

The Dredge Material Management Area in the Kay Drage Park was restored over the spring 2024 period.

2 SUMMARY OF WORK UNDERTAKEN

2.1 Data Collection

Data collection for the Chedoke Creek dredging design and permitting occurred in two phases. The first data collection phase, discussed above, was conducted to support the *Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report*, and was also used to prepare the Work Plan for the Chedoke Targeted Dredge project. The second phase involved collection of additional information within the creek and downstream in Cootes Paradise, as specified in the Work Plan, to support the design of the Chedoke Targeted Dredge project. **Figure 2.1** illustrates sediment thickness in the areas sampled in Phase 1 and additional areas that were investigated as part of Phase 2.

2.2 Assessment

The Phase 2 data collection effort involved over 40 additional transects and division of Chedoke Creek and the Princess Point embayment into five zones as shown in **Figure 2.2**. Analysis of sediment chemistry data obtained in Phase 2 indicated that insufficient water depth and limited amounts of organic sediments were present in Zone 1. Furthermore, sediments in the Princess Point embayment (Zones 4 and 5) contained elevated concentrations of heavy metals at the proposed dredge target depth. Zones 2 and 3 were comparatively easy to access, contained an abundance of soft nutrient-enriched sediments and removal of the sediments to the specified target depths was not anticipated to result in a degradation of sediment surface quality. Therefore, Zones 2 and 3 were recommended for dredging as shown in **Figure 2.3**.

WSP provided updated load reduction estimates for Zones 2 and 3 as shown in **Table 2.1** and updated target dredge elevations to 73.7 m IGLD (International Great Lakes Datum) in Zone 2 (average removal of ~ 0.5 m) and 73.4 m IGLD in Zone 3 (average removal of ~ 0.6 m). An estimated 10,674 m³ of material, comprised of 29 tonnes of TKN and 23 tonnes of TP, were estimated to be available for removal at the time of the assessment. After reviewing additional sediment chemistry data collected during Phase 2, WSP subsequently recommended a revised dredge target elevation of 73.5 m IGLD in Zone 2 (average removal of ~ 0.5 m) and a dredge target elevation of 73.0 m in Zone 3 (average removal of ~ 0.9 m) and a revised estimated total in-situ removal volume of 11,300 m³. The revised target dredge depths provided for additional TKN and TP mass removal while maintaining suitable quality of the remaining exposed sediment. Because the revised dredge volume estimate was similar to the previously determined volume estimate, the estimated TKN and TP mass removal was not revised pending the actual dredge volume removal following construction. WSP prepared several technical memoranda detailing the sediment chemistry and rationale for establishing the final dredge limits (**ref. Appendix C**), which were subsequently posted to the City's Chedoke Creek webpage (hamilton.ca/chedokecreek) and included the following:

- Evaluation of Chedoke Creek and Princess Point Sediment Cores and Preliminary Estimate of In-Situ Total Phosphorus and Total Nitrogen Mass, City of Hamilton (July 2021)
- MECP Request for Additional information – Comparison of Existing Sediment Surface and Target Surface Contaminant Concentrations (September 2021)
- Comparison of Sediment Contaminants in Surficial and Deep Layers in Chedoke Creek and Princess Point Sediment Cores and Recommended Dredge Target Modifications (October 2021)

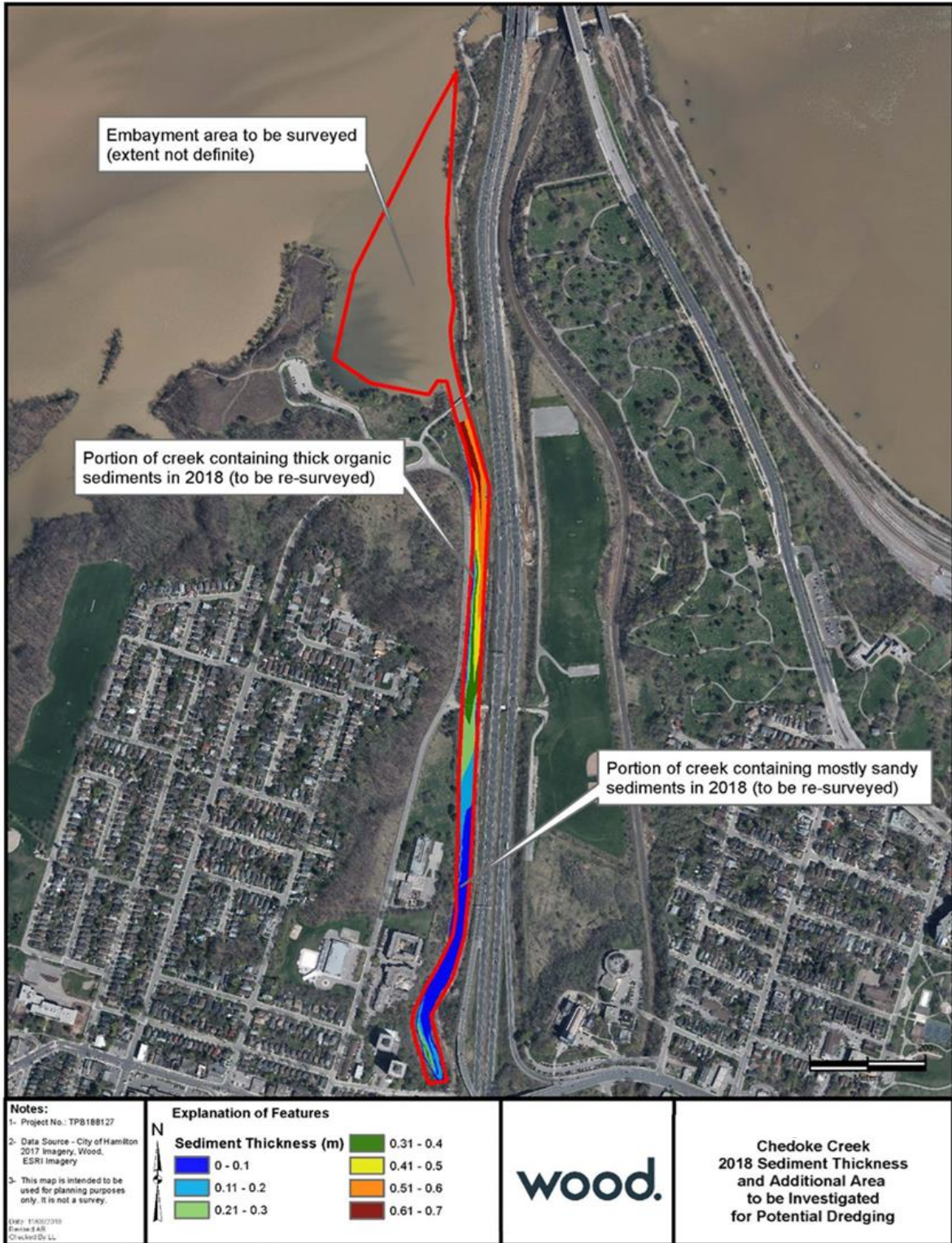


Figure 2.1: Phase 1 Sediment Thickness and Additional Areas Investigated as Part of Phase 2

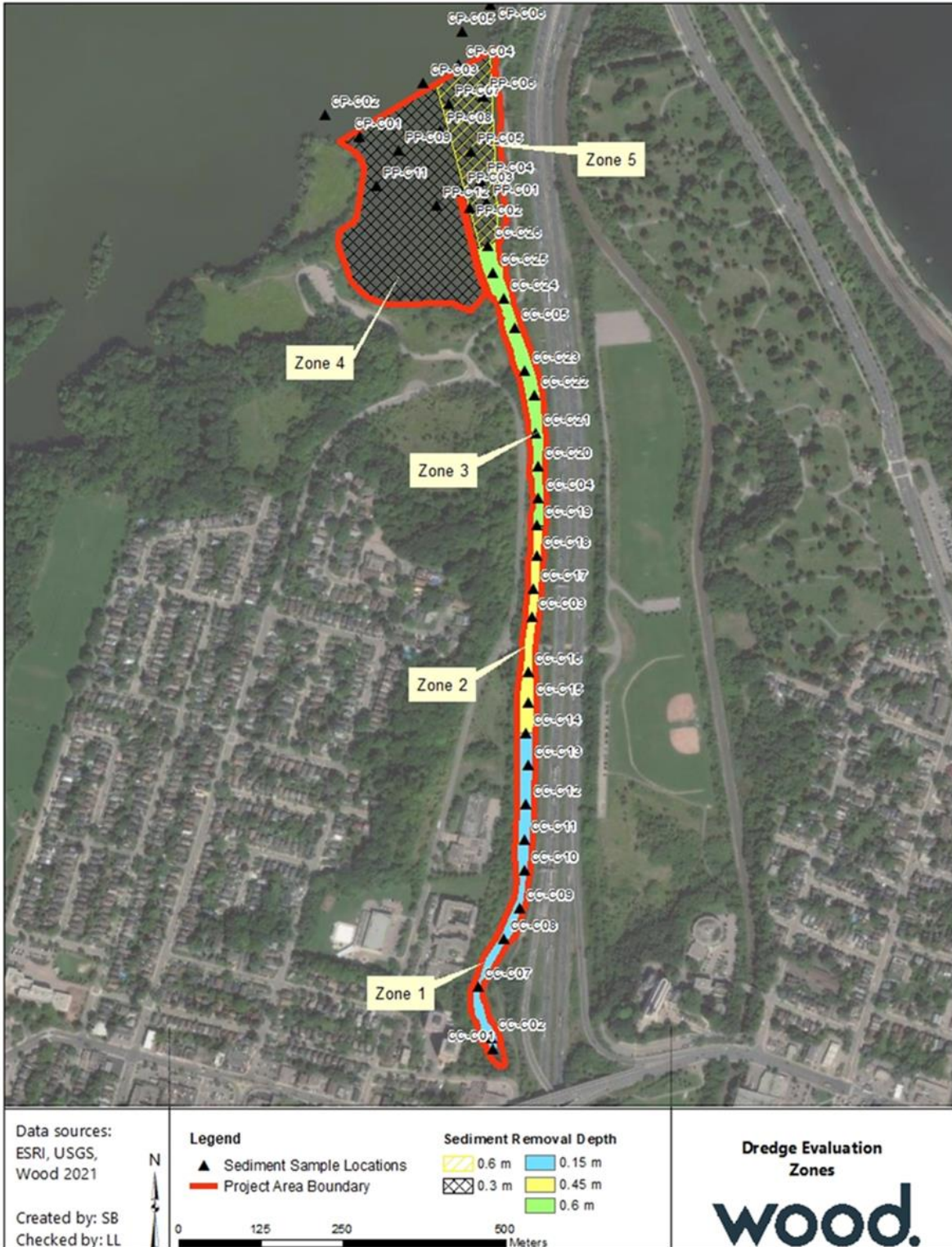


Figure 2.2: Five Zones Investigated as Part of Phase 2



Figure 2.3: Recommended Dredge Zones 2 and 3.

Table 2.1: Original Zone 2 and 3 Dredge Areas and Associated In-Situ Total Kjeldahl Nitrogen and Total Phosphorus Mass

Project Area	Description	Area (m ²)	Target Dredge Elevation (m IGLD)	Average Targeted Sediment Thickness (m)	Volume (m ³)	Average TKN Conc. (ug/g)	Estimated TKN Mass within Zone (tonnes)	Average TP Conc. (ug/g)	Estimated TP Mass within Zone (tonnes)
Zone 2	CC-C14 to CC-C19	6,946	73.7	0.45	3,347	1,180	7	1,067	6
Zone 3	CC-C19 to CC-C26	9,973	73.4	0.60	7,327	1,641	22	1,251	17
				Total Zones 2 & 3	10,674		29		23

2.3 Design and Bid Specifications

The Chedoke Creek targeted dredge design consisted of two main elements including the dredge template and the dredge material management area (DMMA). The Final Chedoke Creek drawings for tender are provided in Appendix D. **Figure 2.4** provides a plan view (overhead) of the dredge template and a profile view (cross section) of the vertical limits of the targeted dredge project. Target dredge elevations in Zones 2 and 3 were selected to provide maximum pollutant removal while ensuring that the exposed underlying sediment would not result in decreased sediment quality at surface. To avoid potential damage to bridge foundations, areas under both bridges were avoided and the contractor was required to maintain a 10 m offset from either side of each bridge. Slopes were maintained at a minimum of 3:1 along the shore (east and west extents) and 10:1 for areas under the bridges and at the northern and southern dredge limits.

The DMMA was constructed at Kay Drage Park on the east side of Chedoke Creek and HWY 403. Kay Drage Park provided the necessary space for construction of a system of Geotubes® which served to dewater the dredged material. In addition, because Kay Drage Park was constructed over a former landfill, there was suitable truck and heavy equipment access under HWY 403. The DMMA layout is shown in Figure 2.5.

The dredge design required sediment to be pumped from the hydraulic dredge in Chedoke Creek to Kay Drage Park where polymer was injected to facilitate the dewatering process. This process was bench-scale tested by Bishop Water, Inc. as part of WSP's design development process. Once mixed with polymer, the slurry material was pumped into two designed containment cells holding several Geotubes® connected by a common manifold. Water draining from the Geotubes® collected at the low point in the containment cells where it was pumped through an above-ground pipeline to the City of Hamilton's wastewater collection and treatment system through a manhole located south of the park.

Once properly dewatered, the Geotubes® were designed to be cut open to access the dredged material which was then excavated and hauled to an appropriate landfill.

Comprehensive bid specifications were also prepared to accompany the design plans. The bid specifications included an extensive list of submittals that the contractor was required to provide prior to commencement of construction. The list of submittals is provided in Table 2.2.

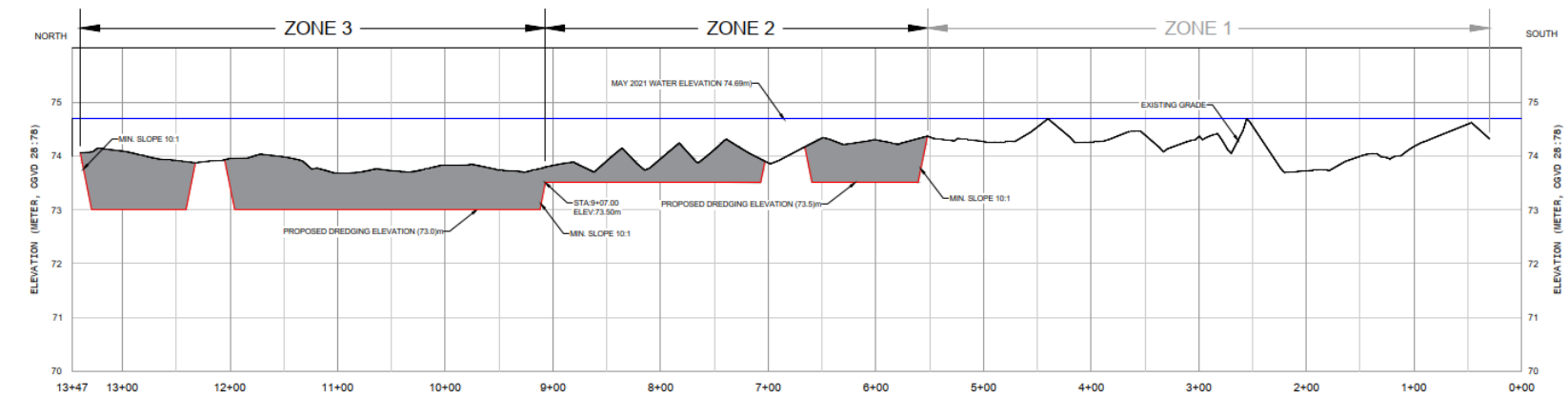
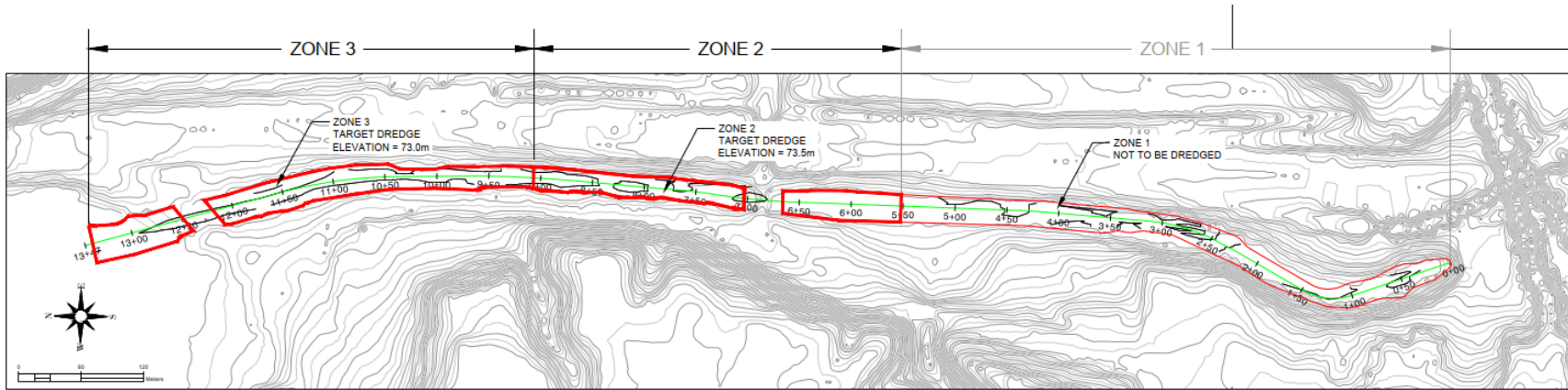
Table 2.2: Submittal Register

Section No.	Description	Due Per Specs
	Due Prior to Start of Construction	
01300	Contractor's Daily Progress Report Template	14 days prior to PCC
02827	Erosion and Sediment Control Plan	14 days prior to PCC
01000	Odour Control Plan	14 days prior to PCC
17002	Active Dewatering System Management Plan	14 days prior to PCC
01300	Timelines for preparation of the sediment dewatering area to receive material	14 days prior to PCC
01300	The expected delivery timeline for geotextile tubes and proposed configuration	14 days prior to PCC
01300	Any proposed flocculants or polymers	14 days prior to PCC
01300	Any deviations from permitted dredging, sediment handling, & dewatering activities	14 days prior to PCC
01300	Discussion of the general operating procedures of the dredging and dredged material placement operations	14 days prior to PCC
01300	Active Dewatering System narrative (means and methods, surveys)	14 days prior to PCC
01300	Supplemental Information	14 days prior to PCC
01300	Testing, submittal of test results (dredged sediments and effluent) per coordination with landfill and wastewater treatment plant respectively	14 days prior to PCC
02827	Turbidity Monitoring and Control Plan (per permit requirements)	14 days prior to PCC
01785	Threatened and Endangered Species Monitoring and Protection Plan	14 days prior to PCC
17001	Dredge Plan	14 days prior to PCC
17001	Contractors dredging, sediment handling, & dewatering activities	14 days prior to PCC
17002	Dredged Material Removal Plan	14 days prior to PCC
01300	Means and methods of hauling and disposal of decanted material	14 days prior to PCC
01300	Timeline for the commencement and completion of dredged material removal	14 days prior to PCC
01300	Estimated number of trips per day	14 days prior to PCC
01300	Primary and backup disposal sites (permit condition for landfill disposal - only)	14 days prior to PCC
01300	Written contract with owner of disposal site, acceptance agreement	14 days prior to PCC
01300	Land alterations or permits by regulatory agencies	14 days prior to PCC
01300	Measures to keep streets and waterways free from spilled materials and to repair damages to streets	14 days prior to PCC
01300	Severe Storm Plan	14 days prior to PCC
01300	Actions taken before a storm strikes a Project Area	14 days prior to PCC
01300	Weather conditions and water stage threshold for shutdown	14 days prior to PCC
01300	Equipment list, with weather limitations	14 days prior to PCC
01300	Methods of securing equipment during shutdown	14 days prior to PCC
01300	Evacuation plan for personnel	14 days prior to PCC
01300	Operations procedures for securing critical dredge equipment	14 days prior to PCC
01300	Communications protocol (with law enforcement/rescue agencies)	14 days prior to PCC
01561	Project Environmental Protection Plan	14 days prior to PCC
01561	Environmental Monitoring Plan	14 days prior to PCC
01561	Dust Management Plan	14 days prior to PCC
01561	List of Emergency Contacts	14 days prior to PCC

Section No.	Description	Due Per Specs
01300	Health and Safety Plan	14 days prior to PCC
01550	Traffic Management Plan	14 days prior to PCC
01300	Quality Control Plan	14 days prior to PCC
01300	Description of QC Organization, identify QC Manager	14 days prior to PCC
01300	Names/authority of QC personnel	14 days prior to PCC
01300	Letter to QC Manager signed by authorized official of firm describing responsibility and delegating authority	14 days prior to PCC
01300	Letters of Direction to all other control reps	14 days prior to PCC
01300	Procedures for scheduling, reviewing, certifying, and managing submittals	14 days prior to PCC
01300	Procedures for testing	14 days prior to PCC
01300	Procedures for tracking deficiencies	14 days prior to PCC
01300	Reporting Procedures	14 days prior to PCC
02101	Soil Management Plan	14 days prior to PCC
02480	Site Restoration Plan	prior to SOW
02480	Post Construction Monitoring Plan	prior to SOW
02480	Landscaping Plan	prior to SOW
01300	Shop Drawings	prior to SOW
01300	In-water and land-side pipeline layout	prior to SOW
01300	Booster Pump locations and configurations	prior to SOW
01300	Effluent water holding tanks	prior to SOW
01300	Active dewatering equipment	prior to SOW
01300	Work Plan	14 days prior to PCC
01300	Layout Drawings	14 days prior to PCC
01300	Projected Schedule (Initial Progress Schedule)	14 days prior to PCC
01300	List of materials and Equipment	14 days prior to PCC
	Due During Construction	
01300	Construction Progress Schedule	Monthly
01300	Monthly Progress Schedule Updates	Monthly
01300	Detailed Monthly Status Reports	Monthly
01300	Daily Progress Reports	Weekly
01025	Signed and sealed hydrographic survey	Prior to SOW
01025	Signed and sealed hydrographic survey	Prior to Final Inspection
01025	Pre-Dredge Condition Assessment	Prior to SOW
01025	Post-Dredge Condition Assessment	Prior to Final Inspection
01025	Progress Hydrographic Survey	Progress Payment Request
01300	Site Inspection and Restoration Report (Dewatering Areas)	Prior to Restoration
01561	Turbidity Monitoring Reports (daily)	Weekly, Unless Exceedance
01050	As-Built Drawings	Prior to Final Inspection

*PCC - Pre-Construction Conference

**SOW - Start of Work (Also Commencement of Work)



LEGEND

- MAY 2021 WATER ELEVATION 74.69m (CGVD28:78)
- EXISTING GRADE
- PROPOSED DREDGE ELEVATION
- PROPOSED DREDGE MATERIAL TO BE REMOVED

Figure 2.4: Chedoke Creek Plan and Profile View

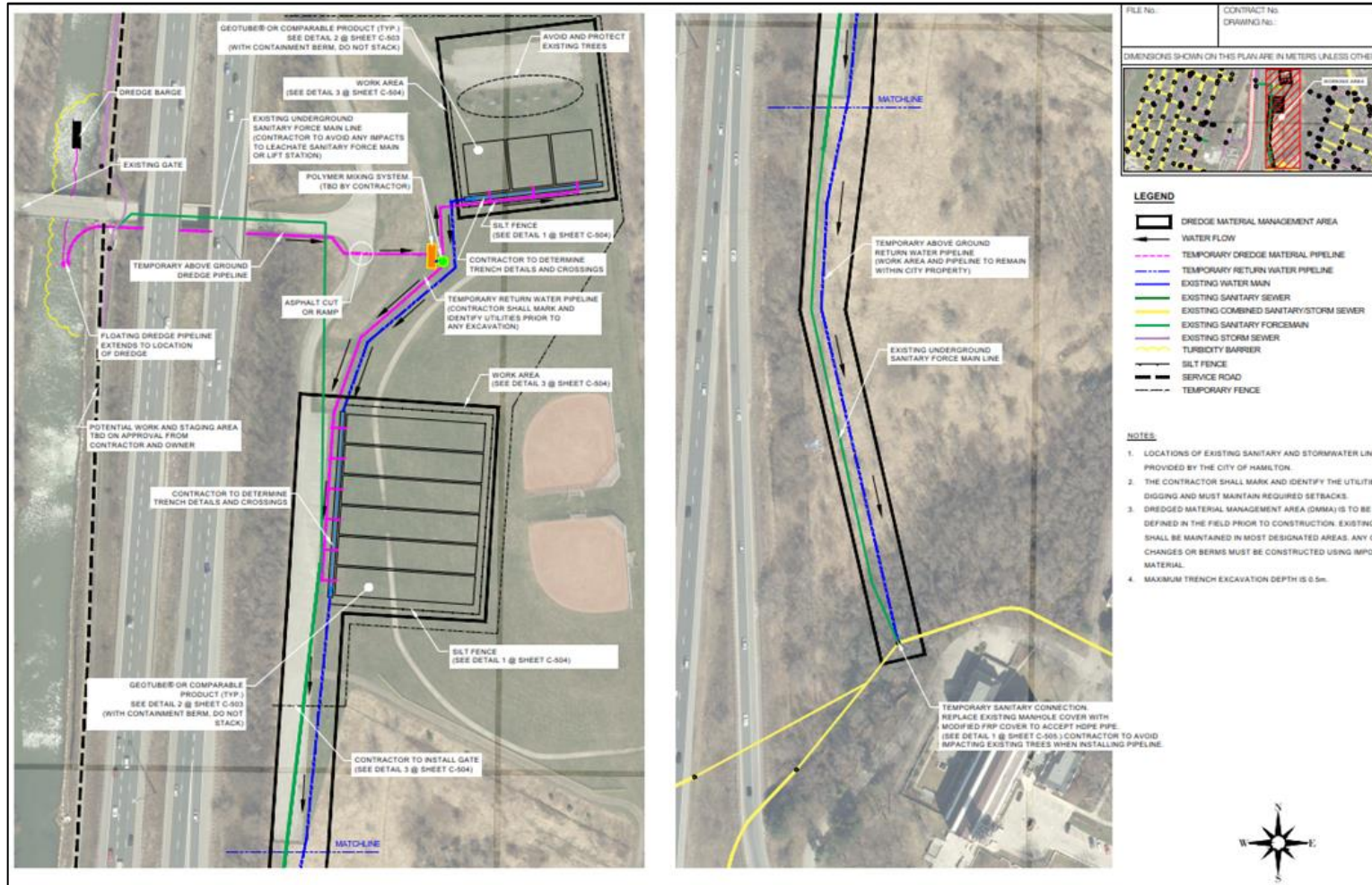


Figure 2.5: Dredge Material Management Area in Kay Drage Park

2.4 Permitting

During the initial stages of the project, consultation was initiated with regulatory agencies and interested community partners to begin early discussions and to confirm permitting requirements, review approval timelines and establish contacts for ongoing consultation throughout the targeted dredge project. A summary of the outcome of these early discussions and permit approvals is provided below. This summary also confirms changes to the original work plan permitting requirements once the agencies were engaged and further details of the proposed works were understood by the regulators. As such, some of the anticipated permitting and approval requirements (e.g., *Fisheries Act* authorization were ultimately not needed).

2.4.1 Hamilton Conservation Authority

As per the *Conservation Authorities Act* regulation 161/06 under Ontario Regulation 97/04, it was determined that a Hamilton Conservation Authority (HCA) Work Permit would be required for the dredging works as they take place within their regulated limits. HCA issued Permit # 2022-06 on February 2, 2022.

2.4.2 Royal Botanical Gardens

The Royal Botanical Gardens (RBG) perform monitoring and regulate research projects by others within Cootes Paradise, which includes the outlet of Chedoke Creek and the Princess Point embayment. As such, RBG identified that the proposed targeted dredging project would require an RBG research permit that includes details regarding the purpose and nature of the proposed project. RBG issued Permit #2021-07 on December 16, 2021.

2.4.3 Ministry of Transportation

The Ministry of Transportation (MTO) confirmed that an Encroachment Permit and Building and Land Use Permit were required as per the *Public Transportation Act and Highways Improvement Act*. Permit # BL-2022-20T-0000036 was issued on February 10, 2022.

2.4.4 Ministry of Natural Resources and Forestry

The Guelph District Ministry of Natural Resources and Forestry (MNRF) confirmed approval under the *Lakes and Rivers Improvement Act* (LRIA) was not required for this project since the HCA Work Permit # 2022-06 addressed the dredging review and approval requirements. As such, no further permitting was required under the LRIA.

2.4.5 Ministry of the Environment, Conservation and Parks

Several Species at Risk (SAR) were identified as being potentially present within the project area, some of which were determined to have direct interactions with the targeted dredging project. As such, early consultation with MECP determined that under the *Endangered Species Act* (ESA) Section 17(2)(c) an Overall Benefit Permit (OBP) would be required. More details of the OBP are discussed in Section 3.1.2.

Additionally, Ontario's Permit to Take Water program ensures water takings in Ontario are managed to the standards of the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement. Companies or organizations who take over 50,000 litres of water/day from a lake, river, stream or groundwater source, must obtain a Permit to

Take Water (PTTW) from the MECP. Permit holders are legally required to record how much water they take each day and must abide by the limits imposed on their permit based on the location and type of water source. MECP issued Permit # P-300-9212648817 on June 15, 2022.

2.4.6 Ministry of Heritage, Sport, Tourism, and Culture Industries

Dredging within the Princess Point embayment had the potential to require archaeological assessment of the nearshore areas; however, it was determined through consultation that the conclusions in the Stage 1 AA, West Hamilton Landfill/Chedoke Creek, Hamilton, Ontario (2006) report that the section of Chedoke Creek north of King Street West had been sufficiently modified through the 20th century and that no further archaeological potential associated with the creek in its current alignment is required.

2.4.7 Transport Canada

The Navigation Protection Program (NPP) within Transport Canada (TC) reviews permit applications under the *Canadian Navigable Waters Act* (CNWA). Early engagement with TC determined that approval under the CNWA would be required. Approval was received on April 11, 2022, under File No.: 2021-405815.

2.4.8 Fisheries and Oceans Canada

The Fisheries Protection Program (FPP) evaluates projects via the Request for Project Review (RFR) form that assesses whether projects are likely to cause death of fish or harmful alteration, disruption, or destruction (HADD) of fish habitat, which would be in contravention of the *Fisheries Act* (FA) and require authorization to proceed.

A RFR was submitted February 23, 2021, and the project was assigned File No. 21-HCAA-00211. DFO issued a Letter of Advice (LOA) for the dredging works; however, it was also determined that due to the potential presence of Lilliput mussel (*Toxolasma cylindrellus*) and its critical habitat a Species at Risk Application (SARA) permit would be required. More details of the SARA permit requirements are discussed in Section 3.1.1.

2.4.9 Impact Assessment Agency of Canada

The MECP indicated that a Provincial Environmental Assessment would not be required. The Impact Assessment Agency of Canada (IAAC) was also contacted, and it confirmed that the targeted dredging project did not require a Federal assessment under the *Impact Assessment Act* (IAA).

2.4.10 Construction Dewatering Sewer Discharge Permit

The City of Hamilton's Construction Dewatering Sewer Discharge Permit is designed for dewatering discharges from construction, land development, renovation, repair, maintenance or demolition activities. A permit is required prior to the start of dewatering and any discharge into the sanitary or combined sewer must comply with the City's Sewer Use Bylaw No. 14-090 Schedule B. Permit # 220701-G was pre-approved on January 24, 2022, and subsequently issued on July 1, 2022.

2.5 Prequalification

Since dredging requires specialized equipment and contracting skills to implement properly, the City determined that a contractor prequalification process was necessary to evaluate interested eligible contractors and provide a streamlined approach to bidding. The City of Hamilton released Request for Pre-qualifications C14-09-21 on May 10, 2021, and received contractor prequalification submittals for the Chedoke Creek Targeted Dredge Project on June 1, 2021. Five contractors provided submittals which were reviewed by the City with four of five contractors selected as pre-qualified.

2.6 Tendering

Designs and technical specifications for tendering were prepared by WSP between January and March 2022. The City released Tender C13-18-22 (Tender for Prequalified Contractors Required for the Targeted Dredging of Chedoke Creek) to the four pre-qualified contractors which was posted April 29, 2022, with a closing date of June 8, 2022. Three addenda were issued during the tender period to answer bidder questions.

A total of three bids were received. A post tender evaluation was performed on the lowest bid to ensure that all conditions addressed the requirements of the Targeted Dredging of Chedoke Creek project. As a result, the tender was awarded on July 8, 2022, to Milestone Environmental Contracting Inc. (Milestone) with a corresponding bid price of \$5,919,992.00 (excluding taxes).

2.7 Construction

Kay Drage Park was closed to the public in June 2022 in anticipation of pending site preparation which began with the construction of the southern containment cell (DMMA #1) in early August 2022. Contractor mobilization progressed until August 18, 2022, when the City paused the project after representatives of the Haudenosaunee Development Institute (HDI) arrived on site stating that they were exercising their treaty rights. On October 6, 2022, the City instructed Milestone to implement a standby plan with construction ceasing due to health and safety concerns.

Following further negotiations and executing a settlement agreement with the HDI, WSP and the City issued a Notice to Proceed to Milestone on May 19, 2023. After receiving the notice to resume construction, Milestone continued with the preparation of the containment cells (DMMA #1 & 2), installation of the polymer mixing system, assembly of the dredge pipeline, and mobilized the hydraulic dredge in July 2023. Milestone however continued to make modifications to the construction of the northern containment area (DMMA #2) including re-arranging geotextile containers and pipelines, such that this feature was not completed until October 2023 (it was not required earlier as the capacity of DMMA #1 was sufficient for initial dredged material).

In-water work began on July 17, 2023, with dedicated debris removal between the Desjardins Recreation Trail bridge and the Kay Drage Park bridge. The debris removal was followed by the commencement of targeted dredging approximately 100 meters north of the Desjardins Recreation Trail bridge. Targeted dredging continued to move south in the manner identified in **Figure 2.6**. Interim bathymetric\hydrographic progress surveys were completed as the work progressed with any identified high spots addressed after the completion of the initial targeted dredge template. Further details are provided in Section 3.2.

Unseasonably wet weather and unexpected debris caused some delays and the City was granted an extension by the MECP to complete in-water work by November 30, 2023. Milestone completed in-water work in advance of the revised deadline (November 17, 2023) and began transporting dewatered sediment to designated soil management

receivers\landfills. Further details are provided in Section 3.2. Excavation and transport of dewatered sediment continued until December 30, 2023. All dredged material was removed from the site in advance of the MECP required deadline of December 31, 2023.

After completion of sediment disposal, Milestone continued to work on the removal of temporary berm material used to construct the southern and northern containment cells. This work continued in 2024, with final Kay Drage Park restoration works completed in June 2024.

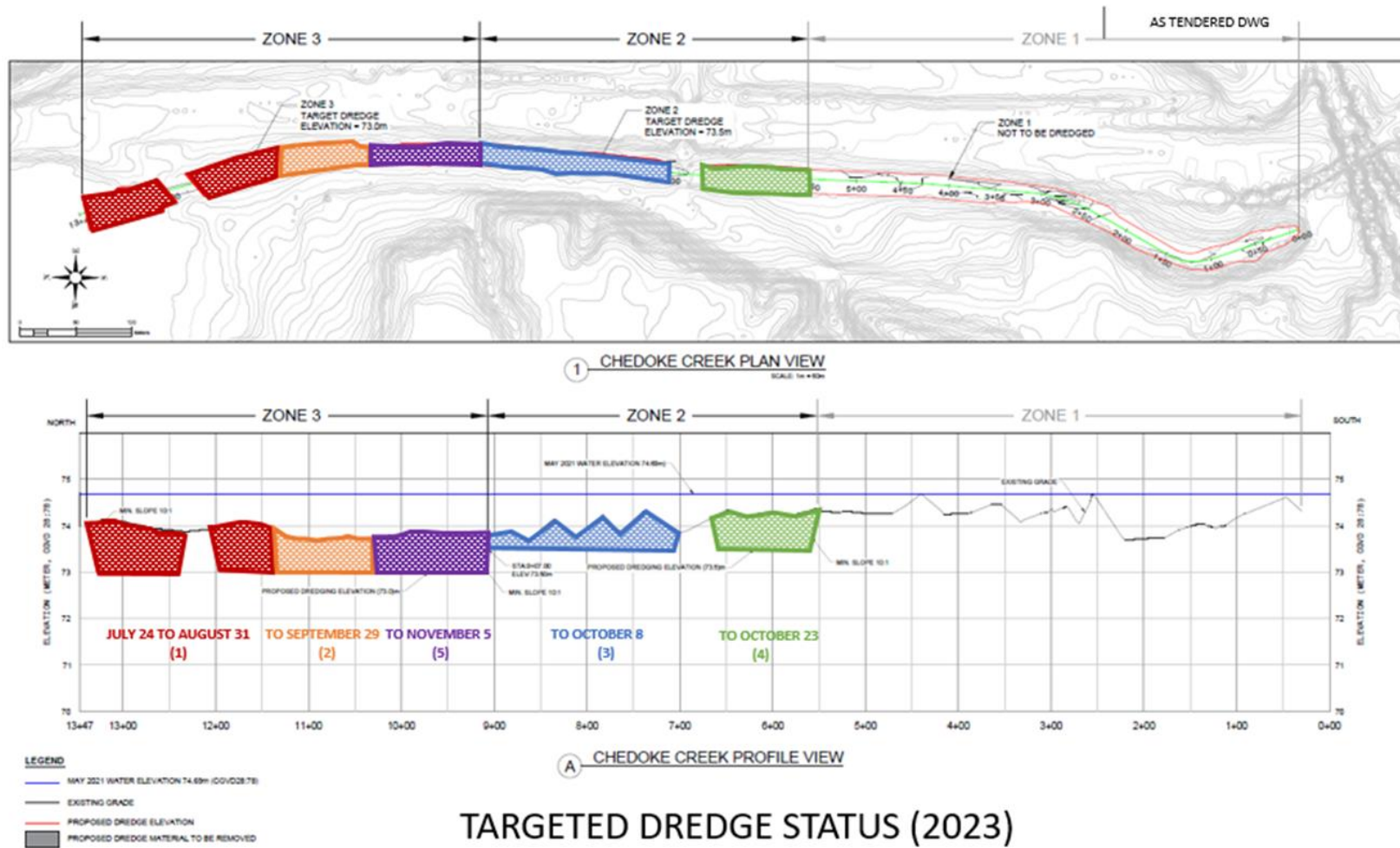


Figure 2.6: Chedoke Creek Plan and Profile View (as dredged)

3 CONSTRUCTION MONITORING RESULTS AND ANALYSIS

3.1 Permitting Requirements

3.1.1 DFO Species at Risk Act Completed Requirements (pre/during dredging)

As identified within Section 2.4, consultation with DFO determined that an application for a *Species at Risk Act* (SARA) permit was required for the mussel relocation component of the project. As part of the SARA permit, the mussel relocation was required to be completed prior to the in-water works to minimize impacts to the federally endangered Lilliput mussel (*Toxolasma parvus*) resulting from the in-water dredging activities which occurred within approximately 2,000 m² of mapped critical habitat for Lilliput mussel.

The mussel relocation was based on protocols set out in “Protocol for the detection and relocation of freshwater mussel species at risk in Ontario-Great Lakes Area” (Mackie et al. 2008), as well as the “Survey Protocol for Species at Risk Unionid Mussels in Wetlands in Ontario” (OMNRF 2018), with the search area focused within the Prescribed Search Area (PSA) and surrounding work area as outlined in **Figure 3.1**. Due to the proposed dredging activities (dredging downstream to upstream) and unsuitable habitat conditions within the upstream reach, mussels were relocated to areas with known Lilliput mussel populations within Cootes Paradise.

WSP biologists initiated the mussel search and relocation project on June 6, 2022, starting at the downstream extent of the PSA (see **Figure 3.1**) by placing metal fence posts within the substrate and running floating line between them to delineate the search area. Initially (June 6 to 10, 2022), a team of two biologists worked from opposing banks, searching towards the middle by 1 m² grids placed upon the substrate. When a line was completely searched, the fence posts were moved upstream 1 m and the search was continued in the same fashion. A total of 20 lines, or approximately 720 of the 4,203 m² search area was completed within week one. During the search, one dead/relic Lilliput and two live Paper Pondshell (*Utterbackia imbecillis*) mussels were found with the live mussels relocated to the area identified within **Figure 3.1**.

During the second week of searching, a team of four staff worked as described above; however, two sets of lines were searched simultaneously with the downstream team clearing 2 m² on the east and west banks prior to the upstream team initiating their searches to ensure the area was cleared prior to standing within the area. A total of 59 lines, or approximately 2,124 of the 4,203 m² search area was searched within the first four days of week two until the water depth became limiting, in that depths did not allow for continued searching by wading. The remaining area (approximately 1,360m²) was searched by utilizing a similar approach as described above, with two to three staff reaching over the side of an inflatable boat and searching the 1 m² grids. During the second week searches, one live Lilliput mussel and three live Paper Pondshell mussels were found with the live mussels relocated to the area identified within **Figure 3.1**. The live Lilliput mussel and one of the Paper Pondshell mussels were tagged (234 and 232 respectively) and placed within the vicinity of a yellow camping peg as part of the required monitoring of SAR mussels following Section 5.3 outlined in the Mackie et al. 2008 protocol, including one (1) month, one (1) year, and two (2) years) after the relocation.



Figure 3.1: Mussel Search and Restoration Map.

As per Condition 3.5 within SARA Permit No.21-HCAA-00211, and as identified above, the one-month monitoring of the relocated SAR Lilliput mussel occurred on 13 July 2022 following methods as per Section 5.3 in the Mackie et al. 2008 protocol. The search centered around the yellow peg, starting at the peg moving outwards for an approximate hour of searching utilizing the “raccooning” technique, and an approximate search area of two metres diameter from the peg. During that search, no live mussels including the tagged Lilliput mussel were found; however, one deceased juvenile Paper Pondshell mussel was located. It should be noted that water levels were approximately 0.8 metres lower from the time of the relocation and the one-month monitoring exercise. As none of the tagged, relocated mussels were found in the area surrounding the peg, a wider search was undertaken and two Paper Pondshell mussels, not related to the relocation efforts were found. The results of the one-month monitoring suggest the relocated mussels may have moved away from the benchmark location, or may have been relocated by predators (e.g., racoons) and could not be found.

These 1-month findings suggested that subsequent 1-year and 2-year post relocation monitoring would no longer be required with this approach confirmed by DFO (ref. Jess Taylor pers. comm. October 25, 2023). As such, future mussel monitoring was not required for the project.

3.1.2 MECP Overall Benefit Permit Completed Requirements (pre/during)

Consultation with the MECP Species at Risk Branch (SARB) was initiated due to several SAR identified as being potentially present within the project area. As part of these early discussions, both an Information Gathering Form (IGF) and Avoidance Alternatives Form (AAF) were submitted to MECP SARB. Upon its review, it was determined that Cootes Paradise and the area within the downstream extent of the remediation area was identified as habitat for Lilliput mussel (*Toxolasma parvum*), a SAR mussel species and that an OBP would be required prior to undertaking the targeted dredging works.

As part of the OBP, WSP on behalf of the City of Hamilton, proposed a series of habitat enhancements within Cootes Paradise. These locations were areas known to have occurrences of Lilliput mussel, and therefore it would create greater opportunities for the glochidia to attach to Bluegill (candidate host sunfish species for the mussel) and promote greater reproduction opportunities for the Lilliput mussel. As part of this Bluegill enhancement program, the OBP plan was to construct 50 habitat enhancement features including brush piles (10), artificial nesting structures (35), and root wads (5) within an area near Cockpit Island and within high density Lilliput mussel habitat between Sassafras Point and Princess Point.

In addition to the habitat enhancements, other conditions within MECP Permit No.WC-C-001-22 included completion of the mussel salvage and providing education and awareness training to all persons engaging in project activities. Details of the mussel salvage are provided above within Section 3.1.1. WSP biologists provided virtual SAR Awareness Training to all staff anticipated to be working on the project in 2022; however, due to project delays in 2022, training was also provided in person in June and July 2023. The topics covered included:

- a) the existence and identification of Protected Species and its habitat at the Site, mostly relating to Lilliput mussel but also including other SAR with the potential to move into the Study Area.
- b) the requirements of the permit;
- c) potential threats posed by Project activities to the Protected Species and its habitat; and
- d) mitigation efforts that must be taken to minimize harming the Protected Species.

The installation of the Bluegill enhancements began on August 3, 2022, and was completed on August 6, 2022, focusing on three areas. Site one is west of Cockpit Island, Site two is east of Cockpit Island and Site three is directly west of the Princess Point shoreline within the Westdale Inlet. All three sites had substrates consisting of sand, silt and muck with woody debris, water lily (*Nymphaeaceae sp.*) and limited other aquatic vegetation.

As identified within the OBP Plan, which was submitted as part of the OBP submission to determine the effectiveness of the enhancements and the bluegill fish populations, responses to the enhancement structures were evaluated on May 23, 2023, utilizing shoreline and boat visual searches, mussel viewers and a Lowrance HDS7 fish finder. At the time of the monitoring, water temperatures within the enhancement areas were approximately 17.2°C, with mostly clear skies and an air temperature of 20°C. Secchi disk measurements were taken at each site and recordings were 0.03, 0.03, and 0.02 m respectively from Site 1 to Site 3. All three sites had increased water depths ranging from 1.0 to 1.3 m and the water colour was brown with organic debris within the water column. Due to the total water depth and colour, shoreline nest counts were not possible. A such, visual searches were undertaken from a boat and by wading out to the enhancements and searching the area using mussel viewers. Similar to the shoreline nest counts, the depth and water clarity was limited, and the enhancements were not visible within the viewer. A final approach, using a Lowrance HDS7 fish finder with structure scan (utilizing side imaging to detect structures in real time) was attempted by following transects and floating over the enhancements to identify the locations of the enhancements, and undertake fish counts. Due to the limitations of the side scanner with the water depth, it was not possible to confirm presence of fish within proximity to the enhancements. Shoreline searches of other areas within Cootes Paradise were undertaken to check for nesting Bluegill activity; however, no nests were observed.

A second attempt to undertake the year one monitoring commenced on June 21, 2023. Water temperatures within the relocation areas ranged from 23.2°C to 25.4°C, with mostly clear skies and an air temperature of 25°C. Secchi disk measurements were taken at each site and recordings were 0.19, 0.22, and 0.23 m respectively from Site 1 to Site 3. Subsequent to the unsuccessful attempt to observe fish presence in May 2023, a MarCum LX-9 underwater video camera was utilized by initially floating over the enhancements in a boat to search the area for fish, but due to gusty conditions and limited water clarity that day, it was decided that walking out to each enhancement, and hovering the camera just off the bottom allowed for optimal viewing of the area. At each enhancement, the biologist stood motionless, and the camera was hovered over the enhancement for approximately five minutes with the camera gently rotated during this period to fully observe any fish or wildlife utilizing them. Visual survey results showed that all installed enhancements were intact and within their original locations. It was also noted that the interstitial spaces within the gravel in the nesting boxes was slowly filling with native substrate/sediment; however, no fish or their nests were observed. Shoreline searches of other areas within Cootes Paradise were undertaken to check for nesting Bluegill activity with a single nest observed along the same bank as Site 3; however, within 0.1 m of total water depth.

The results of the 2023 field surveys to assess the effectiveness of the OBP Bluegill enhancements, determined that due to the limitations associated with increased total water depths and limited water clarity following the approach suggested within the OBP Plan, it was not possible to determine whether Bluegill were utilizing the enhancements during their spawning period. WSP provided the MECP SARB with the Year One Annual Monitoring Report on November 24, 2023. Consultation with the MECP SARB included a proposed ranking matrix of six new monitoring options. The top three options, with the highest cumulative score were determined to be the most appropriate in determining if the Bluegill are using the enhancements. These new monitoring options are currently being completed in 2024.

3.1.3 Erosion & Sediment Control Monitoring

Milestone installed approximately 490 meters of silt fence around the DMMA prior to the start of construction. Other products installed by Milestone to control erosion included mudmats with 15-cm diameter stone, silt sacks, and 20-cm silt socks. Specifications for erosion control products are provided in **Appendix E.1**.

Milestone performed daily erosion and sediment control (ESC) inspections of the construction site as part of its normal activities. In addition, WSP provided routine site inspections as documented in **Appendix E.2** to ensure that all ESC controls were operating as intended. Where deficiencies were identified, WSP worked with Milestone to address the issues in a timely manner.

3.1.4 Turbidity Results (during dredging)

Milestone implemented numerous turbidity control measures throughout the duration of the project as required in the plans. Typical upland turbidity control measures (ESC) were installed as discussed in Section 3.1.3. In addition, the dredge was surrounded by a floating turbidity barrier as shown by the yellow clouded line in **Figure 2.5** which effectively isolated the active dredge area from the remainder of the creek. Both ends of the turbidity barrier were secured to the same side of the creek so that it did not interfere with water flow or fish passage.

Turbidity monitoring was conducted by Milestone as required by the contract during the targeted dredging of Chedoke Creek. Weekly reporting began on July 17, 2023, and continued until November 19, 2023 (i.e. until the completion of in water works). Turbidity checks were conducted every half-hour during targeted dredging working hours using a Hoskin Scientific TN400 Handheld Turbidity Monitor at four monitoring locations.

During the 125-day dredging period, only four exceedances were reported. Exceedances are determined by measuring Nephelometric Turbidity Unit (NTU) concentrations outside of operation hours as a background level. Any turbidity concentrations above 10% of the background level are considered in exceedance. All exceedances were due to natural circumstances, like natural water current fluctuations and adverse weather. **Table 3.1** lists the dates of turbidity exceedances and comments by Milestone. On July 17, 2023, wind and current fluctuated throughout the day causing turbidity fluctuations. Similarly natural fluctuations in turbidity caused exceedances on July 19, 2023, and August 11, 2023. Heavy rainfall and wind gusts ensued on July 20, 2023, causing turbidity exceedances. All Milestone turbidity reports can be found in **Appendix F**.

Table 3.1: Turbidity Exceedance Dates and Comments from Milestone during Chedoke Creek Dredging Activity

Dates of Exceedances	Comments
July 17, 2023	Natural Fluctuation.
July 19, 2023	Natural Fluctuation.
July 20, 2023	Natural Fluctuation and adverse weather.
August 11, 2023	Strong north-to-south current.

3.1.5 Permit to Take Water Results (during dredging)

The Targeted Dredging project Permit to Take Water (PTTW) summary is provided in **Table 3.2**. Daily average pump rates were provided by Milestone (**Appendix G**) and were based on flow meter logs from the hydraulic dredger. For the duration of dredge activity (from July 26, 2023, to November 17, 2023), the average pump rate was 3,421 L/min. Minimum and maximum instantaneous pump rates during operation were 1,391 L/min and 5,639 L/min, respectively. Minimum and maximum daily pump rates during operation were 182,000 L/day and 2,263,000 L/day. The total amount of volume pumped during dredge activity (from July 26, 2023, to November 17, 2023) was 136,509,000 liters including 660 hours of dredging over 102 operational days, by Milestone. All amounts and durations fell within the allowable permitted values (ref. Table 3.2).

Table 3.2: Permit to Take Water Project Summary

PRODUCTION DATA	TOTAL	MAX	MED	MIN
Slurry Pumped (m ³ /day)	136,509	2,263	1,417	182
Slurry Pumped (litres/day)	136,509,000	2,263,000	1,417,000	182,000
Active Pumping (hrs/day)	660	11	7	1
Active Pumping (litres/min)		5,639	3,449	1,391
Active Pumping Days	102			
PTTW Limit				
Volume Taken per Minute (L)	5,833			
Hours Taken per Day (hrs)	15			
Volume Taken per Day (L)	3,500,000			
Number of Days in a Year (days)	120			

3.1.6 Construction Dewatering Sewer Discharge Permit Results (during dredging)

The Construction Dewatering Sewer Discharge permit included a requirement to provide monthly water quality data. Milestone conducted seven (7) water quality sampling events between August 3, 2023, and December 11, 2023, and delivered samples to ALS Canada Ltd. (ALS) for analysis as shown in **Table 3.3**. Relevant parameters and sanitary discharge limits for each are provided in **Table 3.4**. Sample event five indicated a concentration of 14.2 mg/L gravimetric aggregate organics which exceeded the Sewer-Use Bylaw Schedule B standard of < 5.0 mg/L. Sampling event six was collected on November 30, 2023, for re-analysis of gravimetric aggregate organics only and was found to be < 5.0 mg/L. During the period between obtaining the sample results for samples five and six, the dewatered effluent was held onsite until approval was given to resume discharging. Concentrations in all other samples were within the sewer use bylaw limits. All laboratory reports can be found in **Appendix H.1**.

Daily water volume discharge to the sewer system is provided in **Appendix H.2**. Sewer discharge was monitored from July 26, 2023, through January 3, 2023. The minimum and maximum daily volumes reported by Milestone during days with discharge to the sanitary sewer were 137,466 L/day and 3,340,800 L/day. Daily discharge volumes were recorded from July 26, 2023, through November 17, 2023. Average flow during this time was 1,421,295 L/day. Due to the design of the Dredge Material Management Area (DMMA), discharge to the sewer system took place during and after dredging operations, up to 24 hours in duration each day. Monthly pump operating hours and discharge volume to the sanitary sewer are provided in **Table 3.5**.

Table 3.3: Water Quality Sampling Collection Dates

Sampling Event	Date
1	August 3, 2023
2	August 30, 2023
3	October 3, 2023
4	November 2, 2023
5	November 20, 2023
*6	November 30, 2023
7	December 11, 2023

*Event 6 sample analyzed for gravimetric aggregate organics only.

Table 3.4: Sanitary Sewer and Combined Sewer Discharge Limits

Parameter	Limit (µg/L) [a]
cBiochemical Oxygen Demand (cBOD)	300,000
Total Suspended Solids (TSS)	350,000
Total Phosphorus	10,000
Total Kjeldahl Nitrogen (TKN)	100,000
Oil and Grease (animal/vegetable)	150,000
Oil and Grease (mineral/synthetic)	15,000
Phenolic Compounds	1,000
Chlorides	1,500,000
Sulphates	1,500,000
Aluminum (total)	50,000
Iron (total)	50,000
Fluorides	10,000
Antimony (total)	5,000
Bismuth (total)	5,000
Chromium (total)	5,000
Cobalt (total)	5,000
Manganese (total)	5,000
Silver (total)	5,000
Nickel (total)	2,000
Arsenic (total)	1,000
Molybdenum (total)	1,000
Selenium (total)	1,000
Cadmium (total)	700
Mercury (total)	10
Aldrin/Dieldrin	0.2
Benzene	10
Bis(2-ethylhexyl)phthalate	12
Chlordane	100
Chloroform	40
DDT	0.1
1,2-Dichlorobenzene	50
1,4-Dichlorobenzene	80
3,3-Dichlorobenzidine	2
cis-1,2-Dichloroethylene	4,000
trans-1,3-Dichloropropylene	140
Bis(2-ethylhexyl)phthalate	12
Chlordane	100
Chloroform	40
DDT	0.1
1,2-Dichlorobenzene	50
1,4-Dichlorobenzene	80
3,3-Dichlorobenzidine	2
cis-1,2-Dichloroethylene	4,000
trans-1,3-Dichloropropylene	140
Di-n-butyl phthalate	80

Parameter	Limit (µg/L) [a]
Ethylbenzene	160
Hexachlorobenzene	0.1
Hexachlorocyclohexane	100
Methylene Chloride	2,000
Mirex	100
PCBs	1
Pentachlorophenol	5
1,1,2,2-Tetrachloroethane	1,400
Tetrachloroethylene	1,000
Toluene	16
Total Xylenes	1,400
Total PAHs [b]	5
Trichloroethylene	400

[a] Limits from By-Law No. 14-090 For Sewage Disposal Concentrations, Schedule B Table "Limits for Sanitary Sewer and Combined Sewer Discharge."

[b] Total PAHs calculated using the definition of total PAHs in By-Law No. 14-090. According to the By-Law, total PAHs include anthracene, benzo(a)pyrene, benzo(a)anthracene, benzo(e)pyrene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, dibenzo(a,i)pyrene, dibenzo(a,j)acridine, 7H dibenzo(c,g)carbazole, fluoranthene, indeno(1,2,3-c,d)pyrene, perylene, phenanthrene, pyrene. Chedoke creek filtrate samples did not include benzo(e)pyrene, dibenzo(a,i)pyrene, dibenzo(a,j)acridine, 7H dibenzo(c,g)carbazole, and perlyene. Benzo(b)fluoranthene and benzo(j)fluoranthene reported as benzo(b/j)fluoranthene in Chedoke Creek filtrate data and value used in total PAH sum. The majority of PAHs in filtrate samples reported as below detection and 1/2 the detection limit used in sum to calculate total PAHs.

Table 3.5: Total Monthly Water Volume Discharge to the Sewer System.

Total Monthly Discharge		
Month	Volume (L)	Operational Days
July	705,479	4
August	31,594,474	25
September	38,051,280	25
October	46,508,760	30
November	31,080,000	17
December	1,008,010	3
January	288,000	1

Hydrographic Surveys and Sediment Volumes

Multiple hydrographic surveys were conducted to support the Chedoke Creek dredging planning, design, and construction process. Notable survey dates were as follows:

- 1) Initial WSP manual topographic survey to support the Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report (August 2018)
- 2) WSP manual topographic survey to support the Chedoke Creek dredge design completed April 2021
- 3) Pre-Dredge survey provided by Milestone (using sonar – ASI Group Ltd Marine) completed July 27-28, 2022.
- 4) Pre-dredge survey provided by Milestone (using sonar - ASI Group Ltd Marine) (survey completed July 4, 2023, data received July 12, 2023, then updated September 8, 2023) (see **Appendix I.1**)
- 5) Various progress surveys provided by Milestone (using sonar – ASI Group Ltd Marine)
 - a. Interim Survey 1 (August 15, 2023). Progress area 100 m to the north of the Desjardins Recreational Trail Bridge.
 - b. Interim Survey 2 (September 15, 2023). Progress area 90 m to the south of the Desjardins Recreational Trail Bridge.
 - c. Interim Survey 3 (October 11, 2023). Progress area 230 m to the north of the Kay Drage Park Bridge.
 - d. Interim Survey 4 (November 1, 2023). Progress area 130 m to the south of the Kay Drage Park Bridge, and the remaining area between the two bridges.
- 6) Post-dredge survey provided by Milestone (using sonar - ASI Group Ltd Marine) – November 20, 2023 (see **Appendix I.2**)

The final Chedoke Creek dredge design plans specified that a total of 11,300 m³ of in-situ sediment was required to be removed, as indicated by the April 2021 survey.

The subsequent pre-dredge survey provided by Milestone (July 12, 2023) indicated that the expected/estimated dredge volume had diminished considerably and only 7,693 m³ of in-situ sediment remained within the dredge template. This finding was likely the result of continued transport and decomposition of sediments deposited during the spill event between the time of the original survey (April 2021) and the subsequent pre-construction survey (July 2023). There may also have been differences due to the different survey methodologies employed (manual survey vs sonar-based).

An explanation and summary of the differences between the design and the pre-dredge survey in-situ volume estimates is provided in a technical memorandum (dated October 2, 2023), which has been included in **Appendix J** and was provided to the MECP on October 3, 2023.

Based on WSP's analysis of the final post-dredge topographic survey (November 20, 2023) and the original pre-dredge topographic survey (July 12, 2023), a total/final dredge volume of 8,147 m³ was removed. The total TKN and TP load removal associated with this dredge material is provided in **Table 3.6**. Note that the preceding included 130 m³ of debris material which was tracked separately.

Released in December of 2019, Excess Soil Regulation O. Reg. 406/19 is designed for the proper management, tracking, and reuse of excess soil. Excess soil is soil that is generated during construction and excavation activities that will no longer be needed at the site. Thus, the excess soil must be transported off the site. As of January 1, 2023, sites must file notices about how they reuse and/or dispose of excess soil in compliance with O. Reg. 406/19.

The removal of sediment from Chedoke Creek was exempt from the Project Area Notice Filing per Schedule 2 Section 3.5 of O. Reg. 406/19, however the City of Hamilton voluntarily reported the required details on the Excess Soil Registry. Initial estimates were provided with the final totals updated within 30 days of the removal of the final material, as required.

Table 3.6: Total Volume Dredged from Zone 2 and 3 and Associated Total Kjeldahl Nitrogen and Total Phosphorus Mass Removal

Project Area	Description	Area (m ²)	Target Dredge Elevation (m IGLD)	Actual Average Sediment Thickness (m)	Volume (m ³)	Average TKN Conc. (ug/g)	Actual TKN Mass Removed by Zone (tonnes)	Average TP Conc. (ug/g)	Actual TP Mass Removed by Zone (tonnes)
Zone 2	CC-C14 to CC-C19	6,946	73.5	0.34	2,333	1,180	4.9	1,067	4.2
Zone 3	CC-C19 to CC-C26	9,973	73.0	0.58	5,814	1,641	17.5	1,251	13.5
				Total Zones 2&3	8,147		22.4		17.7

3.1.7 Sediment Disposal Quantities

The Targeted Dredging of Chedoke Creek project sediment disposal was completed in compliance under Section 8 of Ontario Regulation 406/19 under the Environmental Protection Act. TerraClean Consultants Inc. (TerraClean) and Culp Transport (Culp) carried non-hazardous sediment dredged from Chedoke Creek to three different disposal sites:

- GFL Stoney Creek Landfill (Stoney Creek - Hamilton, Ontario)
 - 8 loads, 275.32 metric tons
- WM Twin Creeks Landfill (Watford, Ontario)
 - 242 loads, 9,536.30 metric tons
- Allied Waste Niagara (Niagara Falls, New York)
 - 31 loads, 851.48 metric tons

A total of 281 truckloads (using end load trailers) were used to dispose the material, for a total of 10,663.10 metric tons of dredged material removed and disposed of off site (debris was accounted for separately as noted).

Hauling records can be found in **Appendix K.1**.

3.1.8 Sediment Quality

Sediment was analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) prior to acceptance by the recipient site. TCLP is a chemical analysis process used to determine whether there are hazardous elements present in a waste. The test involves a simulation of leaching through a landfill and can prove if the waste is dangerous to the environment or not. TCLP Guideline Limits per Ontario MECP General Waste Control Regulation No. 347/90,558/00 is provided in **Table 3.7**. No exceedances were reported. Laboratory reports are provided in **Appendix K.2**.

Table 3.7: TCLP Guideline Limits

Analyte	Unit	ONWCR Sch. 4
Physical Tests		
Air Velocity, Fume Hood	m/sec	-
Burning Rate	mm/sec	-
Ignitability	-	-
Sample Comment	-	-
Temperature of Test Material	C	-
Time to Ignition	Sec	-
TCLP Extractables		
Aroclor, 1016 TCLP	mg/L	-
Aroclor, 221 TCLP	mg/L	-
Aroclor, 1232 TCLP	mg/L	-
Aroclor, 1242 TCLP	mg/L	-
Aroclor, 1248 TCLP	mg/L	-
Aroclor, 1254 TCLP	mg/L	-
Aroclor, 1260 TCLP	mg/L	-
Aroclor, 1262 TCLP	mg/L	-
Aroclor, 1268 TCLP	mg/L	-
Benzo(a)pyrene, TCLP	mg/L	0.001 mg/L
Decachlorobiphenyl, TCLP	%	
Tetrachloro-m-xylene, TCLP	%	
TCLP Extractables Surrogates		
Chrysene-d12, TCLP	%	
Naphthalene-d8, TCLP	%	
Phenanthrene-d10, TCLP	%	
TCLP Metals		
Arsenic, TCLP	mg/L	2.5 mg/L
Barium, TCLP	mg/L	100 mg/L
Boron, TCLP	mg/L	500 mg/L
Cadmium, TCLP	mg/L	0.5 mg/L
Chromium, TCLP	mg/L	5 mg/L
Lead, TCLP	mg/L	5 mg/L
Mercury, TCLP	mg/L	0.1 mg/L
pH, TCLP 1 st preliminary	pH Units	-
pH, TCLP 2 nd preliminary	pH Units	-
pH, TCLP Extraction Fluid Initial	pH Units	-
pH, TCLP Final	pH Units	-
Selenium, TCLP	mg/L	1 mg/L
Silver, TCLP	mg/L	5 mg/L
Uranium, TCLP	mg/L	10 mg/L

Analyte	Unit	ONWCR Sch. 4
TCLP VOCs		
Benzene, TCLP	mg/L	0.5 mg/L
Carbon Tetrachloride, TCLP	mg/L	0.5 mg/L
Chlorobenzene, TCLP	mg/L	8 mg/L
Chloroform, TCLP	mg/L	10 mg/L
Dichlorobenzene, 1,2-, TCLP	mg/L	20 mg/L
Dichlorobenzene, 1,4-, TCLP	mg/L	0.5 mg/L
Dichloroethane, 1,2-, TCLP	mg/L	0.5 mg/L
Dichloroethylene, 1,1-, TCLP	mg/L	1.4 mg/L
Dichloromethane, TCLP	mg/L	5 mg/L
Methyl Ethyl Ketone [MEK], TCLP	mg/L	200 mg/L
Tetrachloroethylene, TCLP	mg/L	3 mg/L
Trichloroethylene, TCLP	mg/L	5 mg/L
Vinyl Chloride, TCLP	mg/L	0.2 mg/L
Bromofluorobenzene, 4-, TCLP	%	
Difluorobenzene, 1,4-, TCLP	%	
Polychlorinated Biphenyls		
Polychlorinated Biphenyls [PCBs], total, TCLP	mg/L	0.3 mg/L

ONWCR = Ontario MECP General Waste Control Regulation No. 347/90,558/00
 Sch.4 = Schedule 4 Leachate Quality Criteria

4 POST-CONSTRUCTION MONITORING & ACTIONS

4.1 Water Quality

As one of the corrective and preventive actions of the Chedoke Creek spill, the City of Hamilton set out to develop a framework for monitoring surface water quality throughout Hamilton's watersheds. The Surface Water Quality Program (SWQP) is the starting point for the City in gaining a holistic understanding of its receiving waters and the potential impacts from various City assets within the storm and wastewater collection and treatment system.

Various types of overflow structures exist within the City's storm and wastewater infrastructure, both within the combined sewer system, and the separated sewer system. These designed overflow structures have the potential to discharge to the natural environment and include storm relief pumping stations, combined sewer overflow tanks (CSOs), sewer pump stations (SPSs), sewer siphons and flow regulators.

Within the overall service area for the City's storm and wastewater collection and treatment system, five (5) major receiving water bodies exist. These are:

- Hamilton Harbour
- Red Hill Creek
- Grindstone Marsh
- Lake Ontario
- Cootes Paradise Marsh via Spencer & Chedoke Creeks

Headwater tributaries of the Grand River and Niagara Peninsula catchment areas also exist with the boundaries of the City of Hamilton. These headwater tributaries flow south into the Grand River towards Lake Erie, and east outside of City boundary, discharging into Lake Ontario.

Cootes Paradise is an important coastal marsh area in western Lake Ontario and serves as a key sanctuary and habitat for a wide variety of fauna and flora, including rare or threatened species. Owned and managed by the Royal Botanical Gardens (RBG), it spreads over 8.4 km² including 2.5 km² of coastal wetland. Since it serves important ecological functions, such as being a significant natural fish nursery and key migratory bird habitat, the Government of Ontario has listed Coates Paradise as a Provincially Significant Class 1 Wetland, and as an Area of Natural and Scientific Interest (ANSI). Cootes Paradise is also a principal environmental protection area, protected under the Royal Botanical Gardens Act 1941. Like the Hamilton Harbour, Cootes Paradise is also designated as an ESA. Its primary tributaries, Chedoke, Westdale, Spencer, Borer's and Ancaster Creeks are also identified as being environmentally significant.

The Dundas WWTP effluent and a number of CSO sites discharge directly into Cootes Paradise or indirectly via its tributary streams. In addition, Cootes Paradise may receive overflows from two (2) Storm Relief Pumping Stations, multiple sewer pump stations (SPSs) with overflow structures, and multiple sewer siphons with overflow structures. The Dundas Equalization Tank may also discharge to Cootes Paradise under emergency conditions, though this is part of the separated sewer system and historically has not overflowed in normal conditions, including no overflows between 2015-2020. In order to improve the Cootes Paradise ecosystem, the City has a goal to control all the CSO discharges to Cootes Paradise to a maximum of one CSO event in an average year, in accordance with the Provincial protocols. The 'average' precipitation year is determined by the City's Pollution Prevention and Control Plan.

Phase I of the Surface Water Quality Program (2022 to 2024) established a monthly surface water monitoring plan, sampling 33 locations throughout the City. Since the program follows an adaptive management process, the 2023 annual review resulted in an amendment to Phase I with the removal of 7 locations and the addition of 17 locations, bringing the total sampling locations for Phase I to 40 locations.

Phase II (2025 to 2026) will focus on assessing the initial sampling plan and making modifications as needed and expanding the coverage of the monitoring plan or the frequency of sampling. From the baseline information captured in Phases I and II, Phase III will focus on infrastructure investment needed to better protect the receiving waters, as well as prioritizing identified areas of interest/on-going water quality anomalies, or hot spots, for regular inspection and enforcement activities, as needed. Currently the 40 surface water locations are sampled monthly, with data on the surface water samples provided through the [Open Hamilton Data Portal](#) which is a public-facing resource for up-to-date, easy and transparent data for surface water quality general knowledge, trending, review and research purposes.

Data collected are reviewed against municipal, provincial and federal regulations and guidelines for general baseline condition purposes. The City is continuing to monitor Chedoke Creek at the stations shown in **Figure 4.1** which are closely monitored for any improvements based on the Targeted Dredging of Chedoke Creek project, and other supportive initiatives in the Chedoke Creek watershed. The City will also continue to study how wastewater and stormwater discharges are influencing the quality of the receiving waters with the Surface Water Quality Program helping to guide refinements to standard operating conditions, and pin-point non-point source contaminates throughout Hamilton's Watersheds.

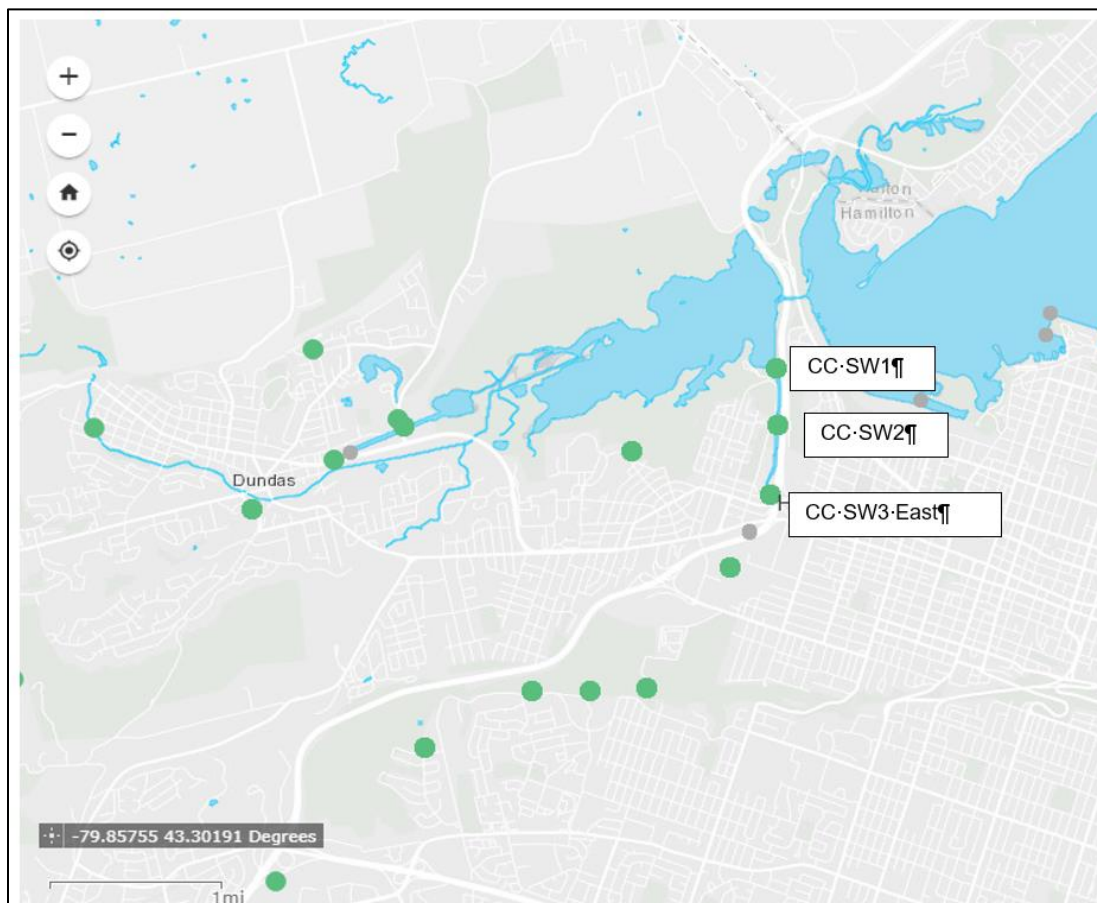


Figure 4.1: Chedoke Creek Monitoring Stations

Water quality data are not the only useful metrics for assessing environmental impacts and establishing restoration success criteria. However, other environmental metrics such as bioassessment criteria are often unavailable for evaluation of “pre-impact” conditions as in the case of Chedoke Creek. Water quality data serves as the best available information to evaluate and compare conditions within Chedoke Creek prior to the spill event, during the spill event, and for the pre-, during and post-restoration periods. It is important to note that Chedoke Creek is an urban drainage conveyance with variable, often poor, water quality conditions that are dependent on rainfall, snowmelt, CSO infrastructure operation and other environmental and infrastructure factors. In addition, water quality data should be considered supplemental to the mass-load reduction provided by removal of poor-quality sediments achieved during the Chedoke Creek Restoration Project as discussed in **Sections 2 and 3** above.

Station CC-SW2, also referred to as Station CP-11, has the most complete period of record (see **Table 4.1**) of the three stations shown in **Figure 4.1** and is located downstream of the Main/King CSO. Data from the CC-SW2/CP-11 station was previously evaluated through 2018 by WSP as part of MECP Order#1 1-J25YB Item 1b, Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report, WSP, 2019. Available water quality parameters include TP, E. coli, pH, ammonia, DO, and TSS. In addition to the data previously evaluated between 2009 and 2018, **Table 4.2** provides the median values for water quality data collected during the pre-restoration (October 2018 – July 2023), restoration (July 2023 – December 2023), and post-restoration (January 2024 – June 2024) periods. Time-series data for the updated period or record are provided in **Figures 4.2 through 4.7**.

Table 4.1: CC-SW2/SP-11 Period of Record for Water Quality Parameters of Concern

Station	Parameter	Units	Start Date	End Date	Number of Samples
CC-SW2/CP-11	Total Phosphorus	mg/L	5/7/2009	6/13/2024	281
CC-SW2/CP-11	<i>Escherichia coli</i>	cfu/100mL	5/7/2009	6/13/2024	280
CC-SW2/CP-11	pH	SU	5/7/2009	3/19/2024	260
CC-SW2/CP-11	Ammonia	mg/L	5/7/2009	5/30/2024	273
CC-SW2/CP-11	Dissolved Oxygen	mg/L	5/7/2009	3/19/2024	239
CC-SW2/CP-11	Total Suspended Solids	mg/L	5/7/2009	6/13/2024	269

Table 4.2: Pre-Event, During Event and Post Event Median Water Quality Data *

Analyte	Pre-event	Gate 1 Open	Gate 2 Failure	Gates Closed	Pre-Restoration	Restoration	Post-Restoration
	(5/7/2009 to 1/28/2014)	1/28/2014 to 12/31/2017	1/1/2018 to 7/18/2018	7/19/2018 to October 2018	October 2018 to July 2023	July 2023 to December 2023	January 2024 - June 2024
TP (mg/L)	0.19	0.386	1.13	0.233	0.280	0.255	0.197
<i>E. coli</i> (cfu/100mL)	510	5900	655000	3300	900	1010	1730
pH (SU)	8.18	7.59	7.09	8.02	7.97	7.73	8.28
Ammonia (mg/L)	0.54	0.51	5.69	0.21	0.29	0.52	0.36
DO (mg/L)	9	9.15	3.51	8.16	10.87	7.60	12.5
TSS (mg/L)	22.3	15.35	24.85	8.4	13.25	17.00	13.2

*Column colors correspond with the color of data points in Figures 4.2 through 4.7

Total phosphorus data shown in **Figure 4.2** suggests TP concentrations at CC-SW2/CP-11 have continued to decrease through the pre-restoration, restoration, and post-restoration phases. The post-restoration TP median concentration of 0.20 mg/L is similar to the pre-event concentration of 0.19 mg/L and is less than 18% of TP median during the Gate 2 failure period.

Median *E. coli* concentrations at CC-SW2/CP-11 shown in **Figure 4.3** suggest that *E. coli* counts returned to pre-event conditions following gate closure and have remained several orders of magnitude below the peak median concentration of 665,000 cfu/100 mL which occurred during the Gate 2 failure period.

Median pH values at CC-SW2/CP-11 shown in **Figure 4.5** indicate that pH returned to pre-spill conditions once the gates were closed. During the Gate 2 failure event, the median pH decreased to 7.1 which was likely a result of high carbon dioxide concentrations associated with wastewater loading. The post-restoration median pH of 8.3 is similar to the pre-spill median pH of 8.2.

Median ammonia concentrations at CC-SW2/CP-11 shown in **Figure 4.5** indicate water quality conditions following gate closure may be better than the pre-spill conditions. The median post-restoration ammonia concentration of 0.36 mg/L is only 67% of the pre-spill median concentration of 0.54 mg/L.

Median DO concentrations at CC-SW2/CP-11 shown in **Figure 4.6** suggest oxygen conditions continued to improve following closure of the gates and were similar to pre-spill conditions during the pre-restoration, restoration and post-restoration periods. Variability in DO concentration during the restoration and post-restoration periods is likely due to water temperature during those periods. Dissolved oxygen data for the post-restoration period was only available from January through March 2024.

Median TSS concentrations at CC-SW2/CP-11 are shown in **Figure 4.7**. Chedoke Creek is an urban drainage conveyance which typically has elevated and variable TSS concentrations depending on a variety of factors including rainfall duration and intensity, snowmelt, and others as discussed above. Median TSS concentrations were similar throughout the period of record and ranged from 9.3 mg/L to 24.9 mg/L. The median TSS concentrations for the pre-restoration (13.3 mg/L), restoration (17.0 mg/L) and post-restoration (13.2 mg/L) periods are all below the pre-event period TSS concentration of 22.3 mg/L.

In summary, water quality conditions at station CC-SW2/CP-11 beginning with gate closure in July, 2018 have improved compared to the period during which gate failures occurred and have generally returned to pre-spill conditions. Limited post-restoration data are available for analysis, however the City will continue to collect and evaluate these data to assess long-term post-restoration benefits resulting from the City's restoration efforts.

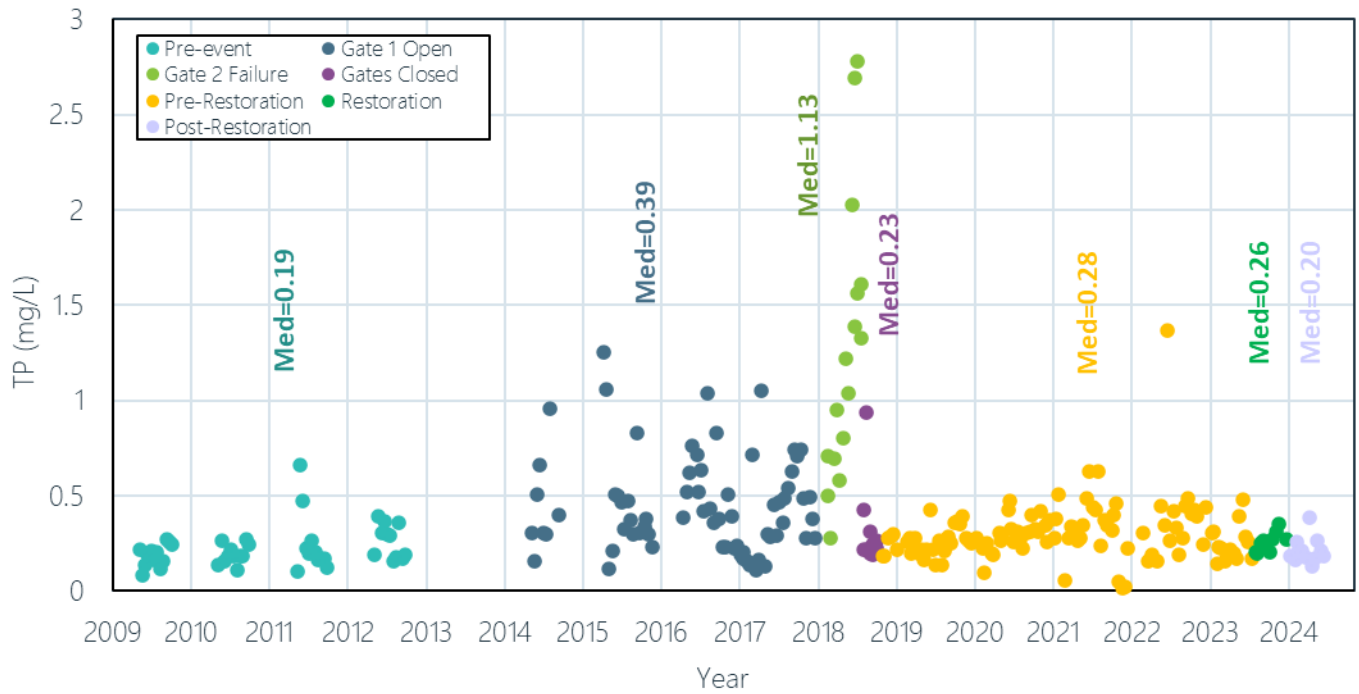


Figure 4.2: Chedoke Creek at CC-SW2/CP-11 TP Concentrations (2009 through 2024)

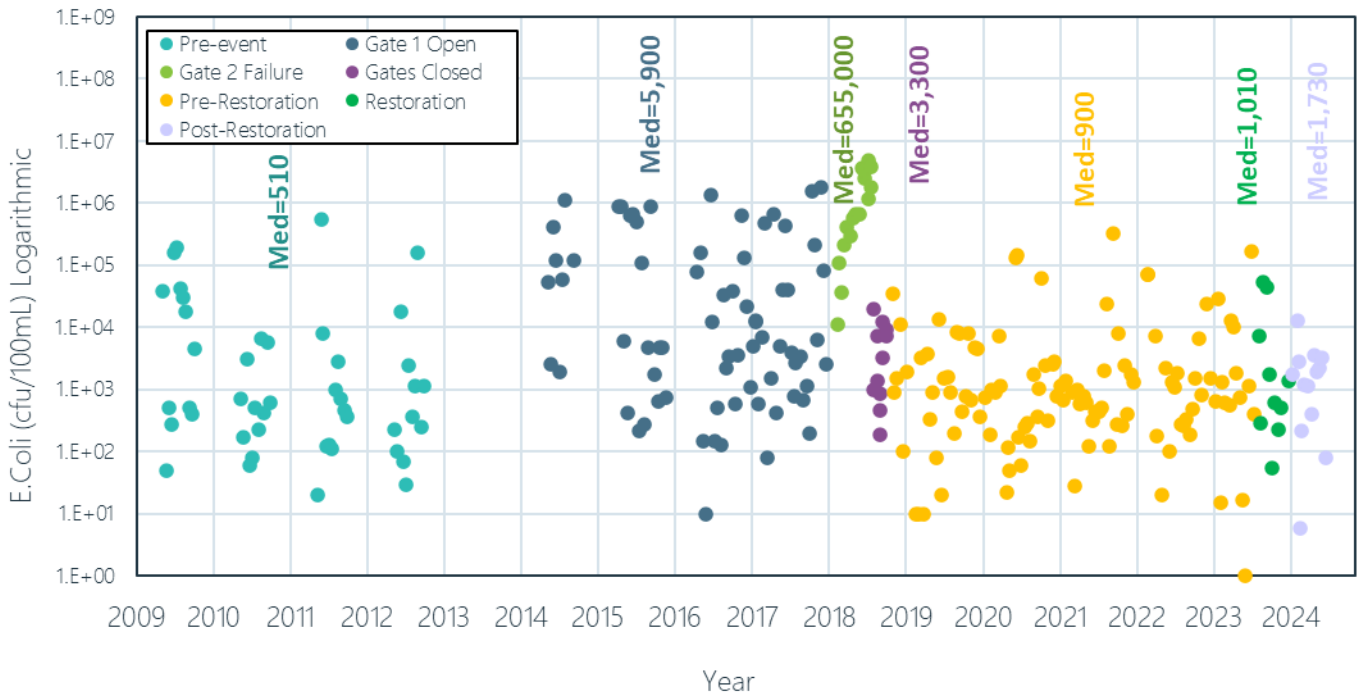


Figure 4.3: Chedoke Creek at CC-SW2/CP-11 *E. coli* Counts (2009 through 2024)

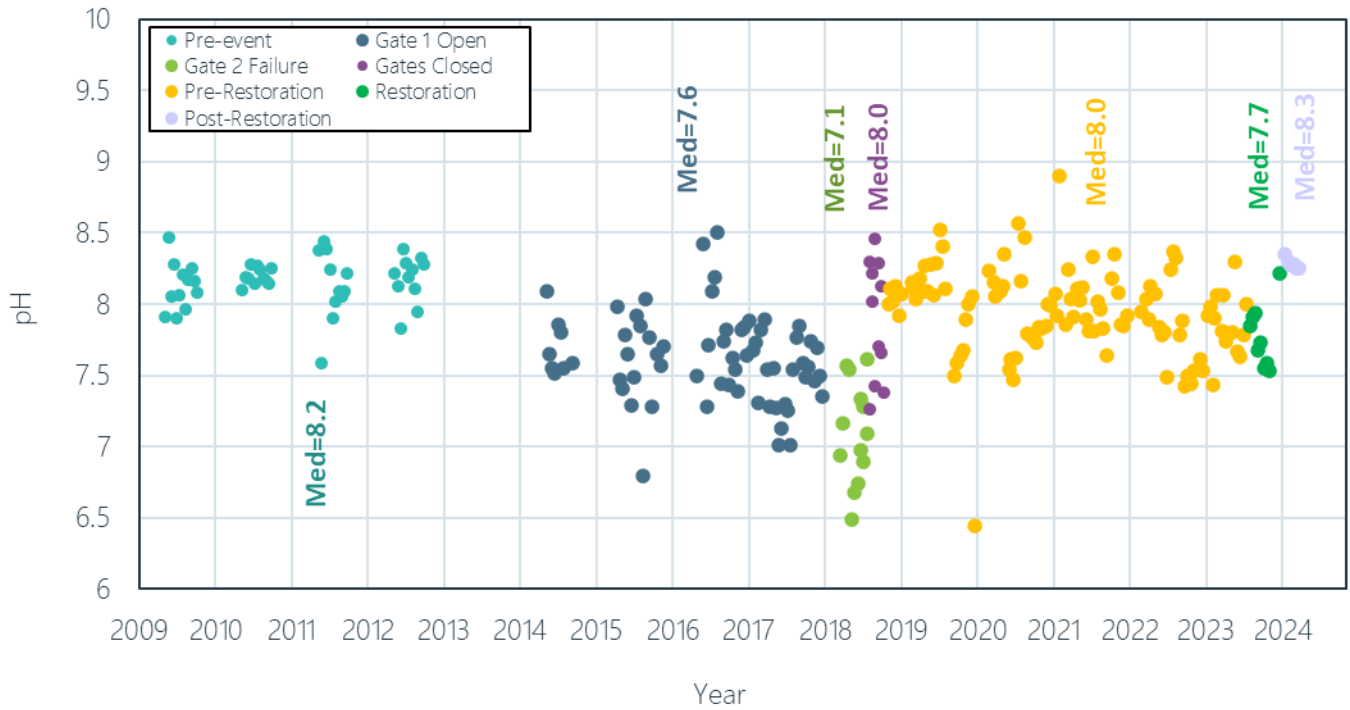


Figure 4.4: Chedoke Creek at CC-SW2/CP-11 pH (2009 through 2024)

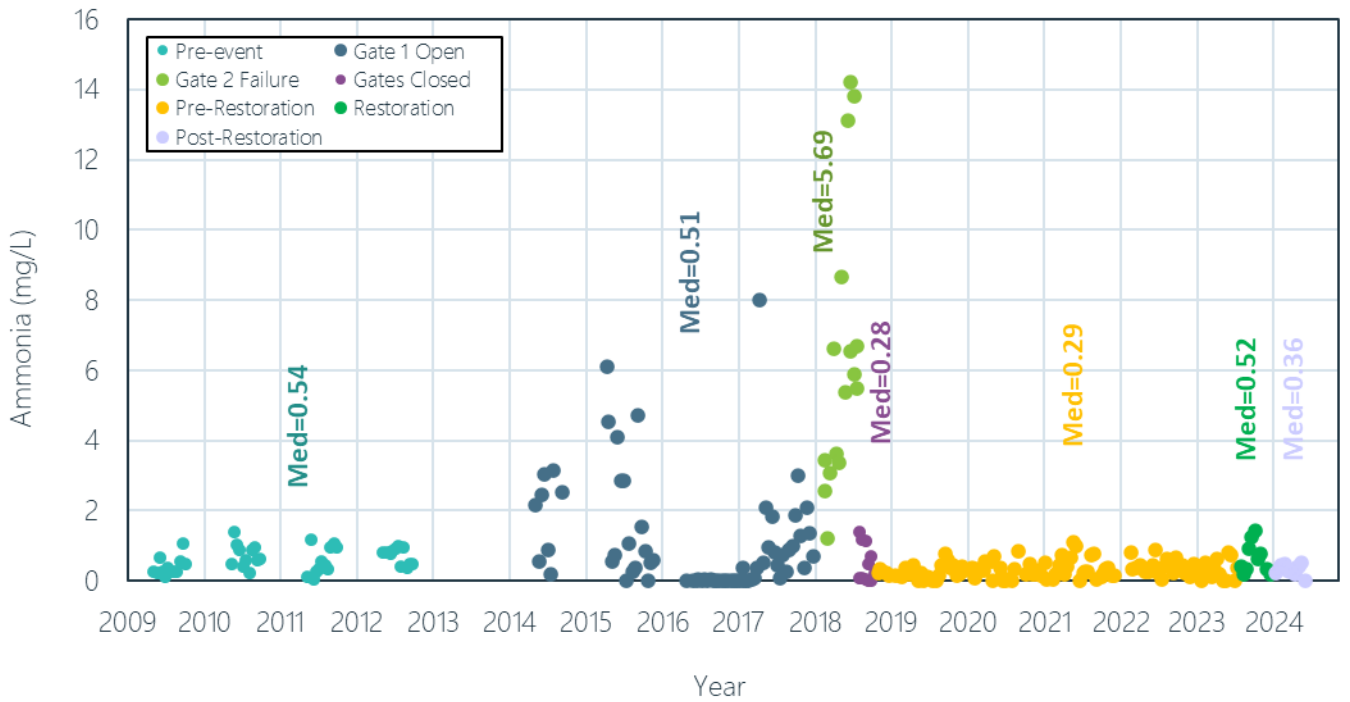


Figure 4.5: Chedoke Creek at CC-SW2/CP-11 Ammonia Concentrations (2009 through 2024)

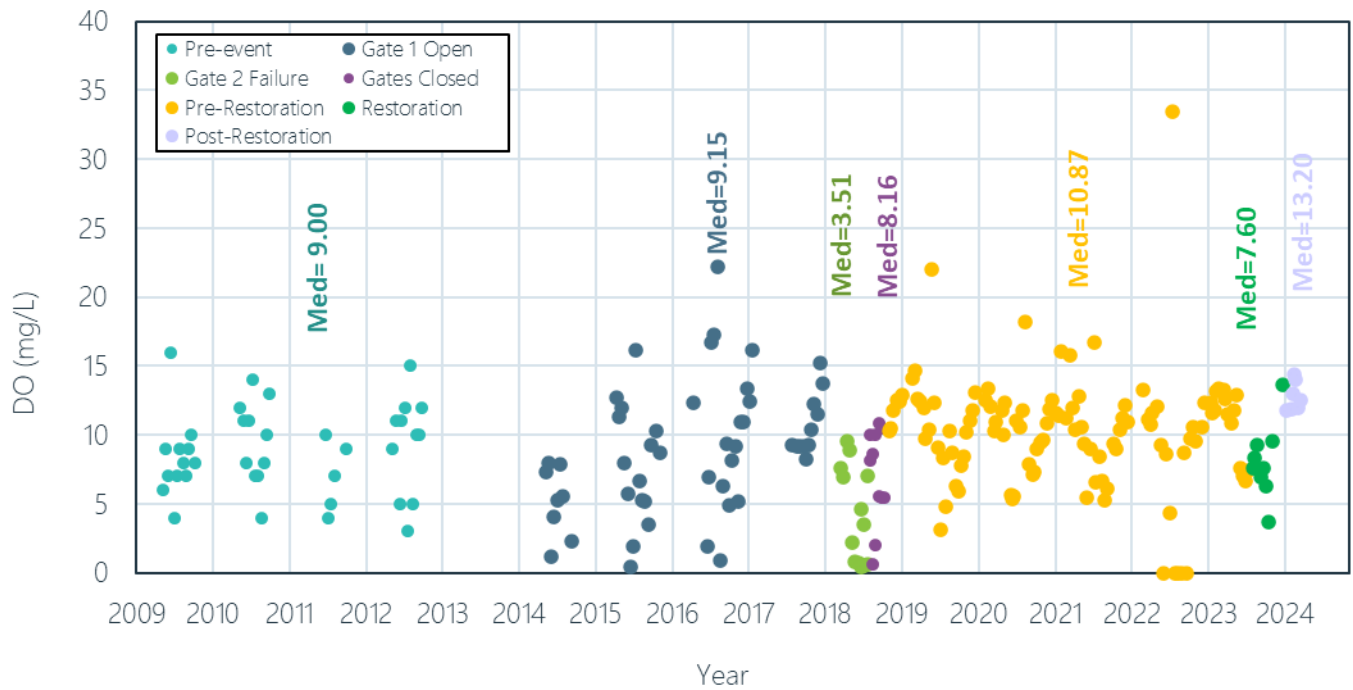


Figure 4.6: Chedoke Creek at CC-SW2/CP-11 DO Concentrations (2009 through 2024)

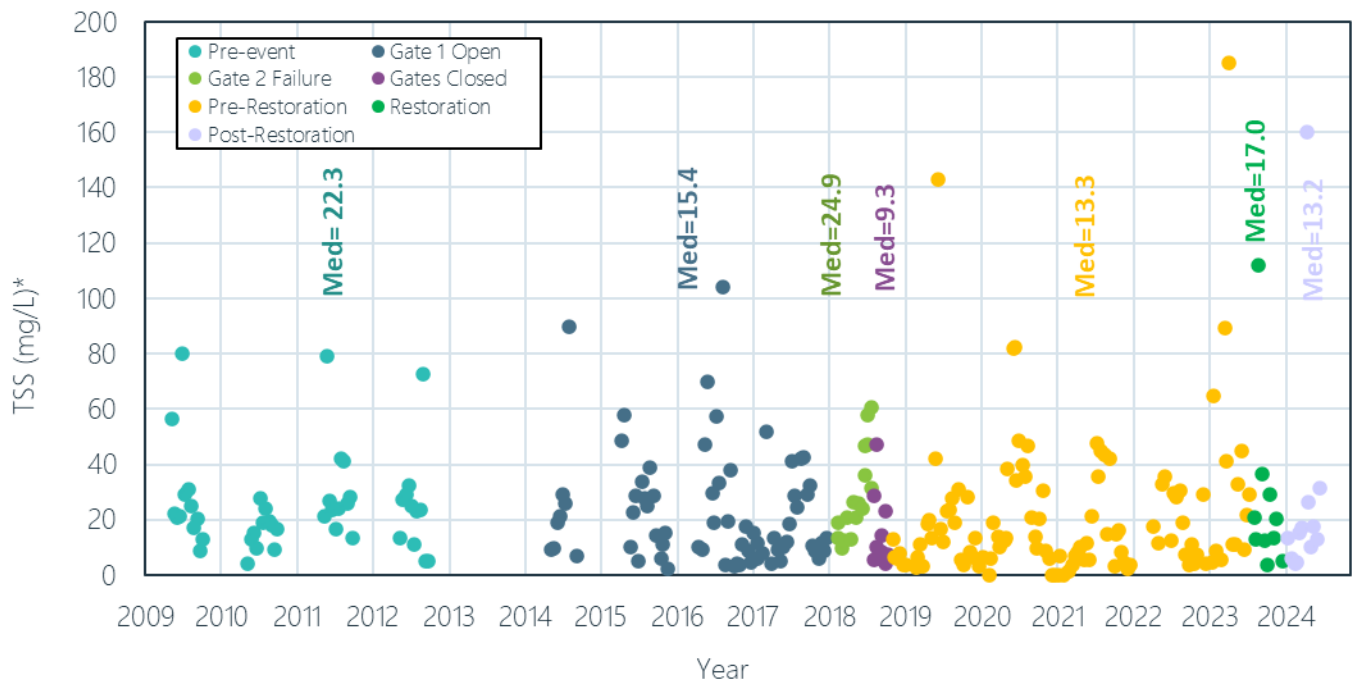


Figure 4.7: Chedoke Creek at CC-SW2/CP-11 TSS Concentrations (2009 through 2024)

*A TSS value of 1,020 mg/L measured on 6/15/2022 is not shown on the graph.

4.2 MECP Overall Benefit Permit Remaining Requirements

Similar to the year one monitoring and reporting, year two (2024) and year three (2025) effectiveness monitoring, reporting are still required to be completed as part of the OBP. In addition, a final report providing a summary of the information provided in the three annual reports (2022, 2023 and 2024), and a final analysis of the effectiveness of Overall Benefit Activities will be completed following on from the last calendar year of monitoring. As mentioned within Section 3.1.2, consultation with MECP SARB determined the need for a new approach upon their review of the year one (2023) findings and appropriate next steps. Three new monitoring options were proposed for the year two (2024) monitoring and are being conducted. .

4.3 Complementary Monitoring

A number of studies were recommended as part of the previously completed “Chedoke Creek Water Quality Improvement Framework Study” (GM BluePlan Engineering and Wood, April 2021). The City has advanced a number of these studies through the Coote Paradise Work Plan, which remain ongoing. These include:

- Ainslie Wood Neighbourhood Creek Separation Municipal Class Environmental Assessment
- Chedoke Watershed Stormwater Retrofits Master Plan Class Environmental Assessment
- Lower Chedoke Creek Class Environmental Assessment

It is expected that these studies will include a number of recommendations for further monitoring of ecological/environmental features, water quality, and CSO performance, to better assess and evaluate the effectiveness of measures recommended through the preceding studies. These monitoring programs and results will further complement the monitoring work being done under other initiatives for the overall Chedoke Creek watershed. Given that the recommendations from the respective Class EA projects are not yet advanced nor approved, the form and extent of monitoring is not yet defined as it will need to be aligned with the form of capital work (i.e., channel improvements would be monitored differently than say water quality enhancement works). That said, the types of monitoring which are expected as part of the possible works stemming from the respective EAs are anticipated to include chemical and biological water quality indicators, as well as physical monitoring of the stability of the Chedoke Creek (stream morphology) and associated areas (headwaters and receivers).

5 MAIN/KING COMBINED SEWER OVERFLOW TANK CORRECTIVE ACTIONS SUMMARY

Since the discovery of the Chedoke Creek combined sewage discharge in July of 2018, the Public Works Department and Hamilton Water Division has implemented a number of new operational programs and procedural changes to assist in the prevention of future incidents from occurring. However, should further incidents occur, measures are now in place that allow early detection and mitigation. In addition, new protocols ensure appropriate and timely communication to City Council, the community, and the City's partners. Additional programs have also been implemented to enhance the stewardship of the City's watersheds and natural environment.

The following provides a list and brief description of new or revised programs or procedures that have been developed:

Watershed Action Plan

The purpose of the Watershed Action Plan is to reduce the pollution of waterways due to rural and urban runoff, reduce the adverse impact of City infrastructure and operations, increase the retention and infiltration of stormwater into the ground and increase the connectivity of naturalized areas and green infrastructure. The plan also minimizes system capacity risks due to development and climate change and maximizes the adaptability of investments to manage future uncertainties.

Surface Water Quality Program

The Surface Water Quality Program builds a baseline understanding of surface water conditions over time and provides processes to respond to, and investigate, any water quality anomalies that may be due to infrastructure malfunctions or standard operating conditions. The program has developed open communication and transparency with various partners. The City has also launched the Surface Water Quality Program webpage that enables the City to share the surface water quality data with the public.

Wastewater Quality Management Program

The Wastewater Quality Management Program has established new processes or improved existing processes to effectively collect and treat wastewater in a manner that protects the environment and meets legal and regulatory requirements. The program supports the City's commitment to a high-quality wastewater system.

Enhanced City of Hamilton Inspections Program

The Enhanced City of Hamilton Outstation Inspection Team was developed in 2020 and consists of one (1) Maintenance Operator, one (1) Millwright, one (1) Electrician, and one (1) Instrumentation Technician. Four (4) of the full-time equivalent staff approved by Council were used to staff the Enhanced City of Hamilton Outstation Inspection Team, who is tasked with completing thorough inspections and preventative maintenance at the City's water and wastewater treatment plants, pumping stations, reservoirs, water towers, well systems and combined sewer overflow tanks. The team is also responsible for looking at a facility or process area to verify its operational functionality instead of focusing on preventative maintenance of individual components. This includes reviewing the process control narratives, Supervisory Control and Data Acquisition set points, Environmental Compliance Approval requirements, asset information, and the facility/process standard operating procedures.

Monitoring Wastewater Overflows and Bypasses Webpage

Developed in 2020, this webpage includes a live map of overflows and bypasses, the Wastewater Treatment Bypass Log and the Combined Sewer Overflow Log. The live map is updated every 15 minutes providing current information for each outfall location.

Operations and Maintenance Plan

In response to the Chedoke Creek combined sewage spill, in 2019, Hatch Consulting completed a comprehensive review and update of combined sewer overflow operations and maintenance plans. The Operations and Maintenance Plan includes updated standard operating procedures for the combined sewer overflow facilities which are reviewed every three years or sooner if required. The Operations and Maintenance Plan also included an updated process control narrative for the Main/King combined sewer overflow tank. Process control narratives for the remaining facilities were not changed and therefore not included in the Operations and Maintenance Plan, however they are maintained as key operational documents for the facilities.

6 OFFSETTING WORKS ASSESSMENT REVIEW

The Chedoke Creek Work Plan noted that water quality management technologies are often used as complements to dredging to improve water quality conditions by increasing DO and reducing nutrient concentrations.

The Chedoke Creek Work Plan listed some potential technologies including:

- 1) Floating vegetated mats
- 2) Small scale Aeration systems
- 3) Shoreline plantings
- 4) Beneficial sediment reuse and sediment stabilization

Floating vegetated mats are relatively simple structures designed to promote growth of aquatic vegetation and nutrient absorption. Plantings are placed within net pots held together by a floating platform which can vary in size based on the available space or removal requirements. The platform is anchored to the shoreline or substrate and plants are harvested periodically resulting in direct removal of the nutrients they have assimilated from the water column. Over the course of the targeted dredging project, the City through a separate contract, installed a floating vegetated mat system within Cootes Paradise, which can be seen from the Desjardins Recreational Trail. Expansion of the project to other areas within Cootes Paradise is currently under evaluation through the on-going and complementary initiative associated with the Lower Chedoke Remediation Class Environmental Assessment (EA) Study.

Unconfined aeration systems are often used in lake and water quality management to increase the oxygen transfer rate, improve mixing of stagnant water, and limit the potential for stratification. Aeration systems consist of a compressor, an air distribution system, and a diffuser assembly. The type of compressor depends on the water depth and required air volume. Shallow water aeration systems generally require only a diaphragm compressor which can produce a relatively large air volume at low pressure. Diffuser assemblies are typically placed on the bottom and include an anti-scour plate to limit sediment disturbance. Over the course of the targeted dredging project, the City installed a small-scale aeration system in Chedoke Creek to help increase oxygen levels at the bottom of the creek while decreasing the amount of excess nutrients that contribute to algae blooms and cloudy water. Due to a decrease in temperature, the pumps were turned off in the winter months. The system has since been removed for the targeted dredging activities to take place. An aeration system is also under evaluation through the on-going and complementary initiative associated with the Lower Chedoke Remediation Class Environmental Assessment (EA) Study.

Shoreline plantings are effective at providing habitat, enhancing nutrient uptake, and stabilizing sediments. Plantings are commonly recommended in areas where natural littoral vegetation has been impacted for a variety of reasons and water quality or sediment conditions prevent natural recruitment from occurring. Identification of the appropriate species and a suitable nursery or donor site is important to the success of a planting project. Planting success can be improved by a variety of planting techniques that are specific to the species, substrate, and depth. While not explicitly assessed during the dredging project, riparian plantings are also being reviewed by the City through the on-going and complementary initiative associated with the Lower Chedoke Remediation Class Environmental Assessment (EA) Study. That project is further examining a series of activities to further enhance and restore Chedoke Creek and water quality discharging to Cootes Paradise. Alternatives being reviewed include channel modifications and plantings (delta generation, mixing weirs, shoreline wetlands, floating wetlands) as well as physical measures such as manual oxygenation/aeration, as noted above.

The Chedoke Creek Work Plan indicated that dredged solids may have a beneficial reuse application depending on the type of material identified for removal and its chemical composition. In some cases, sandy material may be utilized to stabilize areas where lake sediments may not have suitable structure to promote growth of emergent vegetation. If enough sandy material is present of sufficient quality, it may be possible to use the material to formalize an earthen

berm to direct discharge from Chedoke Creek away from Princess Point at the location of the current Christmas tree berm at the mouth to Cootes Paradise. As cited above, the City is currently conducting the Lower Chedoke Creek Remediation Class EA, which among other activities is reviewing the potential to re-establish a delta at the mouth of Chedoke Creek in the Princess Point embayment. The outcomes of that on-going study will further identify preferred alternatives for improving overall system health as noted previously.

As outlined in the Cootes Paradise Work Plan (July 2021), the City of Hamilton is addressing the identified deficit in contaminant removal per the targeted dredge by proposing to incorporate additional offsetting remediation within Cootes Paradise and the Western Harbour to further augment and complement the benefits of the targeted dredging project. These activities listed below, among others, were concurrently identified as part of the Chedoke Creek Water Quality Improvement Framework Study (GM BluePlan Engineering and Wood, April 2021) which established a long list of undertakings by the City and other community partners to improve water quality in Cootes Paradise. The activities were carried forward into the Cootes Paradise Work Plan which was subsequently approved by the MECF on August 13, 2021. They complement the targeted dredging work completed under the Chedoke Creek Work Plan, and further address the City's commitment to offsetting works.

Sediment Nutrient Inactivation

A sediment study in Cootes Paradise was finalized in February 2024, with investigative field work in 2023, that included the evaluation of the potential impacts from various sediment treatment alternatives. This will assist the City in evaluating the potential for the implementation of targeted water quality restoration projects within Cootes Paradise. The study involved two proprietary lanthanum-based treatment products which selectively bind and inactivate orthophosphate (a biologically available form of phosphorus) in the water column and limit orthophosphate flux from sediments. Phosphorus is an essential nutrient for algal growth and has been shown to be the limiting nutrient in Cootes Paradise. Results of the study suggest both EutroSORB® G and EutroSORB SI® are effective at reducing TP (the sum of all forms of phosphorus) in the Cootes Paradise water column and both may be an effective means of inactivating sediment TP and providing additional offsetting TP load reduction within Cootes Paradise. The amount of potential offset is directly proportional to the mass of lanthanum applied and the product could be applied to targeted "hot spot" areas.

The City is also conducting other studies and Stormwater Management policy reviews including:

Chedoke Creek Water Quality Retrofit Class EA

The study is focused on the separated sewer portion of the Chedoke Creek watershed. The intent is to assess opportunities to implement stormwater retrofits throughout the watershed (including both end-of-pipe and source controls) to improve the water quality of stormwater discharges. In addition, options for the Chedoke Creek Golf Course (stream naturalization, retrofit and treatment online) are being assessed. The relative benefits, impacts and life cycle costs will be reviewed with the overall goal of developing a prioritized suite of recommended improvements to reduce stormwater contaminant loadings to Chedoke Creek.

Redevelopment Sites – Stormwater Management (SWM) Policy

This project consists of updating the SWM Policy for Redevelopment Sites in the City of Hamilton. The policy will contain prescription of Best Management Practices including Low Impact Development measures for redevelopment sites within the City. In addition, the City has prepared Green Standards and Guidelines (GSG) which prescribe a minimum retention target for water quality and a hierarchical application of stormwater management practices to address the impacts from new development. These are going to City Council in August 2024 for adoption.

The City currently has policies in place across its jurisdiction requiring Stormwater Management for re-development lands. The intent of this policy is to strengthen and potentially improve the rate of water quality treatment with a specific emphasis on contaminants of concern (COC).

The benefits to this action are governed by third parties (development industry) hence predicting the timing and benefits is challenging. An important advantage of this action/policy is that it will come at no/low cost to the public and will represent a direct improvement by providing treatment of runoff for lands currently receiving no treatment. Work continues to progress with internal City staff and the development industry regarding this project.

Retrofits for Road Rehabilitation Projects / Low Impact Development Best Management Practices Policy

The City currently has a practice to examine opportunities to provide SWM (quality/quantity) for rehabilitated/reconstructed roads. The intent of this project (similar to the one above) is to enhance the policy/practice, to strengthen the City's process and practices and to maximize runoff treatment for rehabilitated roads. The emphasis will not only be on new pavement but also existing pavement so that net runoff treatment benefits are realized. The City is in direct control of the outcomes of this action since it will apply to its roadways. The extent of benefits and associated costs of implementation needs to be assessed for each setting as there can be various utility and physical restrictions which can limit the ability to effectively implement focused Best Management Practices. These will need to be assessed on a case-by-case basis. The start of this project is tied to the completion of the previous project, as any future public SWM policy aims to mirror an equivalent private one.

7 SUMMARY/CONCLUSIONS

The City has provided the information above to satisfy the four reporting items detailed in Directors Order 1-PE3L3 outlined below with a summary response provided for each:

i. Workplan requirements specified by MECP and the details of the work undertaken to complete the Chedoke Creek Workplan.

Section 1 provides a summary of the Workplan requirements and how they were satisfied while Sections 2-3 provide a detailed account of the efforts undertaken by the City to develop the Workplan, complete the design and permitting and construct the project.

ii. Any monitoring results completed before, during and after the work undertaken in accordance with the Chedoke Creek Workplan.

Sections 1-2 provide an evaluation of water quality, sediment quality and ecological monitoring efforts that were completed to support both the Workplan and the targeted dredge project permitting requirements. Section 3 provides a summary of the monitoring that took place during project construction by WSP, Milestone and the City. Section 4 provides a summary of water quality conditions before, during, and after restoration compared to water quality conditions during the spill event and prior to the spill event. Water quality conditions within Chedoke Creek have improved compared to the period during the spill event and all indicators evaluated suggest that water quality conditions are at least as good as they were prior to the spill event.

iii. Analysis of the results in Item 7(ii) above for the purposes of the intended monitoring; and

Data were collected in two phases prior to the start of construction and were used to support development of the Workplan as discussed in Section 1.2.2 through 1.2.9, and to complete the final design and permitting effort as discussed in Section 2.

iv. Determination if any requirement for on-going monitoring is required to verify the effectiveness or maintenance of the remedial actions undertaken is necessary.

As discussed in Section 4, the City has committed to ongoing water quality and ecological monitoring to aid in evaluating the effectiveness of the Chedoke Creek dredging project as well as additional actions that the City has already undertaken or is currently planning/evaluating in the watershed.

In conclusion, the information provided in this report demonstrates that “the natural environment has been restored to pre-spill conditions and that further impairment to the natural environment will not occur as a result of the spill to Chedoke Creek”. This conclusion is based on the assessment of the available water quality record pre-, during and post-restoration as well as the understanding related to the commitment by the City of Hamilton to numerous additional measures including on-going monitoring and related actions per the Cootes Paradise Work Plan. Furthermore, the physical condition of the Chedoke Creek in the vicinity of the dredging has also improved in terms of its morphology which should indirectly further improve its habitat and the associated natural environment.

APPENDICIES

- A: DIRECTORS ORDER**
- B: CONSULTATION SUMMARY**
- C: SEDIMENT TECHNICAL MEMORANDA**
- D: TENDER DRAWINGS**
- E: SEDIMENT & EROSION CONTROL**
- F: TURBIDITY RESULTS**
- G: PERMIT TO TAKE WATER**
- H: CONSTRUCTION DEWATERING SEWER DISCHARGE PERMIT RESULTS**
- I: PRE AND POST DREDGE SURVEY**
- J: DESIGN VS PRE-DREDGE SEDIMENT VOLUME**
- K: SEDIMENT QUALITY & DISPOSAL**

APPENDIX

A: DIRECTORS ORDER



Director's Order

Section 157.3 Environmental Protection Act, R.S.O. 1990
Section 16.4 Ontario Water Resources Act, R.S.O. 1990
Section 26.3 Pesticides Act, R.S.O. 1990
Section 107 Safe Drinking Water Act, S.O. 2002, c.32 (SDWA)
Section 32 Nutrient Management Act, 2002, S.O. 2002

Order Number
1-PE3L3

To:

HAMILTON, CITY OF
700 WOODWARD Ave N
HAMILTON ON L8H 6P4
Canada

HAMILTON, CITY OF
71 MAIN STREET WEST, 1st Floor
HAMILTON, ONTARIO L8P 4Y5
Canada

Site: Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour, and as further described in the Provincial Officer Report # 1-OW6SS under section entitled "Description of the Site and the Orderees".

Response to Request

Attention: City Clerk

I have reviewed Provincial Officer Order 1-OW6SS ("Order") dated 20/11/2020 (dd/mm/yyyy) in response to your request for the review dated November 27, 2020, submitted by your lawyer, Ms. Rosalind Cooper on behalf of the City of Hamilton. I have considered your submissions and met with the issuing Provincial Officer, Shelley Yeudall and technical support staff in the Ministry of the Environment Conservation and Parks (Ministry) to discuss the Order and the above noted request. I have also considered the submissions made at a meeting held on December 3, 2020 between City officials Andrew Grice, Cari Vanderperk and Mark Bainbridge and Ministry officials including myself, Shelley Yeudall, Lindsey Burzese, Zafar Bhatti and Sarah Day.

Pursuant to my authority under s. 157.3 of the Environmental Protection Act, R.S.O. 1990, c. E.19 (EPA) and s. 16.4 of the Ontario Water Resources Act, R.S.O. 1990, c. O.40 (OWRA) I hereby confirm and alter portions of the Order as set out below.

Item No. 1 of the Order was altered to extend the compliance date as specified below.

Item No. 2, No. 3, No. 8 and No. 10 of the Order were altered to extend the compliance dates as specified below, and to refer to the Director as opposed to Provincial Officer for the submission of required documents.

Item No. 6, No. 7, No. 12, No. 13, No. 15, No. 17, No. 18, No. 19 and No. 20 of the Order were altered to refer to the Director as opposed to the Provincial Officer.

Item No. 16 of the Order was revoked.

Item No. 4, No. 5, No. 9, No. 11 and No. 14 of the Order are confirmed.

For ease of reference this order uses the definitions used in the Provincial Officer's Report.

Also, for ease of reference, the Director's Order now reads as follows:

1. By January 15, 2021, retain the services of a Qualified Person that has the experience and qualifications to carry out the work specified in this order.
2. By January 15, 2021, submit to the Director written confirmation that the Qualified Person has been retained to carry out the work specified in this order, that a copy of the order has been given to the Qualified Person; and that the Qualified Person has the experience and qualifications to carry out the work.

Chedoke Creek Downstream of the Main/King CSO Discharge Pipe

3. By February 22, 2021, submit to the Director, for approval, a remediation workplan for Chedoke Creek that is developed by the Qualified person to undertake the targeted dredging of Chedoke Creek based on the recommendation identified in section 5.2.5 of the Wood report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 ("Chedoke Creek Workplan"). The Chedoke Creek Workplan shall be prepared in accordance with the requirements set out in Items 4 and 5 below.
4. The Chedoke Creek Workplan shall, at a minimum:
 - i. Consider technical reports, Ministry comments and affected stakeholders' comments, to determine an acceptable plan to implement the recommendation in the Wood report to restore the Chedoke Creek, while mitigating impacts of implementing the plan on the natural environment, including water;
 - ii. Contain a detailed timeline setting out critical milestones and checkpoints with the Ministry for carrying out the Chedoke Creek Workplan;
 - iii. Contain a Species at Risk assessment plan and associated timelines for Chedoke Creek downstream of the spill and including potential impacted areas downstream of Chedoke Creek that may be impacted by targeted dredging;
 - iv. Undertake consultation with the Species at Risk Branch within the Ministry in respect of any identified items pursuant to 4 iii) and incorporate this feedback and outcome into the workplan for any species at risk;
 - v. Provide a description of any anticipated approvals needed to implement the Chedoke Creek Workplan, initial consultation and proposed timelines to obtain such approvals, if required, for the Workplan to be implemented;
 - vi. The consultation in iv) and v) shall include the Regional Technical Support Section of the Ministry;
 - vii. Contain a description of the identified areas and the extent (depth, location) of the targeted dredging with a description of how the items outlined in Item 5 below were addressed and a description of any methods for refining identified areas in Item 5 including the impacted areas identified in the Wood reports and SLR reports and timing as needed, in the Chedoke Creek Workplan;
 - viii. Contain a description of the approximate volume of material to be removed;
 - ix. Identify and contain a description of proposed mitigation measures for any short-term impact(s) that may arise from implementing the Chedoke Creek Workplan for Chedoke Creek, its shoreline and connected waterways/natural environment, on any species at risk and other potentially impacted uses. Mitigation measures may include, but are not limited to: exclusion measures for local aquatic uses; limit recreational uses in the area; total suspended solids control as required for carrying out the targeted dredging; and proposed monitoring during any remediation to monitor effectiveness of mitigation measures during dredging identified in iv); and
 - x. Contain a proposed monitoring plan to monitor the recovery of the natural environment and effectiveness of the Chedoke Creek Workplan once dredging is complete.

5. With respect to the area from the Main/King CSO outfall to the mouth of Chedoke Creek, the Chedoke Creek Workplan shall take into consideration the scope of targeted dredging work necessary to restore the natural environment to pre-spill conditions, as to be agreed upon by the Ministry, and to mitigate any impairments or potential impairments from the spill, in relation to the following, but not limited to:

- i. Sediment areas identified as impacted, in consultation with the Ministry, by the sewage spill;
- ii. Sediment areas identified as containing elevated organic material consistent with sewage sludge;
- iii. Sediment areas identified as elevated nutrients (particularly TP, TAN, and TKN);
- iv. Sediment areas identified as had, may have, or continuing to have reduced dissolved oxygen levels in the water column from historical levels;
- v. Sediment areas identified as having elevated parameters as identified by the ERA carried out by SLR ("Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" dated February 12, 2020) to have moderate or high risk for impacts, or otherwise identified by the reports or in comments by the Ministry; and
- vi. Addressing any ecological flow path requirements and connectivity within the creek in any remedial action plan that may impact low flow path and connectivity.

6. By October 31, 2021 or such other date approved by the Director in writing, complete the approved Chedoke Creek Workplan.

7. Within one (1) month of the completion of the of the work undertaken pursuant to the approved Chedoke Creek Workplan, submit to the Director, a report prepared by the Qualified Person confirming that the natural environment has been restored to pre-spill conditions and that further impairment to the natural environment will not occur as a result of the spill to the Chedoke Creek as detailed in the attached Provincial Officer's report, and at a minimum contain the following:

- i. The details of the work undertaken to complete the Chedoke Creek Workplan;
- ii. Any monitoring results completed before, during and after the work undertaken in accordance with the Chedoke Creek Workplan;
- iii. Analysis of the results in Item 7(ii) above for the purposes of the intended monitoring; and
- iv. Determination if any requirement for on-going monitoring is required to verify the effectiveness or maintenance of the remedial actions undertaken is necessary.

Cootes Paradise/Western Hamilton Harbour Area

8. By March 22, 2021, submit to the Director for approval, a proposed remediation/mitigation report that is prepared by a Qualified Person(s) for the Cootes Paradise/Western Hamilton Harbor Area to offset the added nutrient loading, principally TP, identified in the Wood reports, the SLR reports and particularly the Hatch reports, and address any other potential on- going impacts (dissolved oxygen, algal blooms) as a result from the sewage spill to this area ("Cootes Paradise Report").

9. The report in Item 8 shall, at a minimum:

- i. Identify and review all potential remediation or mitigation measures, whether direct, indirect, or a combination of measures with consideration for short and long-term measures to address the remediation goal to offset added nutrient loading particularly for TP and any potential on-going impacts (dissolved oxygen, algal blooms) from the sewage spill to the Cootes Paradise/Western Hamilton Harbor Area as identified in the Wood reports, the SLR reports and the Hatch reports;
- ii. Undertake consultation with and provide a summary of comments received from the Royal Botanical Gardens, Hamilton Conservation Authority, the Ministry, and any other relevant affected stakeholders for potential remediation and mitigation options as per item i. above;
- iii. Contain a cost/benefit analysis of all options to assess efficiency and effectiveness of any remediation or mitigation options;
- iv. Identify the recommended options for remediation and mitigation;

v. Identify the proposed offset goal to achieve remediation and/or mitigation with respect to the approximate equivalent loadings from the sewage spill;

vi. Propose a methodology for quantification with respect to the offset of the loadings for any remediation and/or mitigation measures to meet the intended goal for overall remediation and/or mitigation to address the added TP loading from the spill; and

vii. Identify and propose timelines to implement the recommended remediation or mitigation measures to offset loadings from TP, impacts to dissolved oxygen from nutrients or other measures that may improve existing or potential impairments with identification of options that can be implemented as soon as possible to start to reduce the on-going or potential impacts.

10. Within six (6) weeks of approval of Item 8 above or such other date approved by the Director in writing, submit to the Director for approval, a proposed workplan for the approved remediation/mitigation measures for Cootes Paradise/Western Hamilton Harbour Area ("Cootes Paradise Workplan"). The workplan shall consider and address, as necessary, Work Ordered in Item 8 and 9 above and any ministry comments upon approval of Item 8, and shall include, but not be limited to, the following:

i. A detailed workplan and timeline for carrying out the approved remediation/mitigation options within the Cootes Paradise/Western Hamilton Harbour Area;

ii. Calculations referred to in Item 9 iv) and v) or as otherwise approved; and

iii. Proposed follow-up monitoring required to ensure the recovery and effectiveness of the remediation plan.

11. Within two (2) weeks of the approval obtained pursuant to item 10 above, commence implementation of the approved Cootes Paradise Workplan within the timelines set out in the approval.

12. Submit a report prepared by the Qualified Person within one (1) month of the completion of the work undertaken pursuant to the approved Cootes Paradise Workplan to the Director confirming that the natural environment has been restored and outlining the completed items and the work undertaken to restore the natural environment, including, but not limited to, the following:

i. Any monitoring results completed before, during and after the work undertaken in accordance with Cootes Paradise Workplan;

ii. Analysis of the results in Item 12 (i) above for the purpose of the intended monitoring; and

iii. Determination if any requirement for on-going monitoring is needed to verify the effectiveness or maintenance of the remedial actions undertaken as necessary.

13. Provide notice to any impacted landowner(s) of the following items:

i. within 7 days of submission of any proposed workplan(s) submitted to the Director for approval; and

ii. within 7 days of the approval of any workplan(s) by the Director.

14. Provide notice to any impacted landowner(s) at least seven (7) days before the implementation of any work on the approved Chedoke Creek Workplan or the approved Cootes Paradise Workplan;

15. Within seven (7) days of any work on the Chedoke Creek Workplan and the Cootes Paradise Workplan, provide written confirmation to Director, that implementation of the approved workplan(s) has commenced.

16. Within (2) days of any limitations or changes being identified to the approved workplans, notify the Director and within two (2) weeks, submit, in writing for review and acceptance, any proposed changes to an approved workplan with the relevant information to support any proposed changes. Written acceptance by the Director of the proposed changes is required prior to implementation of any proposed changes.

17. Prior to the first of each month, provide to the Director written, monthly progress updates on the progress made to comply with this order.

18. In conjunction with the written monthly progress updates, the City shall meet with the Director within 7 days of the submission of the monthly report to discuss the progress reports.

19. Post this order on the web site of the City for public viewing within 24 hours of it being served and it shall remain posted unless otherwise directed by the Director.

A. While this order is in effect, a copy or copies of this order shall be posted in a conspicuous place.

B. While the order is in effect, report in writing, to the District or Area Office, any significant changes of operation, emission, ownership, tenancy or other legal status of the facility or operation.

Request for Hearing

You may require a hearing before the Environmental Review Tribunal if, within 15 days of service of this order, you serve written notice of your appeal on the Environmental Review Tribunal and the Director. Your notice must state the portions of the order for which a hearing is required and the grounds on which you intend to rely at the hearing. Except by leave of the Environmental Review Tribunal, you are not entitled to appeal a portion of the order or to rely on grounds of appeal that are not stated in the notice requiring the hearing. Unless stayed by the Environmental Review Tribunal, the order is effective from the date of service.

Written notice requiring a hearing must be served personally or by mail upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, ON M5G 1E5

and

Director
Ministry of the Environment, Conservation and Parks
119 King St. W., 9th floor Hamilton, ON, L8P 4Y7
Fax: (905) 521-7806

Where service is made by mail, the service shall be deemed to be made on the fifth day after the date of mailing and the time for requiring a hearing is not extended by choosing service by mail.

For your Information

The procedures to request a hearing and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate references.

Reasons for Response

I altered work ordered item Items No. 1, No. 2, No. 3 and No.8 of the Order allow the City of Hamilton more time to follow their internal procurement and funding process to retain the Qualified Person within a reasonable period of time. Additional time was granted, at the City's request, to allow the City more time to work with the Qualified Person to complete the Chedoke Creek Workplan and the Cootes Paradise Report.

I altered work ordered Item No. 10 of the Order to allow at least six (6) weeks, or such other date approved by the Director, for the submission of the Cootes Paradise Workplan in relation to the approved remediation/mitigation measures for Cootes Paradise/Western Hamilton Harbour Area. The additional time will allow the City more time to develop the Cootes Paradise Workplan in consultation with the Qualified person and accommodate their internal approval processes.

Item No. 16 of the order was revoked as I agree with the City that the requirements were duplicative, and that the monthly update meetings required by Item No. 17 (formerly No. 18 of the Order) will provide the necessary updates to me and the Ministry on the City's progress in complying with the order. Item No. 17, No. 18, No. 19 and No. 20 of the Order were renumbered accordingly.

I am confirming work ordered Items No. 4, No. 5, No. 6, No. 7, No. 9, No. 11, No. 12, No. 13, No. 14, No. 15, No. 17, No. 18, No. 19 and No. 20 of the Order.

A meeting was held on December 3, 2020 between City officials Andrew Grice, Cari Vanderperk and Mark Bainbridge, and me along with Ministry staff, in response to the request for review of the Order. I discussed the requirements of the Order in detail, including in relation to the clarifications sought by the City in its request for review, with support from Ministry officials in attendance. The City was given opportunity to ask questions of me and Ministry officials regarding the work ordered, and I discussed expectations of the Order moving forward. I am of the view that given the nature of the discussions, and the City's understanding of the work that is required of them, I did not see a need to alter any other terms of the order.

I note that Item No. 2, No. 3, No. 6, No. 7, No.8, No. 10, No. 12, No. 13, No. 15, No. 17, No. 18, No. 19 and No. 20 were altered to refer to the Director, as opposed to the Provincial Officer, for the purposes of administering the requirements of the order, and so I am apprised of progress made to comply with the Order.

Issued at City of Hamilton this 04/12/2020 (dd/mm/yyyy).



Stephen Burt

Badge # 1504

Hamilton District

Provincial Officer's Report

Order Number
1-OW6SS

To:

HAMILTON, CITY OF
700 WOODWARD Ave N
HAMILTON ON L8H 6P4
Canada

HAMILTON, CITY OF
71 MAIN STREET WEST, 1st Floor
HAMILTON, ONTARIO L8P 4Y5
Canada

Site:

Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour, and as further described in the Provincial Officer Report under section entitled "Description of the Site and the Orderes".

Observations

1. Authority to Issue Order

This Order is being issued pursuant to my authority under sections 157, 157.1 and 196 of the Environmental Protection Act and under sections 16, 16.1, and 104 of the Ontario Water Resources Act.

2. Definitions

For the purpose of this Order, the following terms shall have the meanings described below:

"adverse effect" means one or more of:

- (a) impairment of the quality of the natural environment for any use that can be made of it,
- (b) injury or damage to property or to plant or animal life,
- (c) harm or material discomfort to any person,
- (d) an adverse effect on the health of any person,
- (e) impairment of the safety of any person,
- (f) rendering any property or plant or animal life unfit for human use,
- (g) loss of enjoyment of normal use of property, and
- (h) interference with the normal conduct of business.

"cBOD" means Carbonaceous Biochemical Oxygen Demand

"City" means the City of Hamilton.

"Combined Sewers" means pipes that collect and convey both wastewater from residential, commercial, institutional and industrial buildings and facilities (including infiltration and inflow) and stormwater runoff through a single-pipe system;

"Combined Sewer Overflow (CSO)" means a discharge to the environment from a Combined Sewer system that usually occurs as a result of precipitation when the capacity of the combined sewer is exceeded.

"combined sewer system" is a wastewater collection system which conveys sanitary wastewaters (domestic, commercial and industrial wastewaters) and stormwater runoff through a single pipe system to a Sewage Treatment Plant (STP) or treatment works. Combined sewer systems which have been partially separated and in which roof leaders or foundation drains contribute stormwater inflow to the sewer system conveying sanitary flows are still defined as combined sewer systems in Procedure F-5-5.

"discharge", when used as a verb, includes add, deposit, emit or leak and, when used as a noun, includes addition, deposit, emission or leak; ("rejet", "rejeter")

"DO" means Dissolved Oxygen

"Dry weather flow" is sewage flow resulting from both: 1) Sanitary wastewater (combined input of industrial, domestic and commercial flows); and 2) Infiltration and inflows from foundation drains or other drains occurring during periods with an absence of rainfall or snowmelt.

"EPA" means the Environmental Protection Act, R.S.O. 1990, c. E.19.

"ERA" means Ecological Risk Assessment.

"HATCH" means HATCH Limited.

"HATCH reports" means the following reports:

- Report entitled "Quantification of Volume and Contaminant Loadings" dated September 28, 2018 by HATCH Limited;
- Report entitled "Main-King CSO Tank Overflow Volume Estimates" by HATCH Limited dated April 14th, 2020.

Ministry" or "MECP" means the Ontario Ministry of Environment, Conservation and Parks.

"municipality" means the City of Hamilton

"operator" means a person who adjusts, inspects or evaluates a process that controls the effectiveness or efficiency of a facility, and includes a person who adjusts or directs the flow, pressure or quality of the wastewater within a wastewater collection facility;

"Order" means this Provincial Officer's Order 1-OW6SS, as it may be amended.

"overflow event" occurs when there is one or more CSOs from a combined sewer system, resulting from a precipitation event. An intervening time of twelve hours or greater separating a CSO from the last prior CSO at the same location is considered to separate one overflow event from another.

"owner" means a municipality or person having authority to construct, maintain, operate, repair, improve or extend water works or sewage works; ("propriétaire")

"owner of the pollutant" means the owner of the pollutant immediately before the first discharge of the pollutant, whether into the natural environment or not, in a quantity or with a quality abnormal at the location where the discharge occurs, and "owner of a pollutant" has a corresponding meaning; ("propriétaire du polluant", "propriétaire d'un polluant")

"OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40.

"Partially Separated Sewer Systems" means wastewater collection systems that originally had Combined Sewers and where either only a portion of a system was retrofitted to separate sewers, or in which roof leaders or foundation drains still contribute stormwater inflow to the separated sewer conveying sanitary sewage, and/or a new development area served by separate sewers was added to an area served by Combined Sewers;

"person having control of a pollutant" means the person and the person's employee or agent, if any, having the charge, management or control of a pollutant immediately before the first discharge of the pollutant, whether into the natural environment or not, in a quantity or with a quality abnormal at the location where the discharge occurs, and "person having control of the pollutant" has a corresponding meaning;

"pollutant" means a contaminant other than heat, sound, vibration or radiation, and includes any substance from which a pollutant is derived;

"practicable" means capable of being effected or accomplished;

"Provincial Officer" means the undersigned provincial officer or, in the event that the undersigned is unable to act, any other provincial officer authorized to act pursuant to the EPA and OWRA.

"Provincial Officer's Report" means this 18-page report which comprises part of the Order.

"restore the natural environment", when used with reference to a spill of a pollutant, means restore all forms of life, physical conditions, the natural environment and things existing immediately before the spill of the pollutant that are affected or that may reasonably be expected to be affected by the pollutant, and "restoration of the natural environment", when used with reference to a spill of a pollutant, has a corresponding meaning;

"Sanitary Sewers" means pipes that collect and convey wastewater from residential, commercial, institutional and industrial buildings, and some infiltration and inflow from extraneous sources such as groundwater and surface runoff through means other than stormwater catch basins;

"Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;

"sewage" includes drainage, storm water, commercial wastes and industrial wastes and such other matter or substance as is specified by the regulations; ("eaux d'égout")

"sewage works" means any works for the collection, transmission, treatment and disposal of sewage or any part of such works, but does not include plumbing to which the Building Code Act, 1992 applies; ("station d'épuration des eaux d'égout")

"Site" means the site described as: Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour and as further described in the Provincial Officer Report under section entitled

"Description of the Site and the Orderees".

"SLR" means SLR Consulting (Canada) Ltd.

"SLR reports" means the following reports:

- Letter report entitled "Peer Review Report - Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated May 15, 2019 by SLR Consulting (Canada) Ltd.;
- Report entitled "Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated February 12, 2020 (including "APPENDIX A Previous Environmental Investigations Sampling Locations");
- Report entitled "Cootes Paradise: Environmental Cootes Evaluation Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated April 22, 2020; and
- Letter report entitled "Response to Ministry of Environment, Conservation and Parks May 28, 2020 letter entitled Chedoke Creek Spill Response – District Comments" by SLR Consulting (Canada) Ltd. dated June 12, 2020.

"spill", when used with reference to a pollutant, means a discharge,

- (a) into the natural environment,
- (b) from or out of a structure, vehicle or other container, and
- (c) that is abnormal in quality or quantity in light of all the circumstances of the discharge, and when used as a verb has a corresponding meaning; ("déversement", "déverser")

"Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);

"substance" means any solid, liquid or gas, or any combination of any of them.

"TAN" means Total Ammonia Nitrogen

"TKN" means Total Kjeldahl Nitrogen

"TP" means Total Phosphorous

"Tribunal" means the Environmental Review Tribunal

"TSS" means Total Suspended Solids

"Wet weather flow" is the combined sewage flow resulting from:

1. Sanitary wastewater; and
2. Infiltration and inflows from foundation drains or other drains resulting from rainfall or snowmelt; and
3. Stormwater runoff generated by either rainfall or snowmelt that enters the combined sewer system.

"Wood" means Wood Environmental & Infrastructure Solutions a division of Wood Canada Limited.

"Wood reports" means the following reports:

- Report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions;
- Report entitled "MECP Order # 1-J25YB Item 1c – Implementation and Costing Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions; and
- Memo entitled "Chedoke Creek Project, Wood Commentary on SLR Peer Review Comments, City of Hamilton" dated May 23, 2019 by Wood Environmental & Infrastructure Solutions.

3. Description of the Site and the Orderees

The City of Hamilton is the owner and operator of two (2) wastewater treatment plants (WWTP) called Dundas WWTP and Woodward WWTP located at 135 King Street West and 700 Woodward Avenue, respectively. Sewage is collected via the wastewater collection system made up of both Separate Sewer Systems and Combined Sewer Systems and Partially Separated Sewer Systems serving the former towns of Stoney Creek, Hamilton, Dundas, Ancaster and Waterdown and other hamlets surrounding the City.

The City of Hamilton is also the owner and operator of the wastewater collection system which includes approximately nine (9) Combined Sewer Overflow (CSO) tanks. CSO tanks are engineered structures designed to hold a portion of combined sewage (sewage and stormwater) during rain events that is in excess of the WWTP capacity. The purpose of providing storage capacity at the CSO tanks is to prevent untreated sewage from discharging to the natural environment. When the rain stops, the sewage is gradually pumped to the WWTP for treatment. Under heavy rain conditions, a CSO tank storage capacity may be exceeded, which may result in combined sewer overflow into the receiving water although at a more diluted concentration than raw sewage. The Main/King CSO Tank and Pumping Station (HCS04) located at 707 King Street West, Hamilton has a combined sewage storage capacity of 75,000 m³.

As detailed later in this Provincial Officer's Report, from January 28, 2014 until July 18, 2018, sewage from the Main/King CSO pumping station was discharged to Chedoke Creek on multiple occasions in the absence of rain and when the capacity of the CSO tank was not exceeded. The sewage flowed from the pumping station into the overflow chamber and out via a 2400 mm discharge pipe traveling west/northwest discharging into Chedoke Creek just north of Glen Road, Hamilton. The spill flowed north in Chedoke Creek discharging into the south-eastern portion of Cootes Paradise with the usual currents going out the Desjardins Canal into the western end of Hamilton Harbour.

The Site is described as: Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour, and as detailed in Appendix A.

Appendix A shows a map of the Site entitled "Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour".

The following are property uses of land surrounding Chedoke Creek:

Neighbouring land uses to the east include Hwy 403 with park land further east (Kay Drage Park/former Landfill); To the south and west is a mix of residential homes and apartments, institutional properties (long term care facility and former school), and Royal Botanical Garden's park land extending north to Princess Point; and To the north of Chedoke Creek is Cootes Paradise and additional Royal Botanical Garden (RBG) park land.

4. Events Leading to the Provincial Officer's Order

An estimated volume of 24 billion litres of sewage spilled from the Main/King CSO Tank and associated Pumping Station into Chedoke Creek during the period of January 28, 2014 until July 18, 2018 as a result of the incorrect operation of a valve, and the malfunction of a second gate valve without detection. The purpose of a CSO tank is to collect and retain sewage and storm flows during rain events that would otherwise overwhelm a waste water collection system and thereby prevent untreated sewage from discharging to the natural environment. The associated pumping station then pumps the sewage to the pant when the rain stops, and capacities allow for more flow. Discharges from a CSO tank should not occur during dry weather conditions or during rain events for which the tank capacity has been designed. Because the discharge was abnormal in quality and quantity and unapproved under the OWRA it was determined a spill.

The following chronology is a description of this Provincial Officer's dealings with this spill event since first being assigned to it on July 6, 2018:

Prior to July 6, 2018 the District Office received Annual Reports from the City about the Main/King CSO tank which reported no recent combined sewer overflows. The City also did not report any operating problems encountered and corrective actions taken with respect to the CSO tank as required under condition 4 (c) of the Certificate of Approval (CofA)/Environmental Compliance Approval (ECA) # 3-1455-94-956.

On July 6, 2018, the Spills Action Centre received a public complaint regarding the City discharging sewage into Chedoke Creek and Cootes Paradise. The complaint was forwarded to the Hamilton District Office. The caller reported the presence of sewage odours, worse than he had ever experienced, and raw sewage related plastic debris within Chedoke Creek. Caller reported that the problem had been ongoing since the City installed the CSO tank. The caller indicated that they had also reported the same observations to the City.

On July 9, 2018, Hamilton District Manager, Paul Widmeyer received an email from the Hamilton Health Unit, regarding the health hazard of extremely high E. coli results meeting the criteria of "suspected sewage contamination" in Chedoke Creek with results reported of 3.4 million CFU/100 mL and a trend of historical high results from approximately the end of May 2018.

On July 10, 2018 the Hamilton Health Unit required the City of Hamilton to post warning signs for the public at potential water access points along Chedoke Creek, Princess Point Park, Cootes Paradise Waterfront Trail, Desjardin Canal (which allows flow between Cootes Paradise and Hamilton Harbour) and to remove the canoe/kayak dock at Princess Point Park.

On July 11, 2018 the Hamilton Conservation Authority took samples in the Chedoke Creek watershed at several locations for E. coli and human/bovine bacteria markers in order to isolate the section of Chedoke Creek where the discharge was occurring and determine the source of contamination. Sample results showed high concentrations of E. coli and bacteria readings consistent with human source. Resampling was conducted on July 18, 2018 by the Hamilton Conservation Authority with results also showing high concentrations of E. coli and bacteria readings consistent with human source.

On July 13, 2018, I received a presentation from the Hamilton Harbour Remedial Action Program (HHRAP) committee where the Royal Botanical Gardens (RBG) presented photos of the Chedoke Creek on July 4, 2018 showing a significant amount of sewage solids floating on the surface.

On July 16, 2018, I visited the site at Kay Drage Park bridge with Water Compliance Supervisor, Zafar Bhatti and detected sewage odours and observed sewage debris in Chedoke Creek.

On July 17, 2018, the undersigned Provincial Officer met with City staff at Chedoke Creek outfall and detected strong sewage odours downwind of the outfall and observed significant sewage debris in the creek. City staff identified the sewage as algae. At the Kay Drage Park bridge a slight increase in sewage debris was observed in the creek.

The City had been checking their system and providing update reports from staff suggesting natural organics, algae or sediment reflux all-natural sources and not sewage coming from the sewage system up to July 18th, 2018 but my inspections were on-going to determine the source.

On the morning of July 18, 2018, I visited the upstream portion of the Chedoke Creek outfall at the MTO work site on the east side of the 403 and observed that the water was running clear with no odour.

On July 18, 2018, Calder Engineering Ltd conducted a confined space inspection and sampling of the twin box culvert and connecting and storm sewer pipe from overflow chamber of Main/King CSO tank and Pumping Station located at 707 King Street West. The twin box culvert channels Chedoke Creek under Main Street West to where Chedoke Creek emerges north of Glen Road and receives flow from several different areas. It was this inspection that found sewage flowing into the box sewer from King/Main

CSO tank at an estimated rate of 150 L/sec, while clear water was coming from Chedoke Creek. Further investigation at the Main /King Pump Station found sewage in the CSO tank overflow chamber discharging to a 2400 mm storm discharge culvert. Sewage was entering the overflow chamber through a reported 4.7% open 3000 mm x 3000 mm maintenance gate valve between the overflow chamber and the influent 1950 mm combined sewer entering the pumping station wet well. Once identified the City closed the gate and reported the spill to the Spills Action Centre due to the discharge being of abnormal quality and quantity.

Water Compliance Supervisor Zafar Bhatti and I attended the King/Main CSO tank location on July 18, 2018 to confirm that the discharge had stopped and to conduct a visual inspection of the Chedoke Creek outfall which showed no flow from the east side of the box culvert which had been observed the previous day by the undersigned Provincial Officer. Sewage debris was still observed with sewage odours. Preliminary reports from the City indicated that the gate valve had been open since January 29, 2014. The initial estimated volume of sewage discharged to the creek from January 29, 2014 until the gate valve was fully closed was initially reported as 15.9 billion litres (and more accurately determined to be 24 billion litres later).

The undersigned Provincial Officer also conducted a site visit on July 20, 2018 and found strong sewage odours on Glen Road, downwind of the creek and observed a boom installed by City contractors between Kay Drage Park bridge and the Chedoke Creek Outfall to collect floating materials.

On July 27, 2018, the City confirmed that a gate valve between the sewage pumping station wet well and overflow chamber had been open since January 28, 2014 allowing dry weather flow out of the station. In January 2018 a second gate valve malfunctioned which directed added (wet and dry weather) flow from a large combined sewer into the wet well where the first gate valve was open which allowed the added flow to spill into the overflow chamber and discharging to Chedoke Creek.

A Provincial Officer Order (POO) Number 1-J25YB was issued on August 2, 2018 requiring the City, among other things, to evaluate impacts of the sewage spill to Chedoke Creek from the Main/King CSO tank facility between January 28, 2014 and July 18, 2018. This evaluation required evaluation of impacts to Chedoke Creek from the spill and anticipation/risk of on-going impacts, recommendations for remediation and/or mitigation, if necessary, and regarding the most effective way to complete the remediation and/or mitigation; and associated implementation timeline for any necessary remedial and/or mitigation work by November 30, 2018.

In October 2018, the City submitted a report entitled "Quantification of Volume and Contaminate Loadings" by HATCH dated September 28, 2018 which stated that an estimated 24 billion litres (24 million cubic metres) of raw sanitary sewage and combined sewage was discharged to Chedoke Creek from January 28, 2014 to July 18, 2018. The Total Contaminant Loadings (in Tonnes) for the period from January 28, 2014 to July 18, 2018 were estimated to be 2375 Tonnes of TSS, 47 Tonnes of TP, 159 Tonnes of TAN, 312 Tonnes of TKN and 1373 Tonnes of cBOD.

On January 31, 2019, the City submitted a consultant's (Wood) report (report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions) as a fulfilment of the above Order #1-J25YB, which recommended Direct Removal (section 5.2.5) of settled material by hydraulic dredging. The report stated, "Physical removal of the organic sediment will directly address the three primary sources of potential impairment including nutrient contamination, bacteriological contamination and habitat loss". Options considered in the order of most to least effective were: Direct Removal, Chemical Inactivation, Physical Capping and No Action.

On March 20, 2019, the City reported that a peer review of the original reports was being conducted. On May 30, 2019 I received both: a Peer Review Report by SLR, dated May 15th, 2019; and a memo from Wood, dated May 23, 2019.

On September 19, 2019 as part of the review of the above reports, the Surface Water Specialist of the Technical Support Section and I requested clarification from the City on the identification of a clear conclusion or recommendation for remediation and/or mitigation option the City was proposing. The City had submitted both the Wood report with one recommendation for dredging and the peer review, which recommended no action. No clear indication was provided by the City on which recommendation it was proposing. With no response from the City by September 30th, 2019 I requested a response by October 4th. The City reported on October 1, 2019 that additional sampling work was completed at the site during the last week of September 2019 as a result of the peer review to identify the need for any remedial work.

On October 10, 2019 in a meeting the City informed the Director, me and other Ministry staff that an ERA had been started. I requested a final report and recommendations by November 15th, 2019. The City then informed us that an ERA final report could not be provided until the end of January 2020 as lab analysis and data interpretation/report would take additional time. The Surface Water Specialist of the Technical Support Section in consultation with the Director and I, informed the City that the contaminated sites environmental risk assessment process cannot be used for the determination of spill clean-up requirements as this process does not have the same requirements as a spill to undertake practicable clean-up to restore the natural environment under Section 93 of the EPA. The legal duty to restore the natural environment in section 93 of the EPA helps to prevent a spill site from becoming a

contaminated site and to ensure the owner deals with the spill and its impacts. Some of the analyses undertaken in an ERA can be used to identify areas and extent of impact of a spill, which may be incorporated into the full evaluation of impact and remediation/mitigation options for the spill, but it does not identify level of clean-up required for spills or the practicable measures available to address the impacts of the spill.

In order to ensure appropriate timelines were followed, a Provincial Officer Order (POO) was issued and the City submitted a Request for Review resulting in the Directors decision to issue Director's Order #1-MRRCX on November 28th, 2019 clarifying the work to be conducted with revised time lines of submission of the ERA in Chedoke Creek by February 14, 2020 and Cootes Paradise Environmental Impact Evaluation (EIE) report by May 1, 2020. Work required was:

1. A Chedoke Creek ERA and evaluation of the environmental impact, an identification and evaluation of sewage remaining in the creek, identification of any anticipated on-going environmental impacts to the creek, and a review of options designed to remediate the creek and monitor the environmental condition of the creek, written proposed actions with justification in respect to the remediation and the monitoring of the creek including selected option(s) for environmental remediation and monitoring with supporting documentation/justification and an implementation timeline including significant milestones and any approvals required; and
2. An environmental impact evaluation to Cootes Paradise from the sewage discharged including a written assessment of any anticipated on-going environmental impacts with identification of contaminants related to the sewage spill, any known environmental impacts and an assessment of anticipated on-going environmental impacts from the identified contaminants including a spatial and environmental evaluation of the contaminants remaining (floatables and non floatables) in Cootes Paradise, and any proposed remedial actions and recommendations with justification including timelines with surface water monitoring program.

On February 14, 2020 the City submitted its Chedoke Creek ERA report and letter of position recommending that no further actions or additional remedial work was required to address the effects from the sewage spill or previous effects from the sewage discharge because of the alleged likelihood of recontamination, presence of historical contamination, and potential presence of a species at risk.

On May 28, 2020, the Director provided preliminary comments from the Ministry technical experts to the City and asked the City to provide additional information and clarification in order to complete its review of the Chedoke Creek ERA and better understand the City's methodology used to conclude that no further action or remediation was needed in Chedoke Creek. The request included, but was not limited to:

- o Clarification on the assessment of the creek sediment;
- o Additional work to verify the presence of a species at risk (Lilliput mussel);
- o Additional evidence to support the no-dredging conclusion to address organic material related to the spill; and
- o an assessment of any other remedial options considered.

The City and its consultant provided additional information to the Director, me and Ministry staff on June 15, 2020 and maintained that no further action was required.

In a letter dated February 13th, 2020 and in a meeting on March 13, 2020 the Royal Botanical Gardens (RBG), expressed concerns regarding ecological damage, potential extent of contamination to the bed of the marsh, which is owned by RBG, and requested a robust analysis of the spill impact and future remediation efforts. RBG plays a critical role in administering marsh restoration programs, ecological remediation plans and are responsible for the health and safety of visitors, program participants and staff of Cootes Paradise.

On April 30, 2020, the City submitted the required Cootes Paradise EIE and letter of position. It did not recommend any action or additional remedial work to address the effects from the sewage spill because the City believed either impact was short-lived or no adverse impact was sustained on water quality, sediment, aquatic vegetation or fish in Cootes Paradise.

I provided the materials for technical review by Technical Support Section, and as a result of their review comments they advised me that more work is needed to address the impacts of the spill on Chedoke Creek and Cootes Paradise as outlined in section entitled 4.2 Workplan below.

4.1 Environmental Site Investigations and Related Information

To date, the following reports detailing environmental site investigations and related information regarding the Site have been received, reviewed by Ministry Staff, provided for technical review and are listed below:

Documents submitted under Order No. 1-J25YB, dated August 2, 2018

- Report entitled "Quantification of Volume and Contaminant Loadings" dated September 28, 2018 by HATCH Limited;

- Report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions;
- Report entitled "MECP Order # 1-J25YB Item 1c – Implementation and Costing Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions;

Additional Letter Reports/Peer Review submitted

- Letter report entitled "Peer Review Report - Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated May 15, 2019 by SLR Consulting (Canada) Ltd.;
- Memo entitled "Chedoke Creek Project, Wood Commentary on SLR Peer Review Comments, City of Hamilton" dated May 23, 2019 by Wood Environmental & Infrastructure Solutions.

Documents submitted under Directors Order No. 1-MRRCX dated November 28, 2019

- Letter from the City entitled "Response to Director's Order 1-MRRCX" Items 1 & 2 submitted on February 14th, 2020 with the following report attachment:
 - "Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated February 12, 2020 (including "APPENDIX A Previous Environmental Investigations Sampling Locations").
- Report entitled "Main-King CSO Tank Overflow Volume Estimates" by HATCH Limited dated April 14th, 2020.
- Letter from the City entitled "Response to Order No.1-MRRCX, Items 3 and 4" submitted on April 30, 2020 with the following attachments:
 - Letter from the City of Hamilton entitled "Director Order Number; Item No. 4, Surface Water Monitoring Program" dated April 30, 2020; and
 - Report entitled "Cootes Paradise: Environmental Cootes Evaluation Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated April 22, 2020.

Confirmation of Position and Methodology Clarification

- Letter from the Ministry to the City entitled "Chedoke Creek Spill Response – District Comments" dated May 28, 2020
- Letter of response from the City entitled "Response to District Comments – Chedoke Creek Spill Response" dated June 15, 2020 with the following attachment:
 - Letter entitled "Response to Ministry of Environment, Conservation and Parks May 28, 2020 letter entitled Chedoke Creek Spill Response – District Comments" by SLR Consulting (Canada) Ltd. dated June 12, 2020.

4.2 Work Plan

As previously discussed, I provided the materials for technical review by Technical Support Section, and as a result of their review comments they advised me that more work is needed to address the impacts of the spill on Chedoke Creek and Cootes Paradise as outlined in this section.

Chedoke Creek

The City and its consultants (Wood and SLR) have identified dredging in Chedoke Creek as the only effective option, of the options assessed, to address the increased sewage parameter concentrations in the sediment from the spill. SLR reported that hydraulic dredging could improve sediment quality but identified several items potentially limiting the effectiveness or feasibility of hydraulic dredging and therefore did not recommend dredging, namely: 1) a potential species at risk presence in Chedoke Creek due to its identification in nearby Cootes Paradise; 2) an inability to differentiate sediment contaminated by the spill versus historical contamination; and 3) the likelihood of recontamination from other on-going sources of contamination to the creek.

I asked Ministry technical experts to assess the above potential limitations and was advised that the limitations noted can be addressed with the refinement of targeted dredging locations and mitigation measures or limitations and were not supported as outlined below and based on the information provided. They advised further work is required to assess and address the potential presence of any species at risk in Chedoke Creek that may be subject to dredging. This could include the development of mitigatable measures to protect any species at risk during dredging or avoidance of specific areas for dredging. Consideration on the impact of dredging on species at risk is also given for: if the potential impact from dredging is deemed to be a long-term negative impact; if current conditions are degraded due to historical or spill impacts and already potentially negatively impacting the species; and if there would be a long-term impact improvement despite a short-term negative impact from dredging, in order to determine what and where it is appropriate to dredge. The City is required to address the impacts of the spill and restore the natural environment even if historical contamination (even similar contamination) is present and does not absolve the owner of cleaning up a spill. It is also felt that any recontamination from on-going sources, such as: the closed landfill, combined sewer overflows; potential sanitary sewer cross-connections; and stormwater, are within the City's range of scope and responsibility. Significant improvements have been made to most of these sources (in quantity and quality) in the last 10-15 years, as shown by the improved conditions in the creek and sediment

before the spill. Any on-going sources of contamination are not anticipated to re-contaminate any remediated area to the same level historically seen or to the level seen from the 24 billion litres of sewage seen in this spill and is generally minor in comparison to the loadings seen from the spill.

Some of the key items from the Ministry's technical staff review of the Chedoke Creek ERA and impact assessment are as follows:

- The data interpretation and aggregate data analysis used in assessing pre spill conditions, spill period conditions and post spill conditions did not look at specific year differences (2018 vs 2014-2017) but used mean data analysis over the spill period potentially masking the extent of the impact of the spill seen, particularly in 2018, for some parameters and didn't determine if the pre-spill period used was representative of conditions at the time of the spill.
- Information supported the sediment being impacted by the sewage spill by some of the nutrients;
- Impacted sediment was found to be a moderate to high risk with bacteria, PAH's and copper;
- The contaminant loading of nutrients, cBOD and other sewage related parameters showed ongoing impact on DO levels;
- Elevated TAN levels in Chedoke Creek above pre-spill conditions were on-going.

Cootes Paradise

The consultant's report (SLR) concluded that no further action was required based on some limited monitoring data indicating that Cootes Paradise had returned to pre-spill conditions. Despite a request from the Director, myself and ministry technical staff the report did not consider, a loadings assessment from the spill to understand the magnitude of the loadings added to the system and to have a long-term impact on the system e.g. algal blooms. The additional loadings will undo and delay the improvements from several projects that are being/have been undertaken to improve the conditions in Cootes Paradise to meet HHRAP goals, such as improvements to TP treatment at the Dundas sewage treatment plant. The added loadings may also increase the likelihood and extent of algal blooms for several years. Based on advice received from ministry technical experts, it is not as feasible, for a number of reasons, to undertake a direct restoration of the added loadings to Cootes Paradise and the western Hamilton Harbour area both from the extent and type of the dispersion of TP, and the cost, effectiveness and potential to cause more harm than good in these areas using a direct removal method like dredging. In order to address the impacts of the increased loadings caused by the spill, based on advice received from Ministry experts, other remedial options must be considered and utilized to offset and/or improve the conditions in these systems in an effort to mitigate the added loading and associated impact as a result of the spill, and thus restore the natural environment.

I have considered some of the key items from the Ministry's technical staff review of the Cootes Paradise EIE and are as follows:

- As previously discussed, the data interpretation and aggregate data analysis used in assessing pre spill conditions, spill period conditions and post spill conditions did not look at specific year differences (2018 vs 2014-2017) but used mean data analysis over the spill period potentially masking the extent of the impact of the spill seen.
- Total Phosphorous (TP) and E. coli also showed similar patterns during the spill with TP double the concentration seen during pre and post spill periods for the east end of Cootes Paradise (CP11, CP11.2 and CP1).
- Rough loadings analysis for Total Phosphorous to Cootes Paradise from the spill in the:
 - o The last 6 months of the spill (January-July 2018) added about 94 kg/d of TP which is approximately double the average annual daily TP loadings (39 kg/day) on top of the normal TP loadings to the system during that time, which may be retained in various forms and recirculated within providing an additional source of nutrients.
 - o The previous four years of the spill (2014-2017) added approximately half, at about 21 kg/d, of the annual average daily TP loading of 39 kg/d on top of the normal TP loadings to the system during that time; and
 - o The total spill loading of 47,750 kg, compared to the annual average modelled loading of 14,100 kg/yr, indicated that the loadings from the spill over 4.5 years were equivalent to approximately three (3) years of additional loadings to Cootes Paradise from the point sources (e.g. Dundas sewage treatment plant, combined sewer overflows and the non-point sources (urban and rural stormwater runoff in the tributaries) combined.
- The report did not assess total ammonia nitrogen (TAN) as a contaminant of potential concern for Cootes Paradise. TAN can have other impacts including eutrophication, elevated nutrients supporting greater algal blooms, and can also cause a nitrogenous oxygen demand impacting dissolved oxygen. Data showed levels at CP11 much higher during the spill, e.g. 13.1 mg/L TAN compared to 1.95 mg/L of TAN during pre and post spill with similar trends at CP11.2 and CP1, although to a lesser extent.
- TKN, Ammonia and cBOD would show high input levels to the systems compared to average annual loadings
- The report did not assess the potential for added loadings to the system to impact algal blooms.
- Although diluted throughout a larger area (Chedoke Creek, the eastern portion of Cootes and into Hamilton Harbour to some extent), potential long-term impacts from the additional loadings, particularly for Total Phosphorous were not evaluated.
- The assessment on Chedoke Creek identified that the bulk of the loadings of some parameters, particularly TP, moved beyond Chedoke Creek into Cootes Paradise. Understanding of the currents and water exchange between Cootes Paradise and Hamilton

Harbour indicates that some of the loading also would have moved into Hamilton Harbour.

Considering the above, I am of the view that more work is needed. The work ordered under section 157, in respect of section 93 and section 14 of the EPA, is needed to restore the natural environment as a result of the spill, and to prevent further impairment to the natural environment, and to prevent adverse effects.

The EPA imposes a duty to mitigate and restore the natural environment on the owner of a pollutant and the person having control of a pollutant that is spilled as per section 93 of the EPA which states:

93 (1) The owner of a pollutant and the person having control of a pollutant that is spilled and that causes or is likely to cause an adverse effect shall forthwith do everything practicable to prevent, eliminate and ameliorate the adverse effect and to restore the natural environment.

When duty effective

(2) The duty imposed by subsection (1) comes into force in respect of each of the owner of the pollutant and the person having control of the pollutant immediately when the owner or person, as the case may be, knows or ought to know that the pollutant is spilled and is causing or is likely to cause an adverse effect.

The City is owner of the pollutant and the City's employees and operators were the person(s) having control of the pollutants, namely raw sewage contaminants (including TSS, TP, TAN, TKN and cBOD), that were discharged into the natural environment over approximately 4.5 years (January 28, 2014 and July 18, 2018) from its sewage works. The discharge of 24 billion litres of sewage was not authorized under the OWRA. As previously discussed, the discharges were occurring at all times, during both dry weather and wet weather conditions regardless of the CSO tank's operating level. The discharged volume of the dry weather flow alone, raw sanitary sewage, was 2.9 billion litres which is abnormal to be discharged to the natural environment considering this volume under normal operating conditions would have received full treatment at the wastewater treatment plant. The estimated normal CSO operation volume during the spill period (2014-2018), for the Main-King CSO if it was operating properly, was modelled by HATCH to be about 0.321 billion litres in total for those five years. Sanitary sewage flow of approximately 2.9 billion litres alone added approximately a loading of 771 tonnes of TSS, 502 tonnes of cBOD, 13 tonnes of TP, and 101 tonnes of TKN into Chedoke Creek. This discharge was further augmented by wet weather flow making a total volume of the spill 24 billion litres with total loadings of 2375 tonnes of TSS, 1373 tonnes of cBOD, 47 tonnes of TP, and 312 tonnes of TKN with no treatment by the WWTP or CSO tank. I consider these volumes and loadings excessive and abnormal in quality and quantity. As a result of the discharge, sewage was spilled into the Chedoke Creek causing adverse effects, including impairment to the quality of the natural environment, including waters (e.g. Chedoke Creek and Cootes Paradise), for any use that can be made of it, impairment to the safety of any person, and loss of enjoyment of normal use of property. Examples include odour complaints from RBG and the public due to raw sewage debris floating in the water and on the shore. As a result of the discharge, technical review by ministry experts have determined an adverse effect was observed as a result of the spill and if the natural environment is not restored the remaining spilled contaminants may cause further adverse effect.

As previously discussed, in July 2018, the City began remediation efforts along the surface of Chedoke Creek which included the installation of booms and removal of floating sewage by boat and hydrovac trucks. A seasonal boom was put in place to capture any further associated sewage floatables discharged. The operator station inspection program has been revised and assessments on critical valves have been completed in the system and maintenance prioritized. I am advised by the Ministry's technical experts that these efforts have not restored the natural environment to the pre-spill conditions as required under Section 93 of the EPA due to ongoing evidence of sewage parameter concentrations present above pre-spill conditions for some parameters and on-going low DO conditions.

Accordingly, the City was requested on several occasions, in writing and during meetings to assess and make recommendations to remediate the impacts of the spill (Order No. 1-J25YB dated August 2, 2018, Order No. 1-J3XAY dated November 21, 2019, Directors Order No. 1-MRRCX dated November 28, 2019 and letter dated May 28, 2020 entitled "Chedoke Creek Spill Response – District Comments".)

In addition, the City was in contravention of s.14 of the EPA in relation to the spill, which has caused and may cause an adverse effect as discussed above.

Pursuant to section 30(1) of the OWRA every person that discharges or causes or permits the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters is guilty of an offence.

The discharge of sewage from the Main/King CSO described above constituted a contravention of section 30 of the OWRA. The City as the owner and operator discharged or caused or permitted the discharge of a material/sewage into or in any waters, Chedoke

Creek and Cootes Paradise/Hamilton Harbour, has impaired and may continue to impair the quality of the water further if work is not done.

For the purposes of the OWRA, the quality of water is deemed impaired by the discharge of material, where certain conditions are met as set out in section 1(3) of the OWRA. In the circumstances of this spill, the quality of water is deemed impaired for Chedoke Creek and its connected waterways/natural environment for the following: there was a degradation in the appearance and odour of the water; and the quality of the water was impaired by the discharge of 24 billion litres of sewage that entered the water directly and caused or may cause injury to or interference with any living organism that lives in or comes in contact with or as a result of it using or consuming the water or sediment that is in contact with the water.

For the purposes of section 30 of the OWRA, I am of the view, after having consulted with ministry experts, that the spill caused or may cause impairment to the system and therefore the items identified in the Order are required and more work is needed. Some of the identified impairments or potential impairments also include: 1) The sediment has been identified as having moderate to high risk for effects to some organisms from PAHs. Elevated levels of bacteria have or may have impacted uses or continue to do so; 2) Elevated TAN and nitrite levels in the water and added TKN levels in the sediment will continue to have an added nutrient source, impact DO levels, and add to the eutrophication of the system, all of which may continue to impact organisms in the water and sediment; and 3) the added nutrient loadings, particularly TP, at the significance of the loading to the entire system, will continue to increase the risk in the frequency and size of algal blooms which may impair the water for its use or cause injury as a result of algal blooms.

Considering the above noted on-going impacts and continuing potential impairment, I am of the opinion, after consultation with Ministry staff and technical experts, that a "no action" recommendation by the City does not discharge its obligation to restore the natural environment nor does it address or prevent potential adverse effects, or may impair or continued impairment of the natural environment, including waters.

Thus, further action is necessary to restore the natural environment in relation to Chedoke Creek and that further action is needed to offset the impacts of the spill to Cootes Paradise. Accordingly, I require the City to undertake remedial measures outlined in the accompanied Provincial Officer's Order to restore the natural environment in Chedoke Creek as a result of the spill and take steps to determine what is required in relation to Cootes Paradise and implement those steps once an appropriate course of action is determined.

Based on previous significant public interest, and the need to keep the public informed, the Order also requires posting on the City's website with progress reports, as needed. Progress reports and meetings with the Ministry are outlined to improve collaborative communication and information sharing during spill response workplan development, remediation and ensure timely progress towards restoring the natural environment. Landowner notifications are also required to improve communications with stakeholders.

5. Legal Basis for the Order and Provincial Officer's Opinion

I reasonably believe that the City of Hamilton has contravened or is contravening those provisions of the EPA as outlined in the Offences, Suspected Violation(s)/Offences section of this report.

And

I further reasonably believe that the City of Hamilton has contravened or is contravening those provisions of the OWRA as outlined in the Offences, Suspected Violation(s)/Offences section of this report.

And

I further reasonably believe that the requirements in this Order are in the public interest in order to prevent any further discharge of material into Chedoke Creek, Cootes Paradise and Hamilton Harbour, that may impair the quality of any water;

And

I further reasonably believe the requirements specified in this Order are necessary:

- i) to prevent, or reduce the risk of any adverse effect on the natural environment from contaminated sediment which sediment was the direct result of the spill or spills to the Chedoke Creek from the Main/King CSO and which will continue to discharge compounds into the natural environment from the Site; and/or
- ii) to prevent, decrease or eliminate an adverse effect that may result from the presence of such contaminants in, on or under the Site.

6.0 Attachments

The attachments listed below form part of the Order:

Appendix A – Site Map "Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour"

Offence(s)

Suspected Violation(s)/Offence(s)

Act – Regulation – Section


Description

Environmental Protection Act, 93 (1) The owner of a pollutant and the person having control of a pollutant that is spilled and that causes or is likely to cause an adverse effect shall forthwith do everything practicable to prevent, eliminate and ameliorate the adverse effect and to restore the natural environment.

(2) The duty imposed by subsection (1) comes into force in respect of each of the owner of the pollutant and the person having control of the pollutant immediately when the owner or person, as the case may be, knows or ought to know that the pollutant is spilled and is causing or is likely to cause an adverse effect. R.S.O. 1990, c. E.19, s. 93.

Environmental Protection Act, Section 14 (1) Subject to subsection (2) but despite any other provision of this Act or the regulations, a person shall not discharge a contaminant or cause or permit the discharge of a contaminant into the natural environment, if the discharge causes or may cause an adverse effect. 2005, c. 12, s. 1 (5).

Ontario Water Resources Act, Section 30 (1) Every person that discharges or causes or permits the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters is guilty of an offence. R.S.O. 1990, c. O.40, s. 30 (1).



Shelley Yeudall
Provincial Officer
Badge Number: 881

Provincial Officer's Order

Order Number
1-OW6SS

Environmental Protection Act, R.S.O. 1990, c.E 19 (EPA)
Nutrient Management Act, R.S.O. 2002, c.4 (NMA)
Ontario Water Resources Act, R.S.O. 1990, c.O. 40 (OWRA)
Pesticides Act, R.S.O. 1990, c. P11 (PA)
Safe Drinking Water Act, S.O. 2002, c.32 (SDWA)

To: HAMILTON, CITY OF
700 WOODWARD Ave N
HAMILTON ON L8H 6P4
Canada

HAMILTON, CITY OF
71 MAIN STREET WEST, 1st Floor HAMILTON, ONTARIO L8P 4Y5
Canada

Site: Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour, and as further described in the Provincial Officer Report under section entitled "Description of the Site and the Ordeees".

Work Ordered

Pursuant to my authority under sections 157, 157.1, 196 of the Environmental Protection Act and under sections 16, 16.1, and 104 of the Ontario Water Resources Act I hereby order you, the City of Hamilton, to do the following:

1. By December 11, 2020, retain the services of a Qualified Person that has the experience and qualifications to carry out the work specified in this Order.
2. By December 11, 2020, submit to the undersigned Provincial Officer written confirmation that the Qualified Person has been retained to carry out the work specified in this Order, that a copy of the Order has been given to the Qualified Person; and that the Qualified Person has the experience and qualifications to carry out the work.

Chedoke Creek Downstream of the Main/King CSO Discharge Pipe

3. By January 22, 2021, submit to the undersigned Provincial Officer, for approval, a remediation workplan for Chedoke Creek that is developed by the Qualified person to undertake the targeted dredging of Chedoke Creek based on the recommendation identified in section 5.2.5 of the Wood report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 ("Chedoke Creek Workplan"). The Chedoke Creek Workplan shall be prepared in accordance with the requirements set out in Items 4 and 5 below.

4. The Chedoke Creek Workplan shall, at a minimum:

i) Consider technical reports, Ministry comments and affected stakeholders' comments, to determine an acceptable plan to implement the recommendation in the Wood report to restore the Chedoke Creek, while mitigating impacts of implementing the plan on the natural environment, including water;

ii) Contain a detailed timeline setting out critical milestones and checkpoints with the Ministry for carrying out the Chedoke Creek Workplan;

iii) Contain a Species at Risk assessment plan and associated timelines for Chedoke Creek downstream of the spill and including potential impacted areas downstream of Chedoke Creek that may be impacted by targeted dredging;

- iv) Undertake consultation with the Species at Risk Branch within the Ministry in respect of any identified items pursuant to 4 iii) and incorporate this feedback and outcome into the workplan for any species at risk;
- v) Provide a description of any anticipated approvals needed to implement the Chedoke Creek Workplan, initial consultation and proposed timelines to obtain such approvals, if required, for the Workplan to be implemented;
- vi) The consultation in iv) and v) shall include the Regional Technical Support Section of the Ministry;
- vii) Contain a description of the identified areas and the extent (depth, location) of the targeted dredging with a description of how the items outlined in Item 5 below were addressed and a description of any methods for refining identified areas in Item 5 including the impacted areas identified in the Wood reports and SLR reports and timing as needed, in the Chedoke Creek Workplan;
- viii) Contain a description of the approximate volume of material to be removed;
- ix) Identify and contain a description of proposed mitigation measures for any short-term impact(s) that may arise from implementing the Chedoke Creek Workplan for Chedoke Creek, its shoreline and connected waterways/natural environment, on any species at risk and other potentially impacted uses. Mitigation measures may include, but are not limited to: exclusion measures for local aquatic uses; limit recreational uses in the area; total suspended solids control as required for carrying out the targeted dredging; and proposed monitoring during any remediation to monitor effectiveness of mitigation measures during dredging identified in iv); and
- x) Contain a proposed monitoring plan to monitor the recovery of the natural environment and effectiveness of the Chedoke Creek Workplan once dredging is complete.

5. With respect to the area from the Main/King CSO outfall to the mouth of Chedoke Creek, the Chedoke Creek Workplan shall take into consideration the scope of targeted dredging work necessary to restore the natural environment to pre-spill conditions, as to be agreed upon by the Ministry, and to mitigate any impairments or potential impairments from the spill, in relation to the following, but not limited to:

- i) Sediment areas identified as impacted, in consultation with the Ministry, by the sewage spill;
- ii) Sediment areas identified as containing elevated organic material consistent with sewage sludge;
- iii) Sediment areas identified as elevated nutrients (particularly TP, TAN, and TKN);
- iv) Sediment areas identified as had, may have, or continuing to have reduced dissolved oxygen levels in the water column from historical levels;
- v) Sediment areas identified as having elevated parameters as identified by the ERA carried out by SLR ("Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" dated February 12, 2020) to have moderate or high risk for impacts, or otherwise identified by the reports or in comments by the Ministry; and
- vi) Addressing any ecological flow path requirements and connectivity within the creek in any remedial action plan that may impact low flow path and connectivity.

6. By October 31, 2021, or such other date approved by the Provincial Officer in writing, complete the approved Chedoke Creek Workplan.

7. Within one (1) month of the completion of the of the work undertaken pursuant to the approved Chedoke Creek Workplan, submit to the undersigned Provincial Officer, a report prepared by the Qualified Person confirming that the natural environment has been restored to pre-spill conditions and that further impairment to the natural environment will not occur as a result of the spill to the Chedoke Creek as detailed in the attached provincial officer's report, and at a minimum contain the following:

- i) The details of the work undertaken to complete the Chedoke Creek Workplan;
- ii) Any monitoring results completed before, during and after the work undertaken in accordance with the Chedoke Creek Workplan;
- iii) Analysis of the results in Item 7(ii) above for the purposes of the intended monitoring; and
- iv) Determination if any requirement for on-going monitoring is required to verify the effectiveness or maintenance of the remedial actions undertaken is necessary.

Cootes Paradise/Western Hamilton Harbour Area

8. By January 22, 2021, submit to the undersigned Provincial Officer for approval, a proposed remediation/mitigation report that is prepared by a Qualified Person(s) for the Cootes Paradise/Western Hamilton Harbor Area to offset the added nutrient loading, principally TP, identified in the Wood reports, the SLR reports and particularly the Hatch reports, and address any other potential on-going impacts (dissolved oxygen, algal blooms) as a result from the sewage spill to this area ("Cootes Paradise Report").

9. The report in Item 8 shall, at a minimum:

- i. Identify and review all potential remediation or mitigation measures, whether direct, indirect, or a combination of measures with consideration for short and long-term measures to address the remediation goal to offset added nutrient loading particularly for TP and any potential on-going impacts (dissolved oxygen, algal blooms) from the sewage spill to the Cootes Paradise/Western Hamilton Harbor Area as identified in the Wood reports, the SLR reports and the Hatch reports;
- ii. Undertake consultation with and provide a summary of comments received from the Royal Botanical Gardens, Hamilton Conservation Authority, the Ministry, and any other relevant affected stakeholders for potential remediation and mitigation options as per item i. above;
- iii. Contain a cost/benefit analysis of all options to assess efficiency and effectiveness of any remediation or mitigation options;
- iv. Identify the recommended options for remediation and mitigation;
- v. Identify the proposed offset goal to achieve remediation and/or mitigation with respect to the approximate equivalent loadings from the sewage spill;
- vi. Propose a methodology for quantification with respect to the offset of the loadings for any remediation and/or mitigation measures to meet the intended goal for overall remediation and/or mitigation to address the added TP loading from the spill; and
- vii. Identify and propose timelines to implement the recommended remediation or mitigation measures to offset loadings from TP, impacts to dissolved oxygen from nutrients or other measures that may improve existing or potential impairments with identification of options that can be implemented as soon as possible to start to reduce the on-going or potential impacts.

10. Within three (3) weeks of approval of Item 8 above, submit to the undersigned Provincial Officer for approval, a proposed workplan for the approved remediation/mitigation measures for Cootes Paradise/Western Hamilton Harbour Area ("Cootes Paradise Workplan"). The workplan shall consider and address, as necessary, Work Ordered in Item 8 and 9 above and any ministry comments upon approval of Item 8, and shall include, but not be limited to, the following:

- i) A detailed workplan and timeline for carrying out the approved remediation/mitigation options within the Cootes Paradise/Western Hamilton Harbour Area;
- ii) Calculations referred to in Item 9 iv) and v) or as otherwise approved; and
- iii) Proposed follow-up monitoring required to ensure the recovery and effectiveness of the remediation plan.

11. Within two (2) weeks of the approval obtained pursuant to item 10 above, commence implementation of the approved Cootes Paradise Workplan within the timelines set out in the approval.

12. Submit a report prepared by the Qualified Person within one (1) month of the completion of the work undertaken pursuant to the approved Cootes Paradise Workplan to the undersigned Provincial Officer confirming that the natural environment has been restored and outlining the completed items and the work undertaken to restore the natural environment, including, but not limited to, the following:

- i) Any monitoring results completed before, during and after the work undertaken in accordance with Cootes Paradise Workplan;
- ii) Analysis of the results in Item 12 (i) above for the purpose of the intended monitoring; and
- iii) Determination if any requirement for on-going monitoring is needed to verify the effectiveness or maintenance of the remedial actions undertaken as necessary.

Communication

13. Provide notice to any impacted landowner(s) of the following items:

- i) within 7 days of submission of any proposed workplan(s) submitted to the undersigned Provincial Officer for approval; and
- ii) within 7 days of the approval of any workplan(s) by the undersigned Provincial Officer.

14. Provide notice to any impacted landowner(s) at least seven (7) days before the implementation of any work on the approved Chedoke Creek Workplan or the approved Cootes Paradise Workplan;

15. Within seven (7) days of any work on the Chedoke Creek Workplan and the Cootes Paradise Workplan, provide written confirmation to undersigned Provincial Officer, that implementation of the approved workplan(s) has commenced.

16. Commencing March 1, 2021 and on the first day of the month, until the completion report for each workplan is submitted, submit a three (3) month summary report, prepared by the Qualified Person(s), to the undersigned Provincial Officer, detailing all of the actions taken in implementing the approved workplan in the preceding three months.

17. Within (2) days of any limitations or changes being identified to the approved workplans, notify the undersigned Provincial Officer and within two (2) weeks, submit, in writing for review and acceptance, any proposed changes to an approved workplan with the relevant information to support any proposed changes. Written acceptance by the undersigned Provincial Officer of the proposed changes is required prior to implementation of any proposed changes.

18. Prior to the first of each month, provide to the undersigned Provincial Officer written, monthly progress updates on the progress made to comply with this Order.

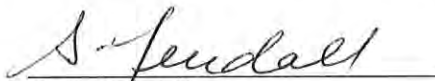
19. In conjunction with the written monthly progress updates, the City shall meet with the undersigned Provincial Officer within 7 days of the submission of the monthly report to discuss the progress reports.

20. Post this Order on the web site of the City for public viewing within 24 hours of it being served and it shall remain posted unless otherwise directed by the undersigned Provincial Officer.

- A. While this Order is in effect, a copy or copies of this order shall be posted in a conspicuous place.
- B. While the Order is in effect, report in writing, to the District or Area Office, any significant changes of operation, emission, ownership, tenancy or other legal status of the facility or operation.

This Order is being issued for the reasons set out in the annexed Provincial Officer's Report which forms part of the Order.

Issued at City of Hamilton this 20/11/2020 (dd/mm/yyyy)



Shelley Yeudall
Badge Number: 881
Hamilton District

APPEAL/REVIEW INFORMATION

REQUEST FOR REVIEW

You may request that this order be reviewed by the Director. Your request must be made in writing (or orally with written confirmation) within seven days of service of this order and sent by mail or fax to the Director at the address below. In the written request or written confirmation you must,

- specify the portions of this order that you wish to be reviewed;
- include any submissions to be considered by the Director with respect to issuance of the order to you or any other person and within respect to the contents of the order;
- apply for a stay of this order, if necessary; and provide an address for service by one of the following means:
 1. Mail
 2. Fax

The Director may confirm, alter or revoke this order. If this order is revoked by the Director, you will be notified in writing. If this order is confirmed or amended by order of the Director, the Director's order will be served upon you. The Director's order will include instructions for requiring a hearing before the Environmental Review Tribunal.

DEEMED CONFIRMATION OF THIS ORDER

If you do not receive oral or written notice of the Director's decision within seven days of receipt of your request, this order is deemed to be confirmed by order of the Director and deemed to be served upon you.

You may require a hearing before the Environmental Review Tribunal if, within 15 days of service of the confirming order deemed to have been made by the Director, you serve written notice of your appeal on the Environmental Review Tribunal and the Director. Your notice must state the portions of the order for which a hearing is required and the grounds on which you intend to rely at the hearing. Except by leave of the Environmental Review Tribunal, you are not entitled to appeal a portion of the order or to rely on grounds of appeal that are not stated in the notice requiring the hearing. Unless stayed by the Environmental Review Tribunal, the order is effective from the date of service.

Written notice requiring a hearing must be served personally or by mail upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, ON M5G 1E5

and

Director (Provincial Officer Orders)
Ministry of the Environment, Conservation and Parks
119 King St. W., 9th floor Hamilton, ON, L8P 4Y7
Fax: (905) 521-7806

Where service is made by mail, it is deemed to be made on the fifth day after the date of mailing and the time for requiring a hearing is not extended by choosing service by mail.

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal by

Tel: (416) 212-6349

Fax: (416) 326-5370

www.ert.gov.on.ca



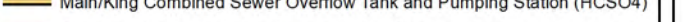
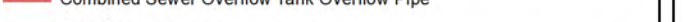

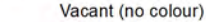
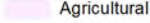
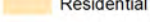
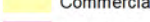
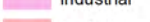



FOR YOUR INFORMATION

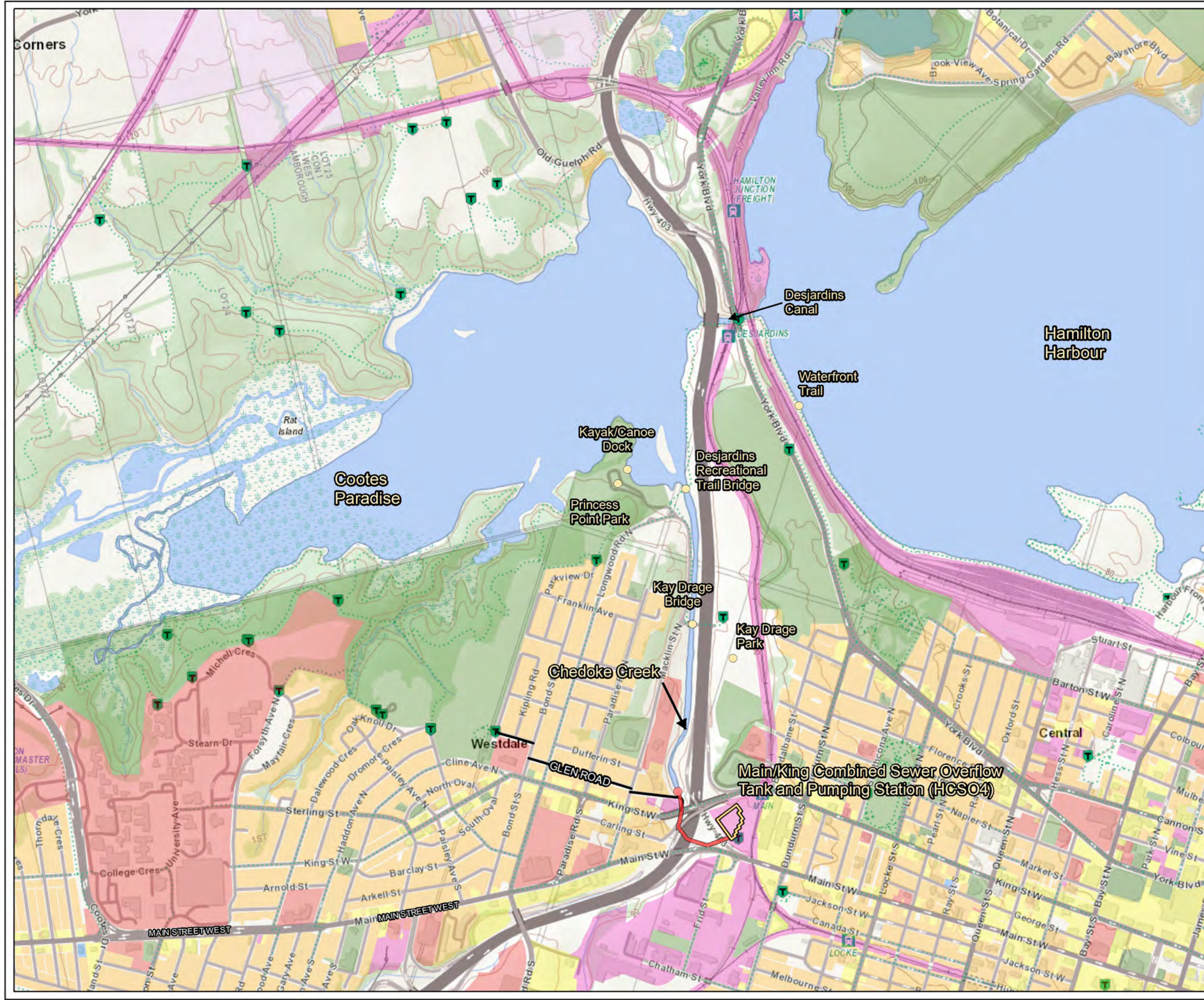
- Unless stayed by the Director of the Environmental Review Tribunal, this order is effective from the date of service. Non-compliance with the requirements of this order constitutes an offence.
- The requirements of this order are minimum requirements only and do not relieve you from complying with the following:
 - Any applicable federal legislation;
 - Any applicable provincial requirements that are not addressed in the order; and
 - Any applicable municipal law.
- The requirements of this order are severable. If any requirement of this order or the application of any requirement to any circumstances is held invalid, the application of such requirement to other circumstances and the remainder of the order are not affected.
- Further orders may be issued in accordance with the legislation as circumstances require.
- The procedures to request a review by the Director and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate reference.

Appendix A -Site Map
Chedoke Creek, downstream of the Main/King Combined Sewer
Overflow discharge pipe, the eastern end of Cootes Paradise
and western end of Hamilton

Drinking Water and Environmental Compliance Division
Central Region Technical Support Section

Legend

-  Chedoke Creek Outfall
 -  Point of Interest
 -  Main/King Combined Sewer Overflow Tank and Pumping Station (HCSO4)
 -  Combined Sewer Overflow Tank Overflow Pipe
 -  Glen Road, Hamilton
- Land Use**
-  Vacant (no colour)
 -  Agricultural
 -  Residential
 -  Commercial
 -  Industrial
 -  Institutional
 -  Special/Exempt
 -  Government



Data Sources, Uses and Constraints

1. Parcel boundary and basemap provided by the Ministry of Natural Resources and Forestry
2. Land Use information provided by the Municipal Property Assessment Corporation

Disclaimer

The map shown here is for illustration purposes only. Ministry of the Environment, Conservation and Parks provides this information with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort has been made to use data believed to be accurate, a degree of error is inherent in all maps. Map products are intended for reference purposes only, and the Ministry of the Environment, Conservation and Parks will accept no liability for consequential and indirect damages arising from the use of this map. This map is distributed 'as-is' without warranties of any kind, either expressed or implied, including but not limited to warranties of suitability to a particular purpose or use.



APPENDIX

B: CONSULTATION SUMMARY



Date	Event Type	Regulatory Agency / Stakeholder Organization	Agency Acronym	Stakeholder Participants	Team Participants	Event Summary	Questions	Response	Actions / Commitments	File Reference
YYYY-MM-DD	Call / Email / In-person Meeting	Agency / Company / Organization Name	Acronym	Name; email address	Company: Name	Brief summary of engagement, items discussed	Specific questions asked	Response(s) if provided	Action item(s) or post-engagement task(s)	Please save record of engagement as PDF in following format: YYYYMMDD_StakeholderName_CommType.pdf (emails, meeting minutes, etc.)
2021/01/15	Email	Ministry of Heritage, Sport, Tourism and Culture Industries	MHSTCI	Malcolm Horne, Archaeology Review Officer; Malcolm.Horne@ontario.ca	Wood: Peter P.	Confirming archaeology survey requirements.	Will the City need to conduct a new archaeology assessment	No new assessment required for Chedoke Creek area - see file.	None	20210115_MHSTCI_MHorne_Archaeology.pdf
2021/01/15	Email	Ministry of the Environment, Conservation and Parks	MECP	Stephen Burt	COH: Susan G.	Written submission confirming the City has retained a QP as per Items 1 & 2 of the Order.	Confirmation request	Confirmation received: Items 1 & 2 – City of Hamilton has met the requirements of this item. (see file)	N/A	20210115_MECP-COH_email_Response to Directors Order No.1-PE3L3 Items 1 and 2.pdf
2021/01/29	Call	Royal Botanical Gardens	RBG	Tys Theysmeyer, Head of Natural Areas ttheysmeyer@rbg.ca	Wood: Ron S.	Access request to RBG information relevant to enhancing Chedoke Creek and Cootes Paradise.	N/A	N/A	Confirm if HHRAP update from 2012 is available. Tys to provide RBG reports/data.	20210129_RBG_TTheysmeyer_EcologicalData.pdf
2021/02/02	Call	Hamilton Conservation Authority	HCA	Scott Peck and Jonathan Bastien, Hamilton Conservation Authority; scott.peck@conservationhamilton.ca	Wood: Ron S.	Discuss - Information Availability; permitting needs and timing	What information does HCA have for the Chedoke and Cootes study areas? What information is required for a permit application and how long will it take to secure a permit?	Information: 2014-2019 sampling; no H&H modelling; flow monitor set up in 2020; regulation mapping covers all of Chedoke and Cootes - based on flood and erosion hazard; 1992 report on physical modelling of lower Chedoke is available; Permitting: will need to provide Staging, E&S, Flood risk assessment, Discharge and material management plan; land owner permission (RBG); SAR and ecological information	JB to provide 1992 report on physical modelling of outlet; HCA can provide permit within 63 days	
2021/02/02	Email	Transport Canada	TC	Navigation Protection Program NPPONT-PPNONT@tc.gc.ca	Wood: Dale K.	Provided summary of POO and requested meeting to discuss targeted dredging and to confirm if the project can be considered an emergency situation under the Canadian Navigable Waters Act.	N/A	N/A	Schedule a teleconference/ meeting	20210203_TC_NPP_MtgRequest.pdf 20210203_TC_NPP_MtgRequest-Response.pdf
2021/02/02	Email	Ministry of the Environment, Conservation and Parks	MECP	Brianne Brothers, Management Biologist (A) brianne.brothers@ontario.ca 905-321-5736 Paul Heeney, Manager Permissions and Compliance 613-202-1889	Wood: Dale K.	Request meeting with MECP SAR group to discuss timelines on permits, assessments and any processes that can be streamlined.	N/A	N/A	Schedule a teleconference/ meeting	20210202_MECP_SARgroup_MtgRequest.pdf 20210202_MECP_SARgroup_MtgRequest-Response.pdf
2021/02/02	Call & Email	Ministry of Natural Resources and Forestry	MNRF	Jennifer Harvard, Lands & Waters Technical Specialist jennifer.harvard@ontario.ca	Wood: Dale K.	Brief discussion and requested review of email summary and subsequent meeting to discuss targeted dredging and to confirm if the project will require an LRIA application and if so, whether this can be considered an emergency situation under the Act.	N/A	N/A	DK - sent email summary to JH DK - follow-up call 20210203w/ JH JH - email received confirming the project is considered channelization and is located within the jurisdiction of HCA. As a result, it falls under the LRIA O.Reg 454/96, and an approval is not required through MNRF. (see email to file)	20210202_MNRF_JHarvard_LRIA.pdf 20210203_MNRF_JHarvard_LRIA-Response.pdf
2021/02/04	Email	Fisheries and Oceans Canada	DFO	Andrea Doherty, SARA/Science Coordinator - Fisheries Protection Program andrea.doherty@dfo-mno.gc.ca Central Region Downsview Highway Corridor Management 416-235-5385	Wood: Mark R., Dale K.	Requested meeting to discuss targeted dredging and to confirm if the project can be considered an emergency situation under the Fisheries Act	N/A	N/A	Schedule a teleconference/ meeting	20210204_DFO_Adoherty_MtgRequest.pdf
2021/02/08	Call	Ministry of Transportation	MTO	Kevin Kelly, Corridor Management Officer; kevin.kelly@ontario.ca 437-833-9479	Wood: Dale K.	Contact for pre-consultation	Requested contact name for pre-consultation	Kevin Kelly, Corridor Management Officer kevin.kelly@ontario.ca 437-833-9479	send email K.Kelly	N/A
2021/02/08	Email	Ministry of Transportation	MTO	Kevin Kelly, Corridor Management Officer; kevin.kelly@ontario.ca 437-833-9479	Wood: Dale K.	Request pre-consultation meeting.	N/A	N/A	DK - email K.Kelly KK - reply cc internal MTO staff	20210208_MTO_KKelly_PreConsultationRequest.pdf 20210208_MTO_KKelly_PreConsultationRequest-Response.pdf
2021/02/10	Email	Royal Botanical Gardens	RBG	Tys Theysmeyer, Head of Natural Areas ttheysmeyer@rbg.ca	Wood: Dale K.	Request meeting	N/A	N/A	Schedule a teleconference/ meeting	20210210_RBG_TTheysmeyer_MtgRequest.pdf
2021/02/11	Conf. Call	Ministry of the Environment, Conservation and Parks	MECP	Paul Heeney, Branne Brothers	Wood: Dale K. CoH: Tim C.	SAR discussion	Asked MECP for their input on permitting and potential options/guidance for consideration	Three permitting options exist; 1) conventional OBP, 2) expedited OBP, and 3) Human Health & Safety under the ESA. Brianne provided a slide deck regarding pros/cons of these options and additional guidance for consideration.	Continue to review data and assess options.	

Minutes

Date: January 26, 2021
File #: WW20101062
Meeting Date & Time: January 15, 2021 - 1:00 p.m.
Meeting at: Teams Call
Subject: Chedoke Creek Remediation –
MECP Consultation Meeting

Attendees:

Cari Vanderperk (CV), City of Hamilton	Brianne Brothers (BB), MECP
Mark Bainbridge (MB), City of Hamilton	Paul Heeney (PH), MECP
Susan Girt (SG), City of Hamilton	Shelley Yeudall (SY), MECP
Stephen Burt (SB), MECP	Lindsey Burzese (LB), MECP
Sarah Day (SD), MECP	Dale Klodnicki (DK), Wood
Zafar Bhatti (ZB), MECP	Lance Lumbard (LL), Wood
	Ron Scheckenberger (RS), Wood

MATTERS DISCUSSED

ACTION BY:

1. Introductions

CV introduced the meeting outlining its purpose to continue the dialogue between the City, its consultant (Wood) and MECP, in regards to the requirements to address the recent Provincial Officer's Order and the actions related to Plan development. Communications between the City and MECP with regard to the order will follow the one window process via S. Girt.

RS noted that the City and Wood are seeking feedback from the MECP Team on the two parts of the presentation related to content and scope for the two plans (Part 1 – Targeted Dredge Plan and Part 2 – Cootes Paradise and Harbour Remediation Plan) which are in preparation for Order fulfilment by February 22, 2021.

PLEASE NOTE: If there is any comment or amendment to be made to these meeting notes, they should be brought to the notice of Wood within five (5) business days of issue and confirmed in writing.

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Burlington, ON L7N 3W5
+1 905 335 2353
www.woodplc.com

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
Registered office: 2020 Winston Park Drive, Suite 700, Oakville, Ontario L6H 6X7
Registered in Canada No. 773289-9; GST: 899879050 RT0008; DUNS: 25-362-6642

Continued...

Meeting Date: January 15, 2021

MATTERS DISCUSSED

ACTION BY:

2. Chedoke Creek Water Quality Improvement Framework

- A. RS provided a presentation of the on-going development of the Chedoke Creek Water Quality Improvement Framework. RS noted the following key points in his presentation:
- i. Study is led by GM Blue Plan, supported by Wood
 - ii. Study has short duration (August 2020 to February 2021)
 - iii. Scope is limited to a desktop review of information – no new field data and no comprehensive analyses
 - iv. Consultation has been limited to Stakeholders – no involvement of the general public
 - v. Based on legacy studies and data, the GM BluePlan/Wood Team conducted a screening, short-listing, review and prioritization of numerous options for improving the water quality and habitat conditions in the Chedoke Creek and Cootes Paradise/Harbour
 - vi. Options have been categorized by type focused on:
 - a. Landfill
 - b. Wastewater
 - c. Stormwater
 - d. Lower Chedoke Creek
 - e. Upper Chedoke Creek
 - f. Engagement
 - g. Monitoring
 - vii. Options have been prioritized and identified per the following:
 - a. Short term Capital – no studies required
 - b. Long term Capital – Studies required
 - c. Short term O&M/Programs
 - d. Long term O&M/Programs
 - e. Policies
 - f. Engagement
- B. Questions and comments arising included:
- i. LB indicated that this represents a good start at addressing the second part of the Order, and recognizing that this was underway before the issuance of the Order, there will be a need to work towards a complete plan. She encouraged that the various options be reviewed for full life-cycle costs with due consideration of co-benefits (e.g. sewer separation)

Continued...

Meeting Date: January 15, 2021

MATTERS DISCUSSED

ACTION BY:

- ii. ZB questioned which stakeholders were involved in the Stakeholder consultation; during the meeting MB advised that the following stakeholders have been invited but not all participated actively on the Committee:
 - Bay Area Restoration Council (BARC)
 - Conservation Halton (CH)
 - Environment Hamilton (EH)
 - Hamilton Conservation Authority (HCA)
 - Hamilton Harbour Remedial Action Plan (HHRAP)
 - Indigenous Water Walkers
 - MT Planners – involved in the RBG 25-Year Master Plan
 - Ontario Ministry of Transportation (MTO)
 - Royal Botanical Gardens (RBG)
- iii. PH questioned if Indigenous Nations and Peoples or MNRF were part of the consultation; CV advised that the Indigenous Water Walkers were invited but did not participate; no other Indigenous Nations or Peoples were requested to participate, nor was MNRF.
- iv. ZB questioned the approach to implementation of the recommendations; CV noted that in approving her new position as Director of Watersheds, Council has recognized the importance of the plan. Long term recommendations will require Council approval through the municipal process. Some projects are already included in the City's current Master Plan. Council is well aware of the Order and the study and there are strong signals that Council is invested
- v. SY questioned the timing of the reporting; RS noted it will be provided to the City the end of January 2021, following which it will be released in "draft" to the stakeholders for review (February, 2021). Once comments have been received the report will be updated and finalized (February/March, 2021).
- vi. LB advised that MECP will be interested in reviewing this document and then considering the recommendations in terms of its requirements specific to the Order. She noted that several projects and O&M activities would be considered part of "normal" operations however others are new and considered "above and beyond". CV noted that the Chedoke Watershed Remediation Plan was started and scoped before the Order issued. It is hoped that it will satisfy some of the requirements in the Order and the City would hence appreciate receiving comments from the MECP.

Continued...

Meeting Date: January 15, 2021

MATTERS DISCUSSED

ACTION BY:

3. Part 1 of Order: Review of Targeted Dredge Plan Considerations

- A. RS provided an introduction to Wood's "working" Plan for the targeted dredge work in the Lower Chedoke Creek. He indicated that Wood has reviewed past work and used its in-house knowledge to provide an outline of:
 - i. Field Work for Design and Permitting
 - ii. Dredge Engineering Scope
 - iii. Permitting Requirements and Timing
- B. LL outlined the current "working" basis for the targeting dredge quoting the quantities cited in the 2019 Wood reporting. He noted that due to the passage of time, including 2 spring freshets, that information will need to be collected on the physical and chemical properties of the spill deposits/resident contaminated sediment in the Lower Chedoke Creek.
- C. DK outlined the required field work currently considered necessary to support the design and permitting, including:
 - i. Bathymetry/LiDAR mapping
 - ii. Sediment (physical and chemical)
 - iii. Species At Risk (SAR)
 - a. Lilliput Mussels
 - b. Blanding Turtles
 - c. Bats
- D. LL outlined the scope of planning and engineering involved in the development of engineering plans and specifications to support a dredge operation. LL worked through the respective 30%, 60%, 90% (permitting) and 100% stages of design.
- E. DK provided an overview of the various permits, their information needs, protocols and estimated schedule/timing, including a GANTT chart for the timing for review and approvals; these included:
 - i. Hamilton Conservation Authority (HCA)
 - ii. Ministry of Transportation (MTO)
 - iii. Ministry of Natural Resources and Forestry (MNRF)
 - iv. Transport Canada (TC)
 - v. Fisheries and Oceans Canada (DFO)
 - vi. Ministry of Environment, Conservation and Parks (MECP)
 - vii. Archeology (HSTCI)
 - viii. Indigenous Consultation (MECP / DFO / Others)
 - ix. Environmental Assessment (MECP / IAA)

Continued...

Meeting Date: January 15, 2021

MATTERS DISCUSSED

ACTION BY:

4. Comments Arising from the Presentation

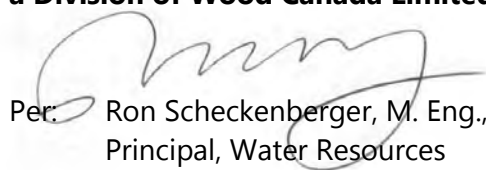
- A. LB indicated that the presentation was most helpful to lay out the currently understood process and related timing; she also acknowledged the difficulties with some parties during CV19 in terms of timely responses; she suggested that it may be advisable to start the agency consultation process sooner (February rather than April); RS noted that the April date was set as this would be roughly when the City would expect MECP to approve its plan, however subject to feedback on the information provided Wood and the City would be willing (and would support) engaging in earlier agency consultation.
- B. SY questioned who would be pursuing the permitting Wood or the City; RS and CV advised that this will be a joint effort; RS also noted that based on the experience the team and City gained for the Red Hill Valley project that there may be benefits in using a consolidated Permitting Compliance reporting approach, whereby a single report is prepared to respond to all permits. Further discussion is required
- C. ZB questioned the approach used to estimate the volumes of contamination; LL advised that the assumptions were common to those used in the original Hatch and Wood reporting (2019) and that the intent is to corroborate these estimates with future field work.
- D. SB indicated that MECP will consider the information provided to look for ways to streamline the permitting process both within its own organization and also outside agencies where it may have a role.
- E. SB thanked the Wood/City Team for the information and he re-iterated that the Order does allow for modification of the delivery date of the project "as approved by the Director". He suggested that Wood/City forward the package to the MECP Team, including the SAR group and that another meeting be held in 2 weeks (+/-) to discuss the path forward on the two parts of the order. CV advised that she will forward the package and arrange for the next meeting date and time.

All

All

Meeting Minutes prepared by:

**Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited**


Per: Ron Scheckenberger, M. Eng., P. Eng.
Principal, Water Resources

RS/kf

c.c. To all present, plus regrets

Minutes

Date: February 4, 2021
File #: WW20101062
Meeting Date & Time: January 29, 2021 - 2:00 p.m.
Meeting at: Teams Call
Subject: Chedoke Creek Remediation –
MECP Consultation Meeting #2

Attendees:

Cari Vanderperk (CV), City of Hamilton	Brianne Brothers (BBr), MECP
Andrew Grice (AG), City of Hamilton	Paul Heeney (PH), MECP
Mark Bainbridge (MB), City of Hamilton	Shelley Yeudall (SY), MECP
Susan Girt (SG), City of Hamilton	Brian Bishop (BBi), Wood
Tim Crowley (TC), City of Hamilton	Dale Klodnicki (DK), Wood
Stephen Burt (SB), MECP	Lance Lumbard (LL), Wood
Lindsey Burzese (LB), MECP	Ron Scheckenberger (RS), Wood
Zafar Bhatti (ZB), MECP	

MATTERS DISCUSSED

ACTION BY:

1. Introductions

CV introduced the meeting, outlining that its purpose is to continue the dialogue between the City, its consultant (Wood) and MECP, in regards to the requirements to address the recent Provincial Officer's Order and the actions related to Plan development. CV introduced Tim Crowley from the City who will be assisting in responding to the Order and associated efforts.

RS reviewed the agenda which focused on discussing MECP feedback on the Wood/City presentation of January 15, 2021 related to the two parts of the Order and the associated Plans, (Part 1 – Targeted Dredge Plan and Part 2 – Cootes Paradise and Harbour Remediation Plan) which are in preparation for Order fulfilment by February 22, 2021 and March 22, 2021 respectively.

PLEASE NOTE: If there is any comment or amendment to be made to these meeting notes, they should be brought to the notice of Wood within five (5) business days of issue and confirmed in writing.

Continued...

Meeting Date: January 29, 2021

MATTERS DISCUSSED

ACTION BY:

2. Part 1 of Order: Review of Targeted Dredge Plan Considerations

- i. SB stated that the process/content overview provided by Wood was good and “on the right track”. He indicated MECP support for the approach which considers the full view of the watershed and Cootes Paradise remediation. He noted that it is acknowledged that there are projects underway (infrastructure, etc.) which are part of the City’s day-to-day business, and that there will need to be further dialogue to establish projects considered as off-sets to address the spill. He noted that MECP will follow-up shortly in writing with its comments.
- ii. LB echoed SB’s comments noting the previous presentation provides a good overall picture. She acknowledged the approach to laying out the timing based on “typical” expectations and requirements, and further the likely issues with CV19 related to agency responsiveness. Notwithstanding, she encouraged the City to engage the regulators/agencies asap, and discuss means of accelerating their processes, and not wait until the submission. RS noted that the City and Wood Team intend to reach out to all regulators next week (week of February 1, 2021) and that a tracking process will be used and documented in the plan to be submitted to MECP on February 22, 2021 which highlights who has been contacted, when, and status/update on feedback provided accordingly. All present supported this approach.
- iii. LB requested that the Plan should clearly state the goals for the targeted dredge work – including principles; specifically, what are we aiming for? She encouraged the City Team to consider sediment characterization and establish a benefit-based understanding of its removal focused on ecology – clearly stating what is guiding the decision-making. RS noted that there is inherent uncertainty until the data have been collected (i.e. how much? how contaminated? where located?) on the extent of removal of sediment, hence any plan will need to be adaptable to observed conditions, as the intent will not be to remove sediment purely for removal sake – it needs to make ecological sense. All parties agreed that it would be necessary to have an adaptive management approach.

MECP

Wood

Continued...

Meeting Date: January 29, 2021

MATTERS DISCUSSED

ACTION BY:

3. Part 2 of the Order: Cootes Paradise and West Harbour Restoration

- i. LB indicated that it will be important to clearly state the goals and how the relationship of Chedoke Creek discharge is being considered in the broader Cootes Paradise setting.
- ii. As noted by SB earlier, LB indicated that establishing the true off-set of works to benefit Cootes Paradise will be key.
- iii. LB questioned if the HH RAP and Cootes RAP were involved in the current Chedoke Creek Water Quality Framework Study; MB advised that Kristen O'Connor was part of the Stakeholder group and the City can discuss a wider circulation of the current draft document.
- iv. LB had some questions on how the loading of TP was established based on conventional values; she indicated that the reporting will need to discuss what is appropriate and how the data are being used.
- v. In terms of the options screening conducted to-date, LB questioned the process used to screen out various options and also how to establish the off-setting works. RS noted that the current draft reporting has fulsome content on the screening methodology.
- vi. LB stated that in addressing the Order, the Plan needs to be clear on what combination of overall works makes the most sense in terms of representing the true offset of spill impacts to Cootes Paradise. She appreciated the on-going work of the City related to what is currently planned/underway versus what is not yet planned. RS stated again with the uncertainty of sediment characterization, absolute valuation of mitigation works at this stage will be difficult. LB noted that there is no "hard and fast" rule, and often the MECP looks for a 2 to 3 times benefit in mitigation works, that said it needs to make sense overall.
- vii. LB questioned why aeration has not been advanced as a short-term work, as she expected this could be quick and relatively low cost. RS and MB advised that the aeration project which was contemplated in the presentation is substantial, whereby the upper third (+/-) of the Lower Chedoke Creek would be dammed and a major aeration treatment system installed; RS noted this has been tabled in RBG's Master Plan. LB appreciated the perspective but noted smaller scale, shorter duration aeration could be considered as well.

City

Continued...

Meeting Date: January 29, 2021

MATTERS DISCUSSED

ACTION BY:

- viii. LB discussed various other possible works in the Lower Chedoke Creek which may be considered as true off-setting undertakings, not all of which need to be large, long-term or permanent including:
- Vegetation mats/harvesting mats
 - Formalizing the Christmas tree berm
 - Floating wetlands
 - Smaller scale aeration
 - Strategic plantings
- ix. AG indicated that while RBG is a major stakeholder and a notable owner of land, there are other stakeholders to this area whose input must be considered in a balanced and transparent manner. LB agreed indicating that the MECP will support the City in this consultation, noting that others, like the HH RAP and Cootes RAP Team need to be consulted for their input.
- x. PH provided a high-level perspective on the Species at Risk considerations put forth by Wood at the last session. He stated that preliminary screening of presence / absence should build on available databases from MNRF and others. He acknowledged the need for properly coordinated seasonal surveys, but indicated there may be an ability to adjust some timing protocols working with MECP staff. He agreed with the overall timelines as stated by Wood (12 months in the normal sense) as being accurate.
- xi. BBr noted that I-Naturalist should be consulted; she advised that American Eel is also known to be in the area having been observed at the RBG fishway.
- xii. SY questioned the timing of the release of the Chedoke Creek Water Quality Framework Study; CV advised that it was presented to City staff January 28, 2021 and is planned to be released to the broader stakeholder group the week of February 1, 2021.

City

4. Other Business/Process

- i. CV questioned whether the monthly reporting/meeting cited in the Order could begin in March 2021 given the recent sessions with MECP? SB agreed; CV will arrange for recurring meetings the 1st week of each month.
- ii. RS suggested that there may be some benefit in a placeholder for another meeting with MECP in two weeks time to discuss plan finalization; all agreed – City will arrange.

City

City

Continued...

Meeting Date: January 29, 2021

MATTERS DISCUSSED

ACTION BY:

- iii. MB reiterated the City's intent to move quickly on the works to address the Order, and reaffirmed the City's commitment to projects that make a difference.

Meeting Minutes prepared by:

**Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited**



Per: Ron Scheckenberger, M. Eng., P. Eng.
Principal, Water Resources

RS/kf

c.c. To all present

Minutes

Date: February 16, 2021
File #: WW20101062
Meeting Date & Time: February 12, 2021 - 3:00 p.m.
Meeting at: Teams Call
Subject: Chedoke Creek Remediation –
MECP Consultation Meeting #3

Attendees:

Cari Vanderperk (CV), City of Hamilton	Brianne Brothers (BBr), MECP
Mark Bainbridge (MB), City of Hamilton	Paul Heeney (PH), MECP
Tim Crowley (TC), City of Hamilton	Shelley Yeudall (SY), MECP
Stephen Burt (SB), MECP	Brian Bishop (BBI), Wood
Lindsey Burzese (LB), MECP	Dale Klodnicki (DK), Wood
Zafar Bhatti (ZB), MECP	Lance Lumbard (LL), Wood
	Ron Scheckenberger (RS), Wood

Regrets:

Andrew Grice (AG), City of Hamilton
Susan Girt (SG), City of Hamilton

MATTERS DISCUSSED

ACTION BY:

1. Introductions

CV introduced the meeting outlining its purpose to continue the dialogue between the City, its consultant (Wood) and MECP, in regards to the requirements to address the recent Director's Order and the actions related to Plan development.

RS reviewed the agenda focused on providing an update on permitting consultation efforts since the last meeting January 29, 2021, as well as to seek clarification on various matters outlined in the Order.

PLEASE NOTE: If there is any comment or amendment to be made to these meeting notes, they should be brought to the notice of Wood within five (5) business days of issue and confirmed in writing.

Continued...

Meeting Date: February 12, 2021

MATTERS DISCUSSED

ACTION BY:

2. Update on Consultation related to Permitting Requirements

DK provided an update on the various permits which are anticipated to be required including associated timing. DK advised that all parties had been contacted since the last meeting, however not all agencies have responded. The following were some of the key outcomes/updates to-date:

- i. Wood will need to submit a Request for Review (RFR) to DFO in order to initiate Federal review.
- ii. MECP - SAR group has advised of various options with varying timelines associated with permitting. Further dialogue is required including a determination as to whether the spill constitutes a human health impact.
- iii. HCA has stated its requirements and timing – 64 days.
- iv. MTO remains in review but it is anticipated to be 64 days.
- v. MNRF will not require a permit as its role is deferred to HCA.
- vi. Archaeological permitting is not required if the work is limited to Chedoke Creek; however, if it moves into the Princess Point embayment or beyond, it may trigger the need.
- vii. Federal Impact Assessment requirements remain under review.
- viii. Indigenous engagement scope remains under review.

Wood

3. Stakeholders Input Consideration

RS questioned which stakeholders MECP sees as needing to be engaged per Condition 4i and whether MECP has correspondence beyond the February, 2020 letter from RBG which should be considered. LB stated that RBG is the main stakeholder, but that the RAP Group should also be consulted given that group's broader perspective and role in restoration.

City/Wood

4. Cootes Paradise Report vs. Work Plan

RS noted that Condition 8 in the Order requires a Cootes Paradise Report while Condition 10 requires a Cootes Paradise Work Plan; he requested clarification on content from MECP. RS stated that based on the perspective of Wood and the City, the recently released GM BluePlan/Wood report would largely fill the requirement for a Cootes Paradise Report, with some possible gap filling. He added that the Work Plan could then focus on addressing the scope of work required to address the offset to the impacts from the spill. LB and SB indicated that to-date they have not reviewed the GMBP/Wood report however, based on initial understanding of content, it appears to be on the right track. SB indicated that MECP would review the GMBP/Wood report and provide clarity on possible supplemental needs to fulfill the Order requirements for the Cootes Paradise Report.

MECP

Continued...

Meeting Date: February 12, 2021

MATTERS DISCUSSED

ACTION BY:

5. Preliminary Comments on Chedoke Creek Water Quality Framework

Per above, MECP staff has yet to formalize its review of this document however it commits to doing so by the February 26, 2021 timeline noted in the distribution of the document.

MECP

6. Indigenous Nations and Peoples Engagement

RS noted that contact has been made with the City's Project Manager in charge of the City's Indigenous Engagement strategy. He indicated that explicit actions are yet to be formalized however expects that the City will consult the requisite groups on both Parts of the Order (Chedoke Creek Dredge and Cootes Paradise Plan). LB indicated that this approach is supportable to MECP.

7. Public Engagement

RS advised that given that the first part of the Order (Targeted Dredge) was not a formal Environmental Assessment, public engagement was deemed to be more voluntary and less prescriptive. Notwithstanding, the City is committed to keeping the public informed and CV also advised that this is a priority for Council. Per the presentation, the City is looking to release media bulletins, public reports and also maintain a project website. SB and LB expressed support for this form of engagement.

SY indicated that MECP was contacted by a Spectator reporter about a report to Council. CV indicated that the report was just released on Feb 12, 2021 for a presentation to Council February 17, 2021. CV indicated that City staff will keep MECP apprised of any emerging public reporting.

City

8. Council Report

CV per above, noted that a draft report has been submitted for a presentation to Council February 17, 2021. It was indicated in the report that meeting the October 31, 2021 completion timeline for the targeted dredge would be challenging however the City will continue to work with MECP on completing the work as expeditiously as possible.

Continued...

Meeting Date: February 12, 2021

MATTERS DISCUSSED

ACTION BY:

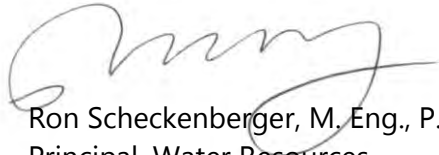
9. Other Business

RS suggested following the submission of the Chedoke Creek Work Plan on February 22, 2021, that the City, Wood and MECP meet to discuss the second part of the Order specific to the Cootes Paradise Report and Plan; the City will coordinate setting this meeting up with all parties.

City

Meeting Minutes prepared by:

**Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited**



Per: Ron Scheckenberger, M. Eng., P. Eng.
Principal, Water Resources

RS/kf

c.c. To all present, plus regrets

APPENDIX

C: SEDIMENT TECHNICAL MEMORANDA

TECH MEMO

07.07.2021

Evaluation of Chedoke Creek and Princess Point
Sediment Cores and Preliminary Estimate of In-
Situ Total Phosphorus and Total Nitrogen Mass,
City of Hamilton

Technical Memorandum

To: Tim Crowley
Public Works, City of Hamilton

From: Lance Lombard; Leah Torres, PE; Suzy Baird; Dale Klodnicki
Wood Environment & Infrastructure Solutions (Wood)

Date: July 7, 2021

Ref: WW20101062 City of Hamilton – Chedoke Creek Remediation Project

Re: Evaluation of Chedoke Creek and Princess Point Sediment Cores and Preliminary Estimate of In-Situ Total Phosphorus and Total Nitrogen Mass, City of Hamilton

1.0 INTRODUCTION

This technical memorandum provides a summary of the methodology and rationale for establishing the preliminary dredge footprint and target dredge elevations within Chedoke Creek and the Princess Point Embayment as part of the preliminary design (30%) process for the Chedoke Creek targeted dredge project.

Wood has prepared a preliminary design for the project that involves establishing a project footprint over the full extent of the Chedoke Creek and the Princess Point embayment to remove the targeted nutrients contained within the sediments from this work area based on the spill event. Wood collected bathymetric and sediment core data from Chedoke Creek and the Princess Point embayment in April 2021 to characterize current sediment conditions and thereby estimate the available in-situ total phosphorus (TP) and total Kjeldahl nitrogen (TKN) mass from the immediately affected area. The potential mass removal from this dredge footprint scenario is reviewed herein and is compared to the estimated nutrient mass transport that occurred during the Combined Sewer Overflow (CSO) spill event.

Subsequent advancement of the design process (60/90/100%) will allow further refinement of target dredge areas that may need to be excluded or added depending on input from various stakeholders, including the Ministry of the Environment, Conservation, and Parks (MECP) and the Royal Botanical Gardens (RBG).

2.0 SEDIMENT DATA COLLECTION

Wood collected sediment cores using a manual piston tube device along the Chedoke Creek transects shown in Figure 1 on 7-9, 12-15, and 19-21 of April 2021. Transects were spaced approximately 100 meters apart and each transect was divided into thirds, when possible, representing the western, centre, and eastern portions of the transect. Core collection was attempted at 15 cm intervals within each of these sections until the piston tube coring device reached refusal. Additional core data were collected from the Princes Point embayment and Cootes Paradise on 20-23 of April 2021 (ref. Figure 1). Sample data were limited in the Princess Point embayment due to shallow and mucky conditions within the middle and western areas of the embayment, preventing access.

Core samples were sent to the analytical laboratory, Bureau Veritas, for chemical characterization of each 15 cm interval. The following nutrient parameters were analyzed: TKN, nitrite, nitrate, nitrate + nitrite, and acid extractable phosphorous (representing TP). Nitrite, nitrate, nitrate + nitrite concentrations were reported consistently less than their respective detection limits so TKN and total nitrogen (TN) were assumed to be the same for this evaluation.

3.0 DETERMINING PRACTICABLE PROJECT MASS LOAD REDUCTIONS AND TARGET DREDGE ELEVATIONS

Wood evaluated the sediment nutrient data collected from Chedoke Creek and the Princess Point embayment to determine the potential TKN and TP mass load reductions that could reasonably be achieved through direct removal of target sediments over the entire project area. Based on a “working” target load reduction, Wood reviewed bathymetry, soft sediment thickness data, and sediment nutrient chemistry for each sediment interval and transect within Chedoke Creek to set preliminary target dredge elevations for various portions of the creek.

Similarly, Wood set preliminary target dredge elevations within the Princess Point embayment using bathymetric data, soft sediment thickness, and sediment nutrient chemistry for points collected within the embayment. Some assumptions were made for the middle and western area of the embayment based on data collected in the eastern sample locations and locations near to the Cootes Paradise (northern extent of the embayment).

3.1 INITIAL IN-SITU NUTRIENT ASSESSMENT

For the initial evaluation, Wood estimated in-situ TKN and TP mass within the dredge footprint using average concentration for each parameter found within the upper 30 cm of sediment over the area within Chedoke Creek and the Princess Point embayment. Sediment within Chedoke Creek had an average TP concentration of 1,078 ug/g while sediment within Princess Point had a slightly lower average TP concentration of 988 ug/g. Chedoke Creek sediment contained an average TKN concentration of 1,417 ug/g while Princess Point sediment contained a slightly higher average TKN concentration of 1,493 ug/g. Wood adjusted for moisture and bulk density using laboratory results to determine the in-situ sediment volume along with in-situ TP and TKN mass shown below in Table 1. Wood has refined the targeted dredge zones and elevations and presents updated mass

removals in Section 3.2 below. The dredge footprint and corresponding estimated TP and TKN mass removals will continue to be refined as the designs are advanced to the 60/90 and 100% stages.

Table 1 – Initial Sediment Volume and Nutrient Mass Evaluation

Location	Surface Area (m ²)	Depth (m)	Sediment Volume (m ³)	Mass of TKN (tonnes)	Mass of TP (tonnes)
Chedoke Creek	31,653	0.3	9,496	18	14
Princess Point	71,421	0.3	21,426	43	29
Total	103,074	0.3	30,922	61	42
Target	-	-	-	312	47
Difference	-	-	-	-251	-5

Dredging the upper 30 cm of sediment within the preliminary targeted dredge area should result in an approximate TP removal of 42 tonnes which is similar to but slightly less than the target of 47 tonnes which discharged during the spill event. The available TKN mass within the potential dredge volume is 61 tonnes, or 251 tonnes less than the estimated TKN mass that was transported downstream during the spill event.

As part of the 60% design phase, Wood is currently refining the target dredge areas based on the amount of material and chemical concentrations present that may result in adjustments to the current dredge template. Wood is also evaluating portions of Chedoke Creek and the Princess Point embayment which may benefit from removal of greater than 30 cm of material. Wood is also including additional refinements to the dredge template to allow for setbacks from the shore and bridge structures.

3.2 TARGETED DREDGE LOCATIONS AND ELEVATIONS

An overhead view of the project area with the respective evaluation zones is shown in Figure 2. Figure 3 provides the average TKN and TP concentrations for each core interval and transect collected from Chedoke Creek relative to the centerline profile view taken from the preliminary design. Line colors are assigned to the following core intervals in Figure 3:

- Orange – 0 to 15 cm
- Grey – 15 to 30 cm
- Yellow – 30 to 45 cm
- Green – 45 to 60 cm
- Black – 60 to 75 cm
- Brown – 75 to 90 cm

As shown in Figure 3, only transect CC-C05 produced sediment cores in all interval ranges. Most transects yielded cores with at least three intervals meaning the soft sediment was at least 45 cm thick.

Portions of Figure 3 shown in blue represent the upper (southern) third of the creek, referred to as Zone 1, which typically contains a thin 15-cm layer of organic sediments. Wood's 30% plans include a target dredge elevation of 73.7 m (IGLD) within this portion of the creek which would allow removal of some soft sediments although TP and TKN concentrations are relatively low between CC-C01 and CC-C08 compared to other portions of the creek. No removal of material would be necessary between CC-C08 and CC-C09 at elevation 73.7 m. Soft sediment between CC-C09 and CC-C10 is also relatively thin and low in nutrient concentration. Between CC-C11 and CC-C14, TP concentration increases although TKN concentration remains relatively consistent with the exception of the 30-45 cm interval which is slightly elevated at CC-C12 but then decreases with the next transect (CC-C13) downstream.

Portions of Figure 3 shown in yellow represent the approximate middle of Chedoke Creek, referred to as Zone 2, where soft sediment is at least 45 cm thick and nutrient concentrations are generally higher than the upper portion shown in blue. This portion includes transects beginning with CC-14 on the southern end through CC-C19 on the northern end.

Zone 3, represented by the green shaded portion of Figure 3, is located downstream of the bridge to Kay Drage Park and has soft sediment thickness of at least 60 cm with the exception of transect CC-C21 which had only 45 cm of soft sediment thickness. Total phosphorus and TKN concentrations are highest in this portion of Chedoke Creek. Transects between CC-C19 and CC-C20 have fairly consistent TP and TKN concentrations across all intervals. The 0-15 and 15-30 cm intervals have the highest TKN concentration at transects CC-C20 and CC-C-21. However, after the CC-C21 transect, the 45-60 cm interval has the highest TP concentration. The TKN concentration at the CC-C22 transect was about 30% higher for the 30-45 cm sediment interval than the 0-15 cm sediment interval. The TKN concentration in the 15-30 cm interval at the CC-C23 transect was approximately 4,000 ug/g or roughly double the concentration of the 0-15 cm interval. The 0-15, 15-30, 30-45 and 45-60 cm intervals between CC-C05 and CC-C26 contained TKN concentrations ranging from approximately 1,000 to 2,000 ug/g. The deepest interval collected from 60-75 cm at the CC-C25 transect had the highest TP and TKN concentrations at this location.

As shown in Figure 3, Wood recommends a reduced dredge elevation beginning with the southern end of Zone 3 at transect CC-C19 from 73.7 m to 73.4 m. This would allow removal of an average of approximately 70 cm of material from within this portion of the creek where nutrient concentrations are greatest and nutrient mass removal would be optimized.

Most of the nutrient mass within Chedoke Creek is found within the downstream portion beginning at transect CC-C15 and dredge operations should focus on this portion of the creek to maximize nutrient removal. Based on higher TP and TKN concentrations below the 30 cm sediment interval Wood recommends lowering the dredge target elevation downstream of transect CC-C19 by additional 30 cm (to 73.4 m) which would provide approximately 60 cm of sediment removal in the downstream portions of Chedoke Creek north of the Kay Drage bridge.

Data collected by Wood from the Princess Point embayment suggest that TP and TKN concentrations are similar to those found within Chedoke Creek for the upper 30 cm. As shown in Table 2, TP and TKN concentrations increase with increasing core interval. All cores collected from the Princess Point embayment yielded at least 45 cm of soft sediment and nine of the eleven cores yielded soft sediment down to the 60 cm interval. Only four cores along the northern edge of the embayment and one internal core yielded soft sediments down to 75 cm and only two of these had soft sediments extending to 90 cm.

Table 2 – Princess Point Sediment Intervals and Nutrient Concentration

Depth Interval (cm)	Average TKN Concentration (ug/g)	Average TP Concentration (ug/g)
00-15	1792	1013
15-30	1195	963
30-45	1224	1180
45-60	1345	1374
60-75	1892	1740
75-90	2060	2050

Wood recommends dredging the upper 30 cm of sediment within the embayment area (Zone 4) and an additional 30 cm of sediment within the yellow cross-hatched polygon identified in Figure 4 as Zone 5 which begins at the end of Chedoke Creek and extends north along the portion of the embayment east of the tree berm. This is roughly equal to a dredge target elevation of 73.7 m inside of the polygon shown in Figure 4 and 74.0 m for the remainder of the embayment.

Table 3 provides a summary of the five zones Wood evaluated for targeted dredging along with the area, targeted dredge elevation, targeted sediment thickness, volume, and estimated TKN and TP mass within each zone. Zone 1 provides the least potential mass removal of all the zones and provides the most significant construction challenges so dredging this area is not recommended. Zone 2 provides opportunity for some removal of material and should be reasonably accessible so Wood recommends dredging this zone. Zone 3 includes some of the most nutrient-enriched sediment within the creek and should be relatively easy to access. Zone 4, which covers a 30 cm dredge template over all of the Princess Point embayment, contains the most surface area and the largest corresponding pollutant mass. Zone 5 provides additional removal of relatively concentrated sources of TKN and TP and has the advantage of increasing water depth for additional restoration measures such as floating vegetated islands.

Based on the adjusted target dredge elevations within Zones 2 through 5, an estimated 68 tonnes of TP and 93 tonnes of TKN could be removed by dredging. This is 19 tonnes above the TP target mass of 47 tonnes but is still short of the 312-tonne TKN target by 219 tonnes.

Table 3 – Recommended Dredge Areas and Associated In-Situ TKN and TP Mass

Project Area	Description	Area (m ²)	Target Dredge Elevation (m IGLD)	Average Targeted Sediment Thickness (m)	Volume (m ³)	Average TKN Conc. (ug/g)	Estimated TKN Mass within Zone (tonnes)	Average TP Conc. (ug/g)	Estimated TP Mass within Zone (tonnes)	Dredge Rec.
Zone 1	CC-C01 to CC-C14	11,784	73.7	0.15	1,768	1,162	4	1,020	3	no
Zone 2	CC-C14 to CC-C19	7,437	73.7	0.45	3,347	1,180	7	1,067	6	yes
Zone 3	CC-C19 to CC-C26	12,211	73.4	0.60	7,327	1,641	22	1,251	17	yes
Zone 4	Princess Point Embayment	68,326	74.0	0.30	20,498	1,493	55	987	36	yes
Zone 5	Princess Point Channel	16,437	73.7	0.30	4,931	1,227	11	1,228	11	yes
Total of Rec. Zones					36,102		95		70	

4.0 SEDIMENT QUALITY COMPARISON TO CRITERIA

Parameter concentrations for all results obtained from the sampling locations shown in Figure 1 were compared to Provincial (Ontario Sediment Quality Guidelines (PSQG)) and Federal (CCME Sediment Quality Guidelines (CSQG)) criteria. These results and quality criteria comparisons are provided in Attachment A.

4.1 CHEDOKE CREEK

A summary of the Chedoke Creek sediment results ("CC" series of samples shown on Figure 1) and comparisons to the quality criteria are provided below and shown in Table A1.

- TKN was elevated above provincial severe effect limit (PSQG SEL) guidelines at varying sediment depths at stations CC-C15, -C21, -C22, and -C23 (Zones 2 and 3).
- Arsenic exceeded the federal probable effect limit (CSQG PEL) in only one sample (Zone 1, station CC-C07 0-15 cm).
- Cadmium concentrations were higher than both federal and provincial guidelines for several stations at varying sediment depths. Notably Zone 3, station CC-C26 at 46-60 cm sediment depth was 7 times the highest guideline (76 ug/g).
- Chromium exceeded provincial and federal criteria at one station, CC-C26 60-75 cm, in Zone 3.
- Several samples across transects and sediment depths had copper concentrations in Zones 2 and 3 that were elevated above provincial SEL guidelines. Station CC-C13 (30-45 cm), -C22 (60-75 cm), and -C26 (60-75 cm) also exceeded the federal PEL limit.
- Most, but not all samples collected had higher concentrations of lead than the federal PEL guideline, one sample from Zone 1 (CC-C11 15-30 cm; 260 ug/g) also exceeded the PSQG SEL criteria.
- Mercury concentrations exceeded federal guidelines for a few stations at varying sediment depths. Impacts seem to be greater at shallower depths (0-15 and 15-30 cm), where seven samples had exceedances greater than the PSQG SEL and CSQG PEL criteria.
- Nickel concentrations at stations CC-C25 and -C26 (45-60 cm) in Zone 3 were higher than the provincial SEL guideline.
- Numerous samples exceeded federal zinc concentration criteria but not provincial SEL, except at two stations CC-C25 and -C26 in Zone 3 at sediment depths of 60-75 and 45-60 cm, respectively.
- There were no obvious trends in exceedances between transect location (east, center, or west stations)

4.2 PRINCESS POINT EMBAYMENT

A summary of the Princess Point embayment sediment results ("PP" series of samples shown on Figure 1) and comparisons to the quality criteria are provided below and shown in Table A2. Stations PP-C01, PP-C02, PP-C04, PP-C05, PP-C06, and PP-C07 are located within Zone 5.

- Stations PP-C03, -C06 and -C11 had concentrations of cadmium that exceeded both the PSQG SEL and CSQG PEL at sediment depths of 45-60, 60-75, and 75-90 cm.
- Federal chromium guidelines were exceeded in few samples at 60-75 cm depth, at stations PP-C03 and -C11. Station PP-C11 also exceeded provincial SEL guidelines at 75-90 cm depth.
- Copper exceeded the provincial SEL criteria in six samples at stations PP-C03, -C09 and -C11 (45-60, 60-75 and 75-90 cm depth) and exceeded the federal CSQG PEL as well at PP-C11 (60-75 cm).
- Federal lead guidelines were exceeded for most samples at sediment depths greater than 30 cm.
- Federal criteria for mercury were exceeded in 12 samples at varying stations within cores of 0-15, 15-30, 45-60, 60-75 and 75-90 cm depths. Trends showed mercury exceedances to occur more frequently in deeper sediment.
- Station PP-C03 exceeded nickel provincial SEL criteria at 60-75 cm depth (79 µg/g).
- Concentrations of zinc exceeded the federal guidelines (PEL) for most samples in the 0-15 and 15-30 cm sediment cores and two samples at station PP-C11 also exceeded provincial SEL guidelines (60-75 and 75-90 cm depths).

4.3 COOTES PARADISE

A summary of the Cootes Paradise sediment results ("CP" series of samples shown on Figure 1) and comparisons to the quality criteria are provided below and shown in Table A3.

- Cadmium, lead and zinc concentrations exceeded CSQG PEL criteria in most samples for the 30-45 and 45-60 cm sediment cores.
- Station CP-C05 had concentrations of cadmium that exceeded both the PSQG SEL and CSQG PEL at sediment depths of 45-60, 60-75, and 75-90 cm. Station CP-C07 also exceeded both guidelines in the 60-75 cm core sample.
- Copper exceeded the provincial SEL criteria in two sample depths at station CP-C05 (60-75 and 75-90 cm).
- Federal criteria for mercury were exceeded in five samples at varying stations within cores of 45-60, 60-75 and 75-90 cm depths.
- Concentrations of zinc exceeded the federal guidelines (PEL) for most samples in the 0-15 and 15-30 cm sediment cores, except at one station (CP-C06 15-30 cm; 70 µg/g). No results exceeded provincial SEL guidelines.

4.4 UPSTREAM REFERENCE

Two locations were sampled to represent upgradient (upstream) sediment quality that was not subject to the CSO spill event. A summary of the upstream reference location sediment results and comparisons to the quality criteria are provided below and shown in Table A3.

- TKN concentration was greater than the PSQG SEL for one sample (CP-REF-1-45-60; 6320 µg/g)
- Zinc was greater than the CSQG PEL but not the PSQG SEL for one sample (CP-REF-2-30-45; 320 µg/g)

5.0 CONTAMINANT SUMMARY

Overall, contaminants of potential concern include cadmium, copper, lead, zinc and mercury, with deeper sediment samples (45+ cm) potentially more heavily impacted. Within Chedoke Creek, the recommended dredge template includes removal of most of the soft sediments north of transect CC-C14 within Zones 2 and 3 which would also remove most of the contaminated sediments discussed above. Within the Princess Point embayment, dredging the upper 30 cm within Zone 4 would leave sufficient cover to limit water column interaction with the more concentrated cadmium, chromium, nickel, and copper contamination beginning at 45 cm. Dredging the upper 30 cm within Zone 4 would also address zinc exceedances found throughout the sample area. However, lead and mercury exceedances were evident for most cores collected below 30 cm. With the exception of PP-C06 which contained elevated cadmium within the 45-90 cm intervals, most other contaminants identified below 60 cm were found outside of Zone 5 and indicates that Zone 5 may be suitable for removal of an additional 30 cm of material.

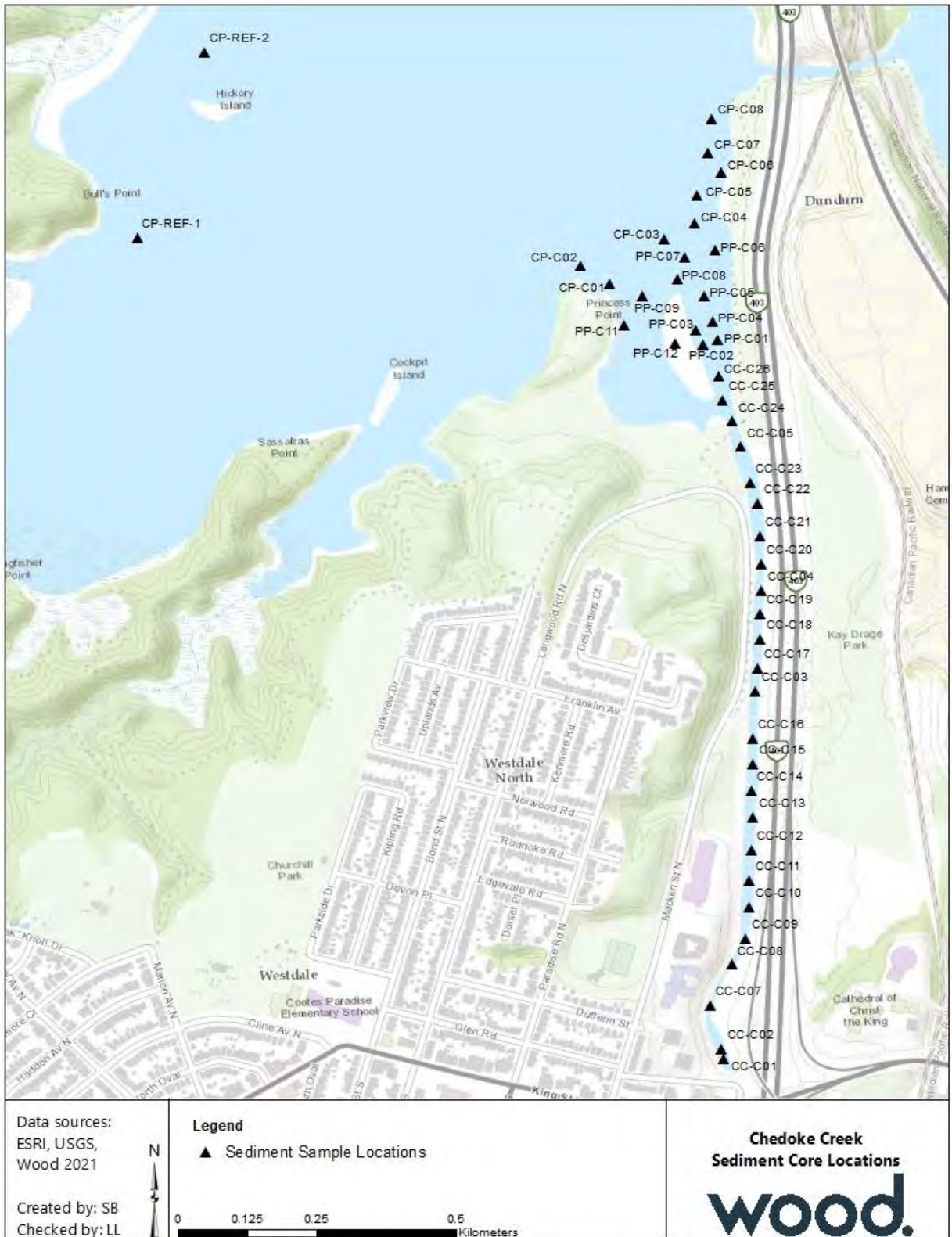


Figure 1. Chedoke Creek, Cootes Paradise, and Princess Point Sediment Sample Locations



Figure 2. Project Area Evaluation Zones

Figure 3. Chedoke Creek Centerline Profile View with Core Depth and Average Nutrient Concentration

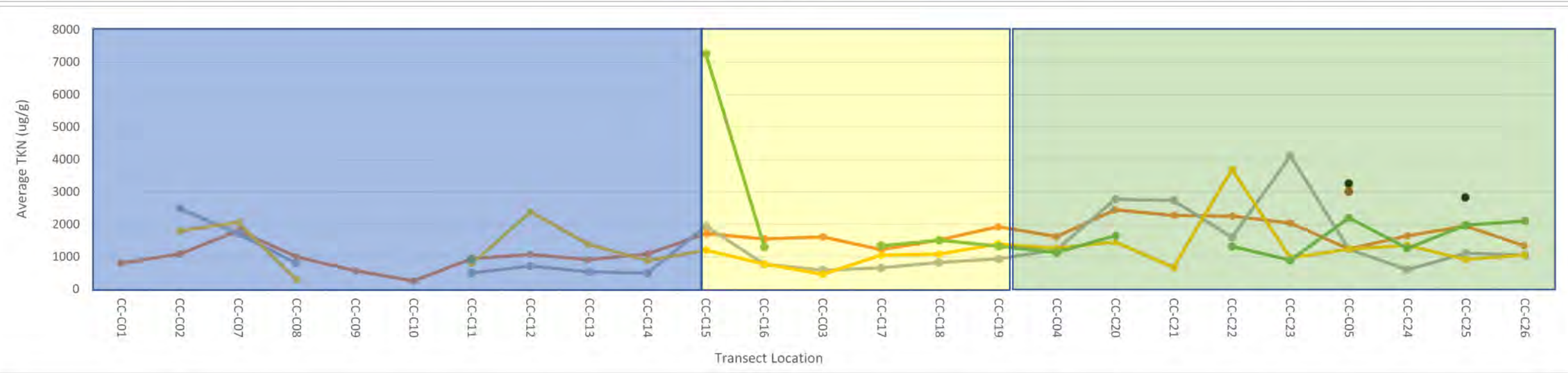
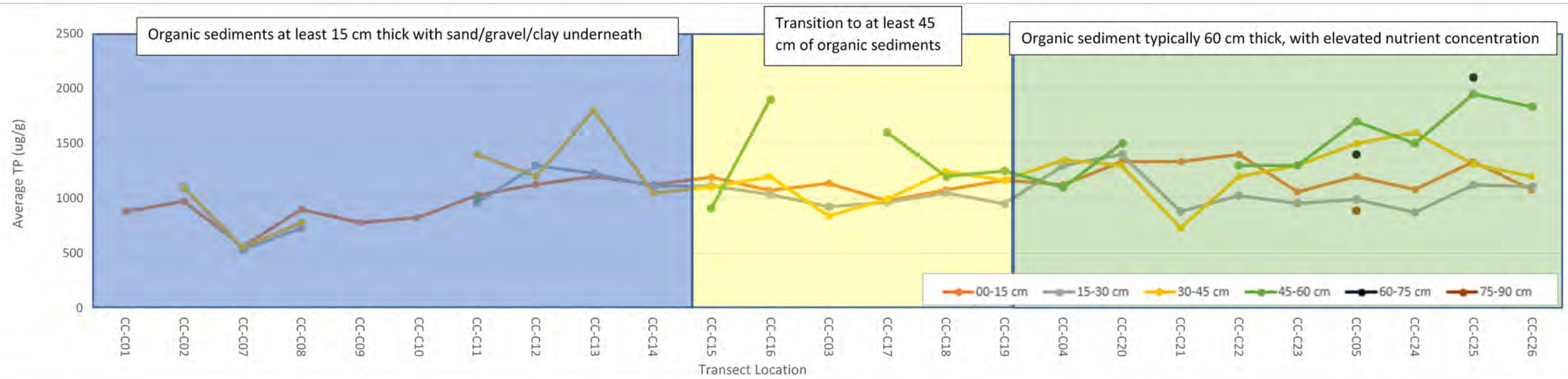
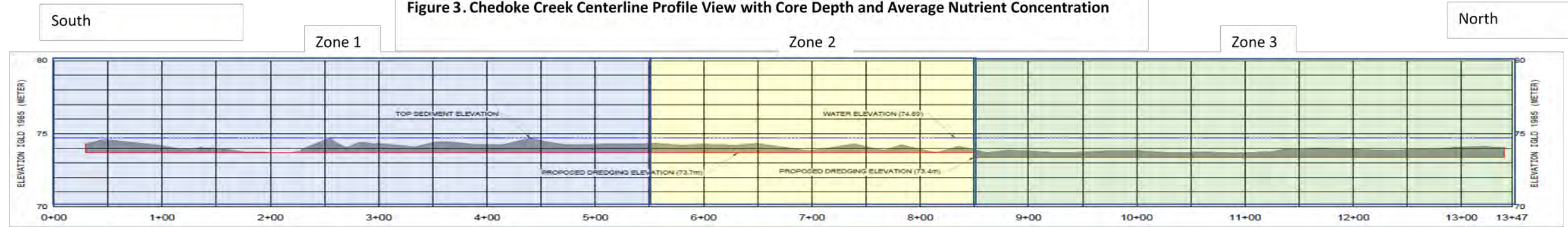




Figure 4. Princess Point Embayment Evaluation Zone Detail

Attachment A
Sediment Analysis Results Tables

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station		CC-C01				CC-C02				CC-07				CC-C08				CC-C09
Sample ID		CC-C01-CW-0-15				CC-C02WEST-0-15				CC-C02WEST-15-30				CC-C02WEST-30-45				CC-C09-EAST-0-15
Sampling Date and Time		4/8/21 14:05				4/8/21 14:05				4/8/21 14:05				4/8/21 13:40				4/9/21 9:10
PARAMETER	Units	PSQG		CSQG														
		O.Reg. 153/04 & LEL	SEL															PEL
PHYSICAL																		
Moisture	%				28	36	44	38	21	29	67	76	79	19	19	44	28	19
ANIONS & NUTRIENTS																		
Total Ammonia-N	ug/g				42	302	586	381	<20	47	<20	<20	<20	<20	<20	<20	<20	<20
Nitrogen (N)	%				0.081	0.16	0.25	0.18	0.025	0.14	0.34	0.3	0.36	0.025	0.042	0.047	0.08	0.03
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		805	1620	2480	1800	247	1400	3370	3000	3650	252	418	473	1650	803
Nitrite (N)	ug/g				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate (N)	ug/g				<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nitrate + Nitrite (N)	ug/g				<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
METALS																		
Acid Extractable Aluminum (Al)	ug/g				9500	9000	7700	9900	11000	12000	920	270	420	11000	11000	10000	9600	9400
Acid Extractable Antimony (Sb)	ug/g				0.56	0.59	0.68	0.66	0.51	0.28	<0.20	<0.20	<0.20	0.43	0.42	0.43	0.86	0.59
Acid Extractable Arsenic (As)	ug/g	6	33	17	4	3.9	5.8	6.9	5.1	4.3	20	11	7.4	4	4.7	4.1	5.2	7.1
Acid Extractable Barium (Ba)	ug/g				110	190	79	95	190	110	310	260	120	120	170	130	97	80
Acid Extractable Beryllium (Be)	ug/g				0.57	0.51	0.45	0.56	0.66	0.59	<0.20	<0.20	<0.20	0.59	0.61	0.6	0.55	0.5
Acid Extractable Bismuth (Bi)	ug/g				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g				20	20	17	19	27	13	8.2	5.1	6.8	25	26	24	17	14
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	0.32	0.42	0.83	1	0.33	0.39	0.17	<0.10	<0.10	0.33	0.37	0.28	0.57	0.47
Acid Extractable Calcium (Ca)	ug/g				61000	65000	66000	69000	61000	36000	300000	270000	240000	59000	59000	54000	67000	71000
Acid Extractable Chromium (Cr)	ug/g	26	110	90	21	22	27	33	19	26	19	<1.0	22	12	26	21	18	22
Acid Extractable Cobalt (Co)	ug/g				8.9	8.5	8.4	9.1	10	9.7	2.1	0.99	0.95	9.8	9.9	9.8	8.7	8.6
Acid Extractable Copper (Cu)	ug/g	16	110	197	47	51	81	35	34	34	5	2.2	2.9	43	37	56	32	59
Acid Extractable Iron (Fe)	ug/g	2%	4%		25000	23000	21000	23000	30000	23000	21000	15000	16000	29000	29000	29000	23000	23000
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	22	23	48	61	28	36	1.1	<1.0	1.2	14	46	20	36	42
Acid Extractable Magnesium (Mg)	ug/g				23000	27000	26000	25000	24000	13000	5600	4200	4700	23000	21000	21000	18000	14000
Acid Extractable Manganese (Mn)	ug/g	460	1100		560	550	620	660	690	630	690	750	580	600	570	510	530	680
Acid Extractable Molybdenum (Mo)	ug/g				0.89	1.2	1.1	1.1	1	<0.50	4.4	4.1	0.92	4.4	0.9	1.3	1.1	<0.50
Acid Extractable Nickel (Ni)	ug/g	16	75		22	22	21	24	26	22	3	1.4	1.8	24	25	22	20	23
Acid Extractable Phosphorus (P)	ug/g				880	1000	1100	1100	950	970	320	190	870	870	870	870	730	780
Acid Extractable Potassium (K)	ug/g				1800	1900	1500	1900	2500	1800	280	<200	<200	2400	2600	2400	1900	2000
Acid Extractable Selenium (Se)	ug/g				<0.50	<0.50	0.5	<0.50	<0.50	<0.50	1.5	1.2	1.4	<0.50	<0.50	<0.50	0.51	<0.50
Acid Extractable Silver (Ag)	ug/g				<0.20	<0.20	0.28	0.31	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.4	<0.20
Acid Extractable Sodium (Na)	ug/g				450	390	430	430	450	510	450	340	420	270	310	300	290	180
Acid Extractable Strontium (Sr)	ug/g				110	120	110	120	130	200	180	200	180	99	83	120	130	160
Acid Extractable Thallium (Tl)	ug/g				0.11	0.12	0.15	0.18	0.098	0.11	<0.050	<0.050	<0.050	0.097	0.11	0.11	0.19	0.11
Acid Extractable Tin (Sn)	ug/g				1.2	1.5	2.5	2.8	1	3.7	<1.0	<1.0	1.7	1.6	1.5	2.7	1.6	<1.0
Acid Extractable Uranium (U)	ug/g				0.6	0.62	0.65	0.57	0.61	0.53	24	21	29	0.62	0.61	0.61	0.91	0.56
Acid Extractable Vanadium (V)	ug/g				22	21	21	24	25	25	<5.0	<5.0	<5.0	25	25	23	23	24
Acid Extractable Zinc (Zn)	ug/g	120	820	315	230	240	350	410	200	150	39	11	13	220	240	190	380	220
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	<0.050	0.079	0.096	0.12	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.17	0.072
PAHs																		
Acenaphthene	ug/g				88.9	0.16	0.053	0.16	0.16	<0.050	<0.050	<0.015	<0.020	<0.020	0.075	<0.050	<0.050	<0.10
Acenaphthylene	ug/g				128	0.053	<0.050	<0.10	<0.10	<0.050	<0.050	<0.015	<0.020	<0.020	<0.050	0.063	<0.050	<0.050
Anthracene	ug/g	0.22	370	245	0.31	0.09	0.25	0.29	<0.050	0.066	<0.015	<0.020	<0.020	0.14	0.25	<0.050	<0.10	<0.050
Benzo(a)anthracene	ug/g	0.32	1480	385	1	0.55	1.1	1.2	<0.050	0.17	<0.015	<0.020	<0.020	0.33	0.99	0.16	0.41	0.21
Benzo(a)pyrene	ug/g	0.37	1440	782	0.89	0.66	1.1	1.3	<0.050	0.16	0.019	<0.020	<0.020	0.31	0.96	0.17	0.47	0.23
Benzo(b)fluoranthene	ug/g				1.3	1	1.6	1.8	0.053	0.23	0.031	<0.020	<0.020	0.47	1.4	0.27	0.74	0.38
Benzo(g,h,i)perylene	ug/g	0.17	320		0.6	0.51	0.81	0.91	<0.050	0.12	0.019	<0.020	<0.020	0.24	0.87	0.14	0.4	0.21
Benzo(k)fluoranthene	ug/g	0.24	1340		0.47	0.28	0.59	0.67	<0.050	0.082	<0.015	<0.020	<0.020	0.16	0.48	0.082	0.21	0.11
Chrysene	ug/g	0.34	460	862	1.1	0.76	1.2	1.5	<0.050	0.16	0.017	<0.020	<0.020	0.34	1	0.2	0.46	0.22
Dibenzo(a,h)anthracene	ug/g	0.06	130	135	0.16	0.087	0.18	0.2	<0.050	<0.050	<0.015	<0.020	<0.020	0.053	0.19	<0.050	<0.050	<0.050
Fluoranthene	ug/g	0.75	1020	2355	3.5	2.1	3.6	3.8	0.1	0.45	0.043	<0.020	<0.020	1.3	2.8	0.68	1.5	0.74
Fluorene	ug/g	0.19	160	144	0.15	0.067	0.19	0.19	<0.050	<0.050	<0.015	<0.020	<0.020	0.085	0.054	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320		0.66	0.53	0.88	0.98	<0.050	0.13	0.02	<0.020	<0.020	0.25	0.84	0.14	0.41	0.21
Methylnaphthalene, 2-(1-)	ug/g			201	<0.071	<0.071	<0.14	<0.14	<0.071	<0.071	<0.021	<0.028	<0.028	<0.071	<0.071	<0.071	<0.14	<0.071
1-Methylnaphthalene	ug/g				<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.015	<0.020	<0.020	<0.050	<0.050	<0.050	<0.10	<0.050
2-Methylnaphthalene	ug/g				0.066	<0.050	0.11	<0.10	<0.050	<0.050	<0.015	<0.020	<0.020	<0.050	<0.050	<0.050	<0.10	<0.050
Naphthalene	ug/g			391	0.14	<0.050	<0.10	<0.10	<0.050	<0.050	<0.015	<0.020	<0.020	<0.050	<0.050	<0.050	<0.10	<0.050
Phenanthrene	ug/g	0.56	950	515	2.4	1	1.8	1.8	0.062	0.29	0.02	<0.020	<0.020	0.9	1.1	0.4	0.53	0.21
Pyrene	ug/g	0.49	850	875	2.5	1.6	2.7	2.8	0.031	0.35	0.031	<0.020	<0.020	0.88	2.1	0.49	1.1	0.57
SIZE DISTRIBUTION																		
< -1 Phi (2 mm)	%				97	100	100	100	51	89							87	82
< 0 Phi (1 mm)	%				92	99	99	100	32	85							83	76
< +1 Phi (0.5 mm)	%				84	97	98	99	22	83							81	74
< +2 Phi (0.25 mm)	%				64	82	91	92	17	80							79	72
< +3 Phi (0.12 mm)	%				43	51	73	79	13	76							76	67
< +4 Phi (0.062 mm)	%				32	34	55	66	11	72							70	62
< +5 Phi (0.031 mm)	%				27	29	42	54	7.4	63							59	54
< +6 Phi (0.016 mm)	%																	

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station		CC-C10				CC-C11					CC-C12					CC-C13							
		Sample ID	CC-C10-CENTRE-0-15	CC-C10-EAST-0-15	CC-C11-WEST-0-15	CC-C11-WEST-15-30	CC-C11-CENTRE-0-15	CC-C11-CENTRE-15-30	CC-C11-CENTRE-30-45	CC-C11-CENTRE-45-60	CC-C11-EAST-0-15	CC-C12WEST-0-15	CC-C12WEST-15-30	CC-C12WEST-30-50	CC-C12CENTRE-0-15	CC-C12EAST-0-15	CC-C13WEST-0-15	CC-C13WEST-15-30	CC-C13WEST-30-45	CC-C13CENTRE-0-15	CC-C13CENTRE-15-30		
Sampling Date and Time		4/9/21 9:50	4/9/21 10:10	4/9/21 10:45	4/9/21 10:45	4/9/21 12:00	4/9/21 12:00	4/9/21 12:00	4/9/21 12:00	4/9/21 13:12	4/7/21 12:25	4/7/21 12:25	4/7/21 12:25	4/7/21 12:10	4/7/21 11:45	4/7/21 17:10	4/7/21 17:10	4/7/21 17:10	4/7/21 16:30	4/7/21 16:30			
PARAMETER	Units	PSQG		CSQG																			
		O.Reg. 153/04 & LEL	SEL	PEL																			
PHYSICAL																							
Moisture	%																						
ANIONS & NUTRIENTS																							
Total Ammonia-N	ug/g																						
Nitrogen (N)	%																						
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800																				
Nitrite (N)	ug/g																						
Nitrate (N)	ug/g																						
Nitrate + Nitrite (N)	ug/g																						
METALS																							
Acid Extractable Aluminum (Al)	ug/g																						
Acid Extractable Antimony (Sb)	ug/g																						
Acid Extractable Arsenic (As)	ug/g	6	33	17																			
Acid Extractable Barium (Ba)	ug/g																						
Acid Extractable Beryllium (Be)	ug/g																						
Acid Extractable Bismuth (Bi)	ug/g																						
Acid Extractable Boron (B)	ug/g																						
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5																			
Acid Extractable Calcium (Ca)	ug/g																						
Acid Extractable Chromium (Cr)	ug/g	26	110	90																			
Acid Extractable Cobalt (Co)	ug/g																						
Acid Extractable Copper (Cu)	ug/g	16	110	197																			
Acid Extractable Iron (Fe)	ug/g	2%	4%																				
Acid Extractable Lead (Pb)	ug/g	31	250	91.3																			
Acid Extractable Magnesium (Mg)	ug/g																						
Acid Extractable Manganese (Mn)	ug/g	460	1100																				
Acid Extractable Molybdenum (Mo)	ug/g																						
Acid Extractable Nickel (Ni)	ug/g	16	75																				
Acid Extractable Phosphorus (P)	ug/g																						
Acid Extractable Potassium (K)	ug/g																						
Acid Extractable Selenium (Se)	ug/g																						
Acid Extractable Silver (Ag)	ug/g																						
Acid Extractable Sodium (Na)	ug/g																						
Acid Extractable Strontium (Sr)	ug/g																						
Acid Extractable Thallium (Tl)	ug/g																						
Acid Extractable Tin (Sn)	ug/g																						
Acid Extractable Uranium (U)	ug/g																						
Acid Extractable Vanadium (V)	ug/g																						
Acid Extractable Zinc (Zn)	ug/g	120	820	315																			
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486																			
PAHs																							
Acenaphthene	ug/g																						
Acenaphthylene	ug/g																						
Anthracene	ug/g	0.22	370	245																			
Benzo(a)anthracene	ug/g	0.32	1480	385																			
Benzo(a)pyrene	ug/g	0.37	1440	782																			
Benzo(b)fluoranthene	ug/g																						
Benzo(g,h,i)perylene	ug/g	0.17	320																				
Benzo(k)fluoranthene	ug/g	0.24	1340																				
Chrysene	ug/g	0.34	460	862																			
Dibenzo(a,h)anthracene	ug/g	0.06	130	135																			
Fluoranthene	ug/g	0.75	1020	2355																			
Fluorene	ug/g	0.19	160	144																			
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320																				
Methylnaphthalene, 2-(1-)	ug/g			201																			
1-Methylnaphthalene	ug/g																						
2-Methylnaphthalene	ug/g																						
Naphthalene	ug/g			391																			
Phenanthrene	ug/g	0.56	950	515																			
Pyrene	ug/g	0.49	850	875																			
SIZE DISTRIBUTION																							
< -1 Phi (2 mm)	%																						
< 0 Phi (1 mm)	%																						
< +1 Phi (0.5 mm)	%																						
< +2 Phi (0.25 mm)	%																						
< +3 Phi (0.12 mm)	%																						
< +4 Phi (0.062 mm)	%																						
< +5 Phi (0.031 mm)	%																						
< +6 Phi (0.016 mm)	%																						
< +7 Phi (0.0078 mm)	%																						
< +8 Phi (0.0039 mm)	%																						
< +9 Phi (0.0020 mm)	%																						
Gravel	%																						
Coarse Sand	%																						
Fine Sand	%																						
Silt	%																						
Clay	%																						
Loss on Ignition	%w/w																						
Wet Bulk Density	g/cm3																						
Liquid Limit	%w/w																						
Plastic Limit	%w/w																						
Plasticity Index	%w/w																						
Dissolved BOD5	mg/L																						

- Notes**
- PSQG: Provincial Sediment Quality Guidelines for the protection and management of aquatic sediment quality in
 - CSQG: Canadian Council of Ministers of the Environment Canadian Sediment Quality Guidelines for the protection
 - MDL: Method Detection Limit provided by Bureau Veritas, Mississauga, ON (see raw data)
 - "Less than" indicates that the reported concentration was less than the detection limit
 - Green shaded cells indicate concentrations that exceed the PSQG LEL
 - Blue shaded values indicate concentrations that exceed the PSQG SEL
 - Purple shaded values indicate concentrations that exceed the CSQG PEL
 - Grey shaded values indicate concentrations that exceed both the PSQG SEL and CSQG PEL

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station					CC-C14											CC-C15								
Sample ID					CC-C13CENTRE-30-45	CC-C13EAST-0-15	CC-C13EAST-15-30	CC-C13EAST-30-50	CC-C14-WEST-0-15	CC-C14-WEST-15-30	CC-C14-WEST-30-45	CC-C14-CENTRE-0-15	CC-C14-CENTRE-15-30	CC-C14-CENTRE-30-45	CC-C14-EAST-0-15	CC-C14-EAST-15-30	CC-C14-EAST-30-45	CC-C15-WEST-0-15	CC-C15-WEST-15-30	CC-C15-WEST-30-45	CC-C15-CENTRE-0-15	CC-C15-CENTRE-15-30		
Sampling Date and Time					4/7/21 16:30	4/7/21 15:00	4/7/21 15:00	4/7/21 15:00	4/19/21 11:00	4/19/21 11:00	4/19/21 11:00	4/19/21 10:30	4/19/21 10:30	4/19/21 10:30	4/19/21 10:00	4/19/21 10:00	4/19/21 10:00	4/12/21 11:00	4/12/21 11:00	4/12/21 11:00	4/12/21 10:30	4/12/21 10:30		
Quality Criteria		PSQG			CSQG																			
PARAMETER	Units	O.Reg. 153/04 & LEL	SEL	PEL																				
PHYSICAL																								
Moisture	%				16	16	21	42	44	18	18	17	19	18	26	24	38	53	54	24	20	18		
ANIONS & NUTRIENTS																								
Total Ammonia-N	ug/g				59	<20	36	141	91	<20	<20	21	47	43	23	67	146	347	247	<20	24	<20		
Nitrogen (N)	%				0.052	0.03	0.064	0.28	0.25	0.036	0.021	0.034	0.028	0.025	0.044	0.086	0.22							
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		521	304	640	2780	2490	360	205	336	278	255	440	858	2200	4080	3980	683	553	286		
Nitrite (N)	ug/g				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Nitrate (N)	ug/g				<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Nitrate + Nitrite (N)	ug/g				<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		
METALS																								
Acid Extractable Aluminum (Al)	ug/g				8400	7000	9800	13000	12000	9700	11000	8100	7300	8800	7500	13000	18000	11000	9800	12000	8800	10000		
Acid Extractable Antimony (Sb)	ug/g				2.6	5.4	3.3	5.2	1.4	0.91	1.7	0.36	0.41	1.7	3.4	2.5	1.5	1.8	2.1	0.54	0.56			
Acid Extractable Arsenic (As)	ug/g	6	33	17	5.9	4.6	7.1	8.4	5.1	4.3	6.4	3.2	4.2	5.4	9.6	8.8	5.3	5	7.4	3.2	5			
Acid Extractable Barium (Ba)	ug/g				160	110	150	280	120	92	140	100	150	100	190	230	120	120	180	110	120			
Acid Extractable Beryllium (Be)	ug/g				0.52	0.44	0.54	0.67	0.55	0.5	0.57	0.46	0.37	0.48	0.38	0.62	0.76	0.59	0.53	0.64	0.51	0.6		
Acid Extractable Bismuth (Bi)	ug/g				<1.0	<1.0	<1.0	1.7	1.3	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	1.4	<1.0	<1.0	<1.0	<1.0		
Acid Extractable Boron (B)	ug/g				26	18	27	38	20	19	21	16	19	16	25	21	23	20	17	22	23			
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	10	0.42	19	44	0.97	0.65	0.72	1.1	0.72	28	13	0.79	0.78	2	0.38	0.59				
Acid Extractable Calcium (Ca)	ug/g				65000	60000	58000	50000	66000	72000	67000	74000	67000	71000	64000	57000	44000	64000	66000	67000	72000	69000		
Acid Extractable Chromium (Cr)	ug/g	26	110	90	30	22	35	66	33	26	28	20	25	23	46	34	33	29	35	21	26			
Acid Extractable Cobalt (Co)	ug/g				11	7	12	17	8.8	8.4	11	7	6.9	8.3	6.9	15	14	9.1	8.6	10	7.5	9.5		
Acid Extractable Copper (Cu)	ug/g	16	110	197	98	49	87	150	99	63	110	59	61	99	97	140	69	110	120	55	69			
Acid Extractable Iron (Fe)	ug/g	2%	4%		23000	26000	24000	24000	25000	27000	31000	22000	24000	26000	24000	31000	32000	25000	25000	27000	23000	28000		
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	100	170	110	180	55	120	140	44	92	120	230	250	110	52	90	190	21	91		
Acid Extractable Magnesium (Mg)	ug/g				22000	20000	16000	13000	26000	24000	20000	25000	20000	24000	19000	13000	12000	24000	26000	23000	26000	22000		
Acid Extractable Manganese (Mn)	ug/g	460	1100		650	530	650	610	550	550	640	500	540	630	490	720	700	540	530	570	520	640		
Acid Extractable Molybdenum (Mo)	ug/g				1	0.9	0.92	1.3	1.5	1.2	1.3	0.83	0.77	1.1	1.5	1.6	1	1.8	1.6	1.8	0.8	0.94		
Acid Extractable Nickel (Ni)	ug/g	16	75		32	18	42	61	25	22	29	17	17	21	22	50	39	25	24	29	21	23		
Acid Extractable Phosphorus (P)	ug/g				1300	1100	1300	2200	1500	960	1000	950	940	1000	950	1500	1200	1600	1500	1100	880	920		
Acid Extractable Potassium (K)	ug/g				1600	1600	1600	2000	2100	2000	2000	2000	2000	1500	1800	1500	1800	2300	2200	1900	1800	2300		
Acid Extractable Selenium (Se)	ug/g				<0.50	<0.50	<0.50	0.54	0.68	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	1.4	0.7	0.67	0.62	<0.50	<0.50		
Acid Extractable Silver (Ag)	ug/g				2.7	0.28	2.3	9.8	0.88	<0.20	0.54	<0.20	<0.20	0.23	0.32	4.1	1.6	0.73	0.67	0.95	1.6	<0.20		
Acid Extractable Sodium (Na)	ug/g				270	270	330	260	390	250	250	250	200	240	370	580	430	420	260	220	190			
Acid Extractable Strontium (Sr)	ug/g				95	100	96	100	120	110	110	97	110	98	110	110	93	120	120	130	100	95		
Acid Extractable Thallium (Tl)	ug/g				0.13	0.11	0.12	0.17	0.21	0.13	0.15	0.11	0.07	0.098	0.13	0.17	0.22	0.22	0.2	0.14	0.12			
Acid Extractable Tin (Sn)	ug/g				12	22	30	33	8.5	31	32	40	34	31	22	5.3	33	75	33	75	30			
Acid Extractable Uranium (U)	ug/g				0.75	0.55	0.97	0.75	0.78	0.69	0.66	0.58	0.48	0.49	0.53	0.65	0.6	0.79	0.77	0.61	0.6	0.57		
Acid Extractable Vanadium (V)	ug/g				22	26	23	24	21	24	21	24	20	21	27	31	25	24	27	20	24			
Acid Extractable Zinc (Zn)	ug/g	120	820	315	320	190	320	580	430	270	320	220	280	270	300	570	410	430	430	510	210	240		
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	0.36	<0.050	0.45	1	0.26	0.059	0.057	<0.050	0.18	0.058	0.62	1.7	0.23	0.31	0.22	0.66	0.34	0.17		
PAHs																								
Acenaphthene	ug/g			88.9	0.067	0.0074	0.18	0.58	<0.10	<0.050	<0.050	0.049	0.82	0.043	0.026	0.17	0.09	<0.10	<0.10	0.23	<0.050	<0.050		
Acenaphthylene	ug/g			128	<0.0050	<0.0050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050	<0.0050	<0.0050	0.013	<0.050	0.022	<0.10	<0.10	<0.10	<0.050	<0.050		
Anthracene	ug/g	0.22	370	245	0.092	0.017	0.24	0.45	0.25	0.058	0.11	1.9	0.061	0.053	0.25	0.14	0.14	0.12	0.47	0.065	<0.050			
Benzo(a)anthracene	ug/g	0.32	1480	385	0.23	0.065	0.64	0.98	0.87	0.2	0.088	0.25	2.3	0.15	0.62	0.31	0.79	0.66	0.77	0.33	0.054			
Benzo(a)pyrene	ug/g	0.37	1440	782	0.22	0.063	0.48	0.89	1	0.19	0.098	0.22	1.3	0.22	0.16	0.62	0.3	0.99	0.83	0.63	0.34	0.062		
Benzo(b)fluoranthene	ug/g				0.27	0.094	0.62	1.3	1.6	0.29	0.15	0.23	0.31	0.15	0.25	0.95	0.46	1.7	1.5	0.93	0.54	0.11		
Benzo(g,h,i)perylene	ug/g	0.17	320		0.13	0.045	0.25	0.53	0.95	0.15	0.096	0.17	0.55	0.18	0.15	0.49	0.28	0.91	0.8	0.42	0.26	<0.050		
Benzo(k)fluoranthene	ug/g	0.24	1340		0.099	0.026	0.23	0.38	0.55	0.099	<0.050	0.11	0.64	0.11	0.084	0.3	0.57	0.46	0.34	0.19	<0.050			
Chrysene	ug/g	0.34	460	862	0.23	0.068	0.55	0.95	1	0.22	0.11	1.9	0.23	0.18	0.68	0.31	1.1	0.83	0.67	0.34	0.069			
Dibenzo(a,h)anthracene	ug/g	0.06	130	135	0.034	0.01	0.076	0.14	0.2	<0.050	0.043	<0.050	0.036	0.12	0.076	0.15	0.15	0.099	0.15	0.099	<0.050	<0.050		
Fluoranthene	ug/g	0.75	1020	2355	0.68	0.25	1.9	3	3.3	0.67	0.35	0.89	5.3	0.74	0.62	2.3	0.87	2.9	2.5	2.4	1.1	0.15		
Fluorene	ug/g	0.19	160	144	0.063	0.0051	0.18	0.55	<0.10	<0.050	<0.050	0.054	0.22	0.032	0.023	0.22	0.11	<0.10	<0.10	0.25	<0.050	<0.050		
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320		0.15	0.049	0.3	0.61	0.96	0.16	0.084	0.18	0.67	0.19	0.16	0.53	0.28	0.83	0.73	0.43	0.27	<0.050		
Methylnaphthalene, 2-(1-)	ug/g			201	0.049	<0.0071	<0.071	0.69	<0.14	<0.071	<0.071	0.019	0.1	<0.0071	0.015	0.12	0.071							
1-Methylnaphthalene	ug/g				0.025	<0.0050	<0.050	0.32	<0.10	<0.050	<													

Table A1: Chedoke Creek Sediment Sample Analytical Results

PARAMETER	Units	O.Reg. 153/04 & LEL	SEL	PEL	Station																		
					Sample ID				CC-C16						CC-C03								
					Sampling Date and Time				CC-C15-EAST-0-15	CC-C15-EAST-15-30	CC-C15-EAST-30-45	CC-C15-EAST-45-60	CC-C16-WEST-0-15	CC-C16-WEST-15-30	CC-C16-CENTRE-0-15	CC-C16-CENTRE-15-30	CC-C16-CENTRE-30-45	CC-C16-CENTRE-45-60	CC-C16-EAST-0-15	CC-C16-EAST-15-30	CC-C03-WEST-0-15	CC-C03-WEST-15-30	CC-C03-WEST-30-45
Quality Criteria		PSQG			CSQG																		
PHYSICAL					20	31	36	62	50	37	26	23	29	32	28	24	56	27	25	21	21		
ANIONS & NUTRIENTS					<20	46	56	<20	37	<20	34	39	88	89	<20	34	425	85	69	<20	40		
Total Ammonia-N	ug/g				<20	46	56	<20	37	<20	34	39	88	89	<20	34	425	85	69	<20	40		
Nitrogen (N)	%																						
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		506	1570	1730	7260	3060	1410	631	349	778	1300	961	558	3800	753	613	388	422		
Nitrite (N)	ug/g																						
Nitrate (N)	ug/g																						
Nitrate + Nitrite (N)	ug/g																						
METALS					8200	9300	10000	10000	10000	9700	8400	8900	10000	13000	8100	11000	12000	7200	8200	7800	7800		
Acid Extractable Aluminum (Al)	ug/g				1.6	1.2	1.9	2.8	1.3	1.9	0.58	0.62	4.1	4.6	0.85	3.6	1.4	0.83	1.5	0.56	0.94		
Acid Extractable Antimony (Sb)	ug/g				6.2	4.2	4.7	6.3	5.2	5.4	3.3	6.3	8	4.2	7.6	5.4	4.2	3.6	3.1	4.6	4.6		
Acid Extractable Arsenic (As)	ug/g	6	33	17	110	100	120	180	120	91	89	100	130	230	8	170	120	83	76	89	95		
Acid Extractable Barium (Ba)	ug/g				0.48	0.47	0.54	0.51	0.55	0.53	0.48	0.52	0.57	0.64	0.44	0.56	0.61	0.41	0.42	0.44	0.45		
Acid Extractable Beryllium (Be)	ug/g				<1.0	<1.0	<1.0	<1.0	<1.0	1.4	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Acid Extractable Bismuth (Bi)	ug/g				17	13	17	26	20	17	19	22	30	39	26	20	20	13	9.7	17	13		
Acid Extractable Boron (B)	ug/g				1.1	3.8	9.6	6.1	0.81	0.93	0.45	0.89	11	32	0.65	20	0.87	1.4	8.3	0.34	3.4		
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	64000	46000	49000	47000	65000	70000	69000	74000	65000	59000	69000	64000	64000	65000	63000	70000	69000		
Acid Extractable Calcium (Ca)	ug/g				33	19	24	24	33	30	23	25	30	53	25	40	35	27	20	22	23		
Acid Extractable Chromium (Cr)	ug/g	26	110	90	8.1	7.8	9.6	9.4	9.1	8.8	7.4	8.7	13	16	7.3	13	9.5	7.2	8.3	6.6	8.3		
Acid Extractable Cobalt (Co)	ug/g				16	110	197	98	47	55	100	100	75	47	89	140	55	140	130	87	46	49	52
Acid Extractable Copper (Cu)	ug/g				27000	20000	22000	22000	24000	23000	22000	26000	24000	24000	26000	22000	28000	25000	22000	19000	21000	22000	
Acid Extractable Iron (Fe)	ug/g	2%	4%		31	250	91.3	140	54	68	170	41	120	50	65	110	180	43	49	76	42	80	92
Acid Extractable Lead (Pb)	ug/g				17000	9100	8800	13000	24000	23000	23000	26000	18000	15000	21000	17000	24000	19000	10000	23000	16000		
Acid Extractable Magnesium (Mg)	ug/g	460	1100		2	0.82	0.7	1.3	1.8	1.3	1	0.92	1.2	0.96	4.4	2.2	1.5	0.52	0.96	0.7	0.7		
Acid Extractable Manganese (Mn)	ug/g				26	22	29	36	25	23	20	22	35	50	18	43	26	19	22	18	22		
Acid Extractable Molybdenum (Mo)	ug/g	16	75		1100	920	1100	910	1400	1200	910	1000	1200	1000	1200	850	1700	850	870	830	1000		
Acid Extractable Nickel (Ni)	ug/g				1600	1500	1600	1600	1900	1700	1900	1900	1900	2200	1700	2100	2000	1300	1400	1700	1400		
Acid Extractable Phosphorus (P)	ug/g				<0.50	<0.50	<0.50	0.56	0.65	0.51	0.52	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	<0.50	<0.50	<0.50	<0.50		
Acid Extractable Potassium (K)	ug/g				0.4	0.88	1.1	1.1	0.7	0.47	0.23	0.65	2.8	6.5	0.29	2.5	0.99	0.33	0.92	<0.20	0.63		
Acid Extractable Selenium (Se)	ug/g				300	280	300	510	510	410	320	380	560	740	370	510	560	150	140	250	250		
Acid Extractable Silver (Ag)	ug/g				110	82	94	94	120	120	110	120	110	120	120	130	100	110	100	100	120		
Acid Extractable Sodium (Na)	ug/g				0.13	0.1	0.12	0.14	0.2	0.19	0.12	0.12	0.13	0.18	0.14	0.17	0.27	0.16	0.11	0.13	0.1		
Acid Extractable Strontium (Sr)	ug/g				72	32	12	21	5	4.3	3	9	12	26	11	110	5.9	5.8	5.7	11	11		
Acid Extractable Thallium (Tl)	ug/g				0.56	0.49	0.57	0.7	0.77	0.76	0.64	0.66	0.56	0.66	0.6	0.67	0.83	0.59	0.5	0.58	0.55		
Acid Extractable Tin (Sn)	ug/g				24	23	25	25	25	25	25	22	23	29	22	27	27	21	21	21	21		
Acid Extractable Uranium (U)	ug/g	120	820	315	280	160	230	320	430	360	200	250	270	540	260	470	520	280	170	180	200		
Acid Extractable Vanadium (V)	ug/g	0.2	2	0.486	0.13	0.12	0.17	0.23	0.18	0.5	0.064	3.8	0.34	0.66	0.1	0.33	0.22	0.082	0.085	<0.80	0.11		
Acid Extractable Zinc (Zn)	ug/g																						
Acid Extractable Mercury (Hg)	ug/g																						
PAHs					88.9	0.069	0.47	0.49	0.46	<0.10	0.051	0.074	<0.050	0.16	0.25	0.09	0.023	<0.10	<0.050	<0.050	<0.050	<0.050	
Acenaphthene	ug/g				128	<0.050	<0.050	<0.050	<0.15	<0.10	<0.050	<0.050	<0.050	<0.20	<0.20	<0.050	0.0057	<0.10	<0.050	<0.050	<0.050		
Acenaphthylene	ug/g	0.22	370	245	<0.050	1.1	0.26	0.69	0.14	0.1	0.13	<0.050	0.2	0.37	0.18	0.037	0.17	<0.050	0.092	<0.050	<0.050		
Anthracene	ug/g	0.32	1480	385	0.1	0.43	0.48	0.93	0.81	0.62	0.25	0.12	0.52	0.94	0.44	0.09	0.7	0.23	0.16	0.29	0.11		
Benzo(a)anthracene	ug/g	0.37	1440	782	0.098	0.28	0.38	0.78	1	0.75	0.2	0.12	0.51	0.89	0.43	0.087	0.86	0.26	0.15	0.25	0.1		
Benzo(a)pyrene	ug/g				0.16	0.41	0.55	1.1	1.8	1.3	0.32	0.19	0.68	1.4	0.68	0.14	0.37	0.46	0.23	0.37	0.16		
Benzo(b)fluoranthene	ug/g	0.17	320		0.073	0.23	0.23	0.38	0.98	0.69	0.11	0.09	0.37	0.66	0.33	0.071	0.84	0.24	0.12	0.17	0.08		
Benzo(g,h,i)perylene	ug/g	0.24	1340		0.056	0.15	0.21	0.39	0.61	0.44	0.11	0.065	0.28	0.44	0.48	0.046	0.52	0.16	0.091	0.12	<0.050		
Benzo(k)fluoranthene	ug/g	0.34	460	862	0.11	0.4	0.42	0.87	1.1	0.67	0.27	0.15	0.5	0.95	0.42	0.097	0.98	0.26	0.12	0.3	0.12		
Chrysene	ug/g	0.06	130	135	<0.050	0.053	<0.050	<0.15	0.15	0.12	<0.050	0.064	0.16	0.064	<0.050	0.019	0.14	<0.050	<0.050	<0.050	<0.050		
Dibenz(a,h)anthracene	ug/g	0.75	1020	2355	0.38	4.1	1.5	3.2	3	2.1	1.1	0.53	1.5	2.9	1.5	0.31	2.7	0.86	0.49	0.95	0.39		
Fluorene	ug/g	0.19	160	144	<0.050	0.48	0.29	0.36	<0.10	0.085	<0.050	0.079	<0.050	0.37	0.079	0.017	<0.10	<0.050	<0.050	<0.050	<0.050		
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320		0.068	0.2	0.25	0.43	0.91	0.66	0.12	0.082	0.38	0.7	0.32	0.07	0.77	0.23	0.13	0.19	0.82		
Methylnaphthalene, 2-(1-)	ug/g			201	<0.050	<0.050	0.061	<0.15	<0.10	<0.050	<0.050	<0.050	<0.050	0.18	0.36	<0.050	0.0056	<0.10	<0.050	<0.050	<0.071		
1-Methylnaphthalene	ug/g				<0.050	<0.050	<0.050	<0.15	<0.10	<0.050	<0.050	<0.050	0.18	0.45	<0.050	0.0058	0.1	<0.050	<0.050	<0.050	<0.050		
2-Methylnaphthalene	ug/g				<0.050	<0.050	<0.050	<0.15	<0.10	<0.050	<0.050	<0.10	<0.10	<0.20	<0.050	<0.0050	<0.10	<0.050	<0.050	<0.050	<0.050		
Naphthalene	ug/g				391																		
Phenanthrene	ug/g	0.56	950	515	0.16	5.5	1.3	2.9	1.1	0.56	0.9	0.22	1	2	0.66	0.11	1	0.25	0.075	0.47	0.11		
Pyrene	ug/g	0.49	850	875	0.25	2.7	0.96	2.4	2.1	1.5	0.75	0.38	2.1	1.9	0.75	1	1.8	0.6	0.37	0.7	0.29		
SIZE DISTRIBUTION																							
< -1 Phi (2 mm)	%				71	96	91	98			92	83		94		97		99		91	97	83	
< 0 Phi (1 mm)	%				58	94	89	95			82	66		84		89		98		79	85	70	
< +1 Phi (0.5 mm)	%				42	91	87	91			63	42		71		77		88		60	49	49	
< +2 Phi (0.25 mm)	%				23	85	82	87			39	21		63		70		95		36	32	25	
< +3 Phi (0.12 mm)	%				16	70	70	83			22	13		60		68		93		25	21	18	
< +4 Phi (0.062 mm)	%				12	56	59	76			15	9.3		49		64		86		21	17	15	
< +5 Phi (0.031 mm)	%				10	44	51	66			12	7.6		38		53		77		19	14	12	
< +6 Phi (0.016 mm)	%				7.3	35	40	56			9.9												

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station					CC-C17										CC-C18							
Sample ID					CC-C03-CENTRE-30-45	CC-C03-EAST-0-15	CC-C17-WEST-0-15	CC-C17-WEST-15-30	CC-C17-WEST-30-45	CC-C17-WEST-45-60	CC-C17-CENTRE-0-15	CC-C17-CENTRE-15-30	CC-C17-CENTRE-30-45	CC-C17-EAST-0-15	CC-C18-WEST-0-15	CC-C18-WEST-15-30	CC-C18-WEST-30-45	CC-C18-WEST-45-60	CC-C18-CENTRE-0-15	CC-C18-CENTRE-15-30	CC-C18-CENTRE-30-45	
Sampling Date and Time					4/13/21 10:30	4/13/21 9:30	4/13/21 14:00	4/13/21 14:00	4/13/21 14:00	4/13/21 14:00	4/13/21 13:30	4/13/21 13:30	4/13/21 13:30	4/13/21 13:00	4/14/21 10:00	4/14/21 10:00	4/14/21 10:00	4/14/21 10:00	4/14/21 9:30	4/14/21 9:30	4/14/21 9:30	
PARAMETER	Units	Quality Criteria																				
		O.Reg. 153/04 & LEL	SEL	CSQG																		
PHYSICAL																						
Moisture	%				17	24	42	23	33	33	23	26	37	34	33	35	38	22	30	22		
ANIONS & NUTRIENTS																						
Total Ammonia-N	ug/g				<20	<20	145	171	216	135	46	86	84	<20	284	211	175	129	46	36	23	
Nitrogen (N)	%																					
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		309	657	1810	573	1280	1340	594	746	823	1250	1660	1040	1590	1510	608	612	578	
Nitrite (N)	ug/g																					
Nitrate (N)	ug/g																					
Nitrate + Nitrite (N)	ug/g																					
METALS																						
Acid Extractable Aluminum (Al)	ug/g				6300	5600	8900	7800	11000	10000	8400	9400	7000	8200	8600	9900	12000	13000	7100	7700	8000	
Acid Extractable Antimony (Sb)	ug/g				0.73	0.37	0.98	1.1	3.5	3.2	0.78	1.9	1.6	0.8	1.2	1.9	2.7	4.1	0.6	1.4	1.8	
Acid Extractable Arsenic (As)	ug/g	6	33	17	3.3	2.6	4.2	3.9	7	7	3.9	5.7	4.1	4.8	4.3	6.5	7.1	10	3.6	5	4.2	
Acid Extractable Barium (Ba)	ug/g				50	49	100	73	130	190	100	95	67	94	110	180	230	77	96	100	100	
Acid Extractable Beryllium (Be)	ug/g				0.33	0.32	0.51	0.46	0.58	0.49	0.46	0.52	0.4	0.44	0.49	0.56	0.64	0.66	0.37	0.42	0.4	
Acid Extractable Bismuth (Bi)	ug/g				<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	1.2	<1.0	<1.0	<1.0	<1.0	
Acid Extractable Boron (B)	ug/g				6	8.8	20	17	29	22	18	18	13	14	23	25	23	15	12	11	11	
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	4.9	0.29	0.71	1.5	10	23	1.1	8.3	10	0.59	0.71	7.6	21	23	23	0.58	7.9	11
Acid Extractable Calcium (Ca)	ug/g				60000	63000	63000	64000	64000	59000	68000	65000	54000	70000	67000	67000	58000	59000	72000	56000	63000	
Acid Extractable Chromium (Cr)	ug/g	26	110	90	14	13	27	23	29	23	24	23	21	24	29	42	43	24	22	22	22	
Acid Extractable Cobalt (Co)	ug/g				6.9	5.4	8	8.4	12	13	7.8	10	8.4	7.2	7.6	10	14	15	6.5	8.5	7.9	
Acid Extractable Copper (Cu)	ug/g	16	110	197	31	32	89	46	88	120	74	70	60	51	76	61	110	68	56	50	50	
Acid Extractable Iron (Fe)	ug/g	2%	4%		16000	16000	23000	21000	24000	22000	22000	22000	17000	21000	21000	23000	24000	25000	23000	19000	18000	
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	23	24	42	50	85	120	27	68	59	38	41	83	120	140	46	67	50	
Acid Extractable Magnesium (Mg)	ug/g				7400	12000	22000	19000	19000	13000	23000	16000	8900	17000	22000	20000	10000	12000	22000	10000	9200	
Acid Extractable Manganese (Mn)	ug/g	460	1100		490	440	530	550	790	610	510	720	570	470	490	640	680	570	480	600	560	
Acid Extractable Molybdenum (Mo)	ug/g				<0.50	0.67	1.2	0.72	0.89	1	1.1	0.85	0.6	1.1	1.3	0.96	1.1	1.2	0.83	0.69	0.52	
Acid Extractable Nickel (Ni)	ug/g	16	75		16	12	21	20	36	41	20	31	24	18	20	27	42	47	18	24	24	
Acid Extractable Phosphorus (P)	ug/g				810	880	1200	830	1000	1600	990	840	1100	1200	1100	1600	1200	930	1000	890	890	
Acid Extractable Potassium (K)	ug/g				1000	1000	1800	1400	1900	1500	1700	1600	1100	1500	1600	1800	1900	1700	1400	1100	1300	
Acid Extractable Selenium (Se)	ug/g				<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Acid Extractable Silver (Ag)	ug/g				0.5	<0.20	0.56	0.75	2.2	5.1	0.41	2.5	2	0.27	0.78	1.2	5.3	3.6	<0.20	1.8	1.4	
Acid Extractable Sodium (Na)	ug/g				150	200	370	200	280	250	260	210	310	330	240	240	210	200	190	140	140	
Acid Extractable Strontium (Sr)	ug/g				110	120	120	96	100	110	110	110	110	160	120	110	110	110	100	100	110	
Acid Extractable Thallium (Tl)	ug/g				0.077	0.099	0.17	0.12	0.12	0.13	0.14	0.12	0.1	0.14	0.15	0.16	0.16	0.17	0.1	0.1	0.096	
Acid Extractable Tin (Sn)	ug/g				3.5	4.1	12	7.3	10	20	2.7	4.8	8.2	4	7.1	18	21	2.6	10	8.1	8.1	
Acid Extractable Uranium (U)	ug/g				0.44	0.42	0.65	0.51	0.63	0.56	0.62	0.44	0.62	0.66	0.57	0.65	0.61	0.51	0.46	0.44	0.44	
Acid Extractable Vanadium (V)	ug/g				19	18	23	19	23	24	23	19	21	22	23	27	28	20	20	20	20	
Acid Extractable Zinc (Zn)	ug/g	120	820	315	85	130	300	190	260	400	230	230	200	250	300	320	360	440	220	190	170	
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	0.053	<0.050	0.12	0.12	0.36	0.6	0.093	0.32	0.23	0.12	0.46	0.25	0.62	0.48	0.085	0.15	0.14	
PAHs																						
Acenaphthene	ug/g				88.9	0.0076	0.028	0.12	0.073	0.21	0.34	0.081	0.13	0.13	<0.10	<0.050	0.11	0.31	0.23	0.077	0.054	0.053
Acenaphthylene	ug/g				128	0.009	0.0052	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	0.025	<0.10	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050
Anthracene	ug/g	0.22	370	245	0.036	0.088	0.32	0.12	0.3	0.43	0.37	0.14	0.21	0.11	0.078	0.19	0.43	0.43	0.11	0.06	0.097	
Benzo(a)anthracene	ug/g	0.32	1480	385	0.15	0.25	0.92	0.32	0.73	1.1	1.8	0.49	0.5	0.34	0.32	0.65	1	1.1	0.33	0.16	0.28	
Benzo(a)pyrene	ug/g	0.37	1440	782	0.15	0.28	0.89	0.28	0.65	0.97	1.1	0.42	0.45	0.39	0.38	0.69	0.9	1	0.29	0.15	0.25	
Benzo(b)fluoranthene	ug/g				0.22	0.47	1.5	0.38	0.9	1.3	1.8	0.62	0.73	0.64	1.1	1.3	1.7	0.45	0.24	0.39	0.39	
Benzo(g,h,i)perylene	ug/g	0.17	320		0.12	0.24	0.66	0.19	0.4	0.58	0.51	0.26	0.31	0.36	0.32	0.59	0.53	0.77	0.21	0.11	0.2	
Benzo(k)fluoranthene	ug/g	0.24	1340		0.079	0.15	0.52	0.14	0.27	0.48	0.64	0.18	0.23	0.17	0.41	0.39	0.6	0.14	0.067	0.13	0.13	
Chrysene	ug/g	0.34	460	862	0.12	0.29	0.93	0.33	0.65	1	1.5	0.54	0.48	0.42	0.42	0.7	0.93	1.1	0.36	0.18	0.29	
Dibenzo(a,h)anthracene	ug/g	0.06	130	135	0.027	0.045	0.15	<0.050	0.099	0.15	0.15	0.062	0.091	<0.10	<0.050	0.13	0.13	0.18	<0.050	<0.050	<0.050	
Fluoranthene	ug/g	0.75	1020	2355	0.45	0.91	2.8	0.97	2	3.2	4.5	1.6	1.5	1.3	2	2.9	3.2	3.2	1.2	0.5	0.81	
Fluorene	ug/g	0.19	160	144	0.0069	0.031	0.15	0.076	0.25	0.48	0.66	0.14	0.19	<0.10	0.058	0.16	0.44	0.36	0.076	0.068	<0.050	
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320		0.12	0.23	0.65	0.2	0.45	0.67	0.56	0.3	0.34	0.36	0.32	0.6	0.61	0.81	0.22	0.11	0.22	
Methylnaphthalene, 2-(1-)	ug/g			201	<0.0071	0.017	0.095	<0.071	0.27	0.63	<0.071	0.19	0.34	<0.14	<0.071	0.17	0.59	0.41	<0.071	<0.071	<0.071	
1-Methylnaphthalene	ug/g				<0.0050	<0.0050	0.021	<0.050	0.12	0.26	<0.050	0.089	0.15	<0.10	<0.050	0.079	0.24	0.16	<0.050	<0.050	<0.050	
2-Methylnaphthalene	ug/g				0.0054	0.017	0.074	<0.050	0.15	0.37	<0.050	0.098	0.18	<0.10	<0.050	0.089	0.36	0.25	<0.050	<0.050	<0.050	
Naphthalene	ug/g			391	0.0056	0.0064	0.037	<0.050	<0.050	<0.050	0.052	<0.050	<0.050	<0.050	<0.050	0.054	<0.10	<0.050	<0.050	<0.050	<0.050	
Phenanthrene	ug/g	0.56	950	515	0.072	0.33	1.3	0.57	1.5	2.5	1.5	1.3	1	0.39	0.55	0.99	2.3	2.2	0.76			

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station					CC-C19										CC-C04								
Sample ID					CC-C18-EAST-0-15	CC-C19-WEST-0-15	CC-C19-WEST-15-30	CC-C19-WEST-30-45	CC-C19-WEST-45-60	CC-C19-CENTRE-0-15	CC-C19-CENTRE-15-30	CC-C19-CENTRE-30-45	CC-C19-CENTRE-45-60	CC-C19-EAST-0-15	CC-C04-WEST-0-15	CC-C04-WEST-15-30	CC-C04-WEST-30-45	CC-C04-WEST-45-60	CC-C04-CENTRE-0-15	CC-C04-CENTRE-15-30	CC-C04-CENTRE-30-45		
Sampling Date and Time					4/14/21 9:00	4/14/21 12:00	4/14/21 12:00	4/14/21 12:00	4/14/21 12:00	4/14/21 11:30	4/14/21 11:30	4/14/21 11:30	4/14/21 11:30	4/14/21 11:00	4/19/21 13:00	4/19/21 13:00	4/19/21 13:00	4/19/21 13:00	4/19/21 12:30	4/19/21 12:30	4/19/21 12:30		
Quality Criteria		PSQG			CSQG																		
PARAMETER	Units	O.Reg. 153/04 & LEL	SEL	PEL																			
PHYSICAL																							
Moisture	%				47	47	28	38	32	25		27	31	40	37	34	34	32	20	32	34		
ANIONS & NUTRIENTS																							
Total Ammonia-N	ug/g				35	252	218	271	183	67		95	135	156	<20	152	179	181	140	43	133	155	
Nitrogen (N)	%														0.17	0.18	0.14	0.11	0.056	0.13	0.12		
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		2300	2590	1070	1810	1230	1290	795	982	1420	1900	1720	1810	1360	1130	560	1300	1170		
Nitrite (N)	ug/g														<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Nitrate (N)	ug/g														<2	<2	<2	<2	<2	<2	<2		
Nitrate + Nitrite (N)	ug/g														<3	<3	<3	<3	<3	<3	<3		
METALS																							
Acid Extractable Aluminum (Al)	ug/g				9300	11000	8000	9500	12000	9000		9900	8900	10000	9200	9800	9300	11000	11000	7600	12000	12000	
Acid Extractable Antimony (Sb)	ug/g				0.92	1.3	1.4	2.5	2	4.7		1.6	1.9	2.2	0.97	1.6	2.1	2.1	1.8	0.56	2	2	
Acid Extractable Arsenic (As)	ug/g	6	33	17	5.3	5.3	13	5.5	6	5.4		5.6	5.3	4.7	5.7	5.5	6.5	5.7	4.1	7.3	6.2		
Acid Extractable Barium (Ba)	ug/g				100	120	100	240	170	170		100	180	100	160	190	220	120	89	240	150	150	
Acid Extractable Beryllium (Be)	ug/g				0.49	0.56	0.43	0.46	0.59	0.46		0.46	0.46	0.5	0.44	0.44	0.51	0.5	0.41	0.56	0.6	0.6	
Acid Extractable Bismuth (Bi)	ug/g				<1.0	1.1	<1.0	<1.0	1	<1.0		<1.0	<1.0	<1.0	3	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Acid Extractable Boron (B)	ug/g				20	22	22	26	25	21		20	23	23	18	22	25	22	23	17	27	25	
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	0.63	0.96	3.8	38	17	15		7.7	6.1	21	0.65	14	26	30	7.9	3.2	30	14	
Acid Extractable Calcium (Ca)	ug/g				66000	71000	72000	57000	65000	64000		65000	65000	64000	66000	63000	57000	58000	61000	66000	66000	62000	
Acid Extractable Chromium (Cr)	ug/g	26	110	90	22	30	25	56	25	41		39	24	21	41	39	25	40	51	30	23	57	37
Acid Extractable Cobalt (Co)	ug/g				8	9.1	8.5	14	13	11		9.6	10	13	8.2	11	13	14	11	7.1	15	12	
Acid Extractable Copper (Cu)	ug/g	16	110	197	58	86	78	150	94	93		56	62	110	67	150	150	130	76	46	120	83	
Acid Extractable Iron (Fe)	ug/g	2%	4%		23000	25000	20000	24000	22000	22000		21000	20000	20000	22000	23000	19000	23000	22000	20000	25000	24000	
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	49	46	91	110	95	120		65	62	92	33	110	98	110	72	40	140	85	
Acid Extractable Magnesium (Mg)	ug/g				22000	25000	22000	16000	16000	13000		16000	18000	20000	22000	20000	16000	15000	19000	15000	16000	16000	
Acid Extractable Manganese (Mn)	ug/g	460	1100		520	550	510	480	660	510		650	660	600	510	500	590	710	490	630	720		
Acid Extractable Molybdenum (Mo)	ug/g				1.2	1.4	0.78	0.85	0.86	0.96		0.65	0.85	0.77	1.3	1.2	0.83	1	0.75	1.2	0.88	0.88	
Acid Extractable Nickel (Ni)	ug/g	16	75		22	25	27	58	45	38		28	28	46	20	41	53	56	32	20	53	40	
Acid Extractable Phosphorus (P)	ug/g				1100	1300	970	1500	1300	1200		830	1200	1000	930	1300	1400	1700	1100	970	1500	1200	
Acid Extractable Potassium (K)	ug/g				1700	2100	1600	1500	1800	1700		1600	1500	1700	1800	1600	1400	1500	1600	1500	1900	1900	
Acid Extractable Selenium (Se)	ug/g				<0.50	0.57	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Acid Extractable Silver (Ag)	ug/g				0.24	0.68	1.5	9.8	3.3	3.1		1.5	4.6	0.3	7.8	11	5.3	5	0.85	5.7	3.1	3.1	
Acid Extractable Sodium (Na)	ug/g				570	430	220	230	250	350		320	330	370	370	440	310	260	270	510	450	450	
Acid Extractable Strontium (Sr)	ug/g				140	160	120	100	110	110		100	100	100	140	130	96	110	98	120	110	110	
Acid Extractable Thallium (Tl)	ug/g				0.18	0.21	0.12	0.12	0.13	0.13		0.12	0.11	0.12	0.17	0.16	0.11	0.12	0.12	0.1	0.14	0.13	
Acid Extractable Tin (Sn)	ug/g				3.2	5.2	6.9	19	14	17		6.3	7	2.9	9.2	16	23	7.8	3.1	24	11	11	
Acid Extractable Uranium (U)	ug/g				0.61	0.71	0.53	0.59	0.62	0.58		0.52	0.52	0.57	0.68	0.63	0.59	0.61	0.57	0.44	0.65	0.62	
Acid Extractable Vanadium (V)	ug/g				21	24	20	23	25	23		24	23	21	22	23	19	22	19	25	24	24	
Acid Extractable Zinc (Zn)	ug/g	120	820	315	340	400	290	500	330	390		210	200	350	320	440	420	440	260	210	520	300	
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	0.068	0.19	0.22	0.54	0.38	0.29		0.27	0.27	0.37	0.13	3.8	0.47	0.42	0.29	0.14	0.45	0.3	
PAHs																							
Acenaphthene	ug/g				88.9	<0.10	<0.10	0.21	0.54	0.41		0.26	0.13	0.28	0.4	0.052	0.11	0.39	0.48	0.31	0.1	0.38	0.31
Acenaphthylene	ug/g				128	<0.10	<0.10	<0.050	<0.20	<0.10		<0.050	<0.050	0.044	<0.10	0.015	<0.050	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10
Anthracene	ug/g	0.22	370	245	0.13	0.15	0.36	0.52	0.37	0.31		0.14	0.44	0.38	0.18	0.15	0.5	0.39	0.37	0.2	0.47	0.29	
Benzo(a)anthracene	ug/g	0.32	1480	385	0.27	0.73	1	1.1	0.87	0.6		0.41	1.1	0.72	0.66	0.48	0.95	0.82	0.75	0.5	1.1	0.58	
Benzo(a)pyrene	ug/g	0.37	1440	782	0.25	0.83	0.84	0.98	0.83	0.5		0.4	1	0.66	0.76	0.54	0.86	0.82	0.71	0.47	1	0.58	
Benzo(b)fluoranthene	ug/g				0.38	1.3	1.2	1.3	1.6	1.3		1.5	1	1.3	0.89	1.2	1.2	1	0.71	1.6	0.86	0.86	
Benzo(g,h,i)perylene	ug/g	0.17	320		0.19	0.73	0.53	0.73	0.61	0.34		0.28	0.64	0.47	0.66	0.52	0.62	0.67	0.51	0.34	0.84	0.49	
Benzo(k)fluoranthene	ug/g	0.24	1340		0.11	0.37	0.35	0.56	0.45	0.34		0.2	0.54	0.34	0.45	0.3	0.45	0.39	0.36	0.24	0.55	0.3	
Chrysene	ug/g	0.34	460	862	0.29	0.94	0.99	1.1	0.9	0.66		0.39	0.98	0.68	0.76	0.59	0.95	0.93	0.76	0.48	1.2	0.65	
Dibenzo(a,h)anthracene	ug/g	0.06	130	135	<0.10	0.11	0.12	0.16	0.12	0.069		0.18	0.16	0.11	0.12	0.16	0.18	0.16	0.16	0.079	0.2	0.14	
Fluoranthene	ug/g	0.75	1020	2355	1	2.8	2.6	3.7	2.5	2.2		1.1	2.8	2.2	2.4	1.8	3	2.5	2.4	1.8	3.8	1.7	
Fluorene	ug/g	0.19	160	144	<0.10	0.1	0.28	0.65	0.45	0.37		0.17	0.35	0.45	0.075	0.15	0.53						

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station					CC-C20										CC-C21									
Sample ID					CC-C04-CENTRE-45-60	CC-C04-EAST-0-15	CC-C04-EAST-15-30	CC-C20-WEST-0-15	CC-C20-WEST-15-30	CC-C20-WEST-30-45	CC-C20-WEST-45-60	CC-C20-CENTRE-0-15	CC-C20-CENTRE-15-30	CC-C20-CENTRE-30-45	CC-C20-EAST-0-15	CC-C21-WEST-0-15	CC-C21-WEST-15-30	CC-C21-WEST-30-45	CC-C21-CENTRE-0-15	CC-C21-CENTRE-15-30	CC-C21-EAST-0-15			
Sampling Date and Time					4/19/21 12:30	4/19/21 12:00	4/19/21 12:00	4/14/21 15:00	4/14/21 15:00	4/14/21 15:00	4/14/21 15:00	4/14/21 14:30	4/14/21 14:30	4/14/21 14:30	4/14/21 14:00	4/15/21 10:00	4/15/21 10:00	4/15/21 10:00	4/15/21 9:30	4/15/21 9:30	4/15/21 9:00			
Quality Criteria		PSQG			CSQG																			
PARAMETER	Units	O.Reg. 153/04 & LEL	SEL	PEL																				
PHYSICAL																								
Moisture	%					55	25	57	57	32	35	36	38	39	50	57	36	28	30	38	51			
ANIONS & NUTRIENTS																								
Total Ammonia-N	ug/g					29	<20	341	463	218	214	150	174	137	<20	61	<20	<20	<20	<20	126			
Nitrogen (N)	%					0.26	0.055																	
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800			2590	554	3800	3800	1290	1650	1390	1750	1630	2160	3240	1230	671	1010	1490	2580			
Nitrite (N)	ug/g					<0.5	<0.5																	
Nitrate (N)	ug/g					<2	<2																	
Nitrate + Nitrite (N)	ug/g					<3	<3																	
METALS																								
Acid Extractable Aluminum (Al)	ug/g					11000	5500	11000	10000	9500	11000	14000	9300	11000	10000	12000	10000	8600	7400	11000	11000			
Acid Extractable Antimony (Sb)	ug/g					1.3	0.42	1.3	1.8	1.3	2	2	1.8	2.2	0.79	1.6	1.7	1.9	1.1	2	1.5			
Acid Extractable Arsenic (As)	ug/g	6	33	17		5.9	2.9	5	5.1	5.2	6.4	7.6	5.1	5.7	5.8	6.4	6.6	4.1	6.5	5.5				
Acid Extractable Barium (Ba)	ug/g					100	46	120	150	110	200	270	200	250	100	120	110	92	100	180	120			
Acid Extractable Beryllium (Be)	ug/g					0.51	0.25	0.56	0.58	0.48	0.55	0.65	0.43	0.54	0.59	0.5	0.52	0.38	0.57	0.55				
Acid Extractable Bismuth (Bi)	ug/g					1.1	<1.0	1.3	1.2	1.5	<1.0	1.2	<1.0	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	1.1			
Acid Extractable Boron (B)	ug/g					16	7	21	22	18	27	25	21	25	20	19	13	7.9	15	16	20			
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5		0.81	0.28	1.1	7.7	2.6	32	30	7.7	27	36	0.62	1.2	13	5.3	7.1	17	0.88		
Acid Extractable Calcium (Ca)	ug/g					66000	70000	64000	58000	78000	42000	64000	56000	57000	65000	64000	61000	60000	71000	57000	70000			
Acid Extractable Chromium (Cr)	ug/g	26	110	90		29	12	31	39	26	61	61	42	85	32	33	35	23	27	35	30			
Acid Extractable Cobalt (Co)	ug/g					8.5	4.5	8.9	11	8.6	17	16	12	15	8.5	9.4	11	7.7	7.5	12	9.1			
Acid Extractable Copper (Cu)	ug/g	16	110	197		83	29	93	130	67	130	110	180	51	110	76	55	91	86	87				
Acid Extractable Iron (Fe)	ug/g	2%	4%			25000	15000	25000	24000	24000	21000	28000	19000	23000	25000	25000	22000	18000	19000	23000	25000			
Acid Extractable Lead (Pb)	ug/g	31	250	91.3		39	15	43	88	100	140	140	110	130	41	51	74	87	110	100	44			
Acid Extractable Magnesium (Mg)	ug/g					22000	11000	23000	20000	22000	13000	15000	13000	13000	24000	23000	14000	8400	19000	16000	23000			
Acid Extractable Manganese (Mn)	ug/g	460	1100			520	410	520	540	620	490	660	470	490	540	520	420	340	450	460	540			
Acid Extractable Molybdenum (Mo)	ug/g					1.6	0.65	1.7	1.6	1.2	1.2	0.85	1.2	0.94	1.8	0.96	1.2	0.81	1	1.5				
Acid Extractable Nickel (Ni)	ug/g	16	75			23	11	26	34	26	61	58	47	61	22	25	35	23	23	40	23			
Acid Extractable Phosphorus (P)	ug/g					1100	800	1300	1500	1100	1500	1300	1500	1200	1500	1500	730	1100	890	1400				
Acid Extractable Potassium (K)	ug/g					1900	850	2100	1700	1600	1400	2200	1400	1600	2000	2000	1600	1200	1400	1700	2000			
Acid Extractable Selenium (Se)	ug/g					0.71	<0.50	0.62	0.56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	<0.50	0.57			
Acid Extractable Silver (Ag)	ug/g					0.47	<0.20	0.74	2.7	0.95	7.6	6	5.9	14	<0.20	0.89	2.6	1.3	4	3	0.64			
Acid Extractable Sodium (Na)	ug/g					250	120	540	420	230	210	330	310	440	440	1600	940	580	1000	650				
Acid Extractable Strontium (Sr)	ug/g					160	130	140	140	170	110	90	99	110	130	110	96	110	91	170				
Acid Extractable Thallium (Tl)	ug/g					0.19	0.073	0.19	0.2	0.15	0.15	0.17	0.11	0.16	0.17	0.22	0.12	0.14	0.12	0.2				
Acid Extractable Tin (Sn)	ug/g					4.3	1.2	6.4	9.9	8.1	15	23	16	15	3	7.9	10	9.2	13	4.4				
Acid Extractable Uranium (U)	ug/g					0.76	0.45	0.75	0.74	0.62	0.67	0.69	0.55	0.69	0.56	0.77	0.6	0.78	0.55	0.59	0.65			
Acid Extractable Vanadium (V)	ug/g					24	16	24	25	23	26	29	23	27	23	26	24	23	20	25	24			
Acid Extractable Zinc (Zn)	ug/g	120	820	315		420	120	400	480	340	540	440	390	480	320	480	290	210	270	340	400			
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486		0.12	0.051	0.12	0.3	0.18	0.48	0.45	0.3	0.41	0.057	0.21	0.23	0.26	7.1	0.3	0.15			
PAHs																								
Acenaphthene	ug/g			88.9		<0.10	0.018	0.11	<0.10	<0.050	0.24	0.53	0.69	0.3	<0.10	0.79	0.054	0.016	0.57	0.33	<0.10			
Acenaphthylene	ug/g			128		<0.10	0.0061	<0.10	<0.10	<0.050	0.053	<0.20	<0.20	<0.10	<0.10	<0.20	<0.050	0.022	0.035	0.05	<0.10			
Anthracene	ug/g	0.22	370	245		0.16	0.034	0.25	0.16	0.078	0.22	0.43	0.73	0.29	0.23	0.86	0.12	0.072	0.71	0.57	0.13			
Benzo(a)anthracene	ug/g	0.32	1480	385		0.64	0.16	1	0.83	0.33	0.61	0.92	1.4	0.57	0.76	2.6	0.45	0.26	2	1.9	0.65			
Benzo(a)pyrene	ug/g	0.37	1440	782		0.85	0.22	1.1	0.97	0.36	0.59	0.84	1.2	0.48	0.8	2.3	0.5	0.25	1.7	1.6	0.77			
Benzo(b)fluoranthene	ug/g					1.5	0.39	1.9	1.8	0.65	0.99	1.4	2.1	0.74	1.2	3.8	0.8	2.6	2.4	1.4				
Benzo(g,h,i)perylene	ug/g	0.17	320			0.92	0.26	0.99	0.94	0.33	0.45	0.64	0.97	0.33	0.64	1.5	0.33	0.17	1	1	0.73			
Benzo(k)fluoranthene	ug/g	0.24	1340			0.44	0.12	0.67	0.55	0.22	0.35	0.69	0.55	0.22	0.34	1.3	0.83	0.12	0.91	0.83	0.47			
Chrysene	ug/g	0.34	460	862		0.96	0.26	1.2	1	0.44	0.7	0.95	1.5	0.61	0.88	3	0.33	0.19	1.9	1.8	0.87			
Dibenzo(a,h)anthracene	ug/g	0.06	130	135		0.15	0.05	0.17	0.15	0.057	0.1	0.14	0.22	<0.10	0.11	0.34	0.077	0.044	0.28	0.31	0.12			
Fluoranthene	ug/g	0.75	1020	2355		2.8	0.66	3.4	3	1.1	2	2.9	4.5	1.9	2.8	9.7	1.4	0.57	6	5	2.4			
Fluorene	ug/g	0.19	160	144		<0.10	0.016	0.14	<0.10	0.062	0.3	0.6	0.99	0.4	0.1	0.8	<0.050	0.018	0.5	0.3	<0.10			
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320			0.84	0.24	0.92	0.87	0.32	0.46	0.65	0.93	0.36	0.66	1.6	0.37	0.18	1.1	1.1	0.67			
Methylnaphthalene, 2-(1-)	ug/g			201		<0.14	0.015	<0.14	<0.14	<0.071	1	2.1	3.1	0.81	<0.14	0.38	<0.050	0.0063	0.084	0.17	<0.10			
1-Methylnaphthalene	ug/g					<0.10	<0.0050	<0.10	<0.10	<0.050	0.62	0.94	1.6	0.51	<0.10	0.38	<0							

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station					CC-C22										CC-C23						
Sample ID					CC-C21-EAST-15-30	CC-C22-WEST-0-15	CC-C22-WEST-15-30	CC-C22-WEST-30-45	CC-C22-WEST-45-60	CC-C22-CENTRE-0-15	CC-C22-CENTRE-15-30	CC-C22-CENTRE-30-45	CC-C22-EAST-0-15	CC-C23-WEST-0-15	CC-C23-WEST-15-30	CC-C23-WEST-30-45	CC-C23-WEST-45-60	CC-C23-CENTRE-0-15	CC-C23-CENTRE-15-30	CC-C23-EAST-0-15	CC-C05-WEST-0-15
Sampling Date and Time					4/15/21 9:00	4/15/21 12:00	4/15/21 12:00	4/15/21 12:00	4/15/21 12:00	4/15/21 11:30	4/15/21 11:30	4/15/21 11:30	4/15/21 11:00	4/15/21 14:00	4/15/21 14:00	4/15/21 14:00	4/15/21 14:00	4/15/21 13:30	4/15/21 13:30	4/15/21 13:00	4/20/21 10:00
Quality Criteria		PSQG			CSQG																
PARAMETER	Units	O.Reg. 153/04 & LEL	SEL	PEL																	
PHYSICAL																					
Moisture	%				59	53	20	34	34	34	42	59	53	48	30	29	26	38	67	39	42
ANIONS & NUTRIENTS																					
Total Ammonia-N	ug/g				474	317	90	165	204	114	186	252	27	213	182	178	149	61	227	41	178
Nitrogen (N)	%																				0.21
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		5500	3240	367	1000	1320	1370	2840	6380	2160	2610	879	970	894	1710	7340	1800	2080
Nitrite (N)	ug/g																				<0.5
Nitrate (N)	ug/g																				<2
Nitrate + Nitrite (N)	ug/g																				<3
METALS																					
Acid Extractable Aluminum (Al)	ug/g				12000	11000	6900	7100	9400	8800	9900	8500	10000	10000	6600	7000	7200	8200	11000	8800	7500
Acid Extractable Antimony (Sb)	ug/g				0.56	1.6	1	1.4	1.9	4.2	3.4	4	1.3	1.1	1.6	1.5	2.4	0.45	0.39	1.6	0.84
Acid Extractable Arsenic (As)	ug/g	6	33	17	5.1	5.5	3.5	6.3	6.3	7.2	7.3	6.5	6.1	5.1	4.4	5	5.8	3.8	4	6.2	3.7
Acid Extractable Barium (Ba)	ug/g				110	130	86	130	190	260	160	190	110	110	91	130	95	84	120	95	94
Acid Extractable Beryllium (Be)	ug/g				0.54	0.55	0.36	0.41	0.55	0.44	0.51	0.46	0.52	0.49	0.33	0.41	0.42	0.4	0.54	0.47	0.42
Acid Extractable Bismuth (Bi)	ug/g				<1.0	1.7	<1.0	<1.0	<1.0	<1.0	1.2	1.1	<1.0	1	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0
Acid Extractable Boron (B)	ug/g				14	19	14	20	25	20	20	29	18	19	15	19	18	14	17	15	16
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	0.72	0.94	0.65	4.7	9.9	20	9.8	8.4	0.87	0.75	2.6	5.8	9.8	0.39	0.44	1.2	0.66
Acid Extractable Calcium (Ca)	ug/g				57000	64000	74000	64000	65000	65000	54000	56000	72000	65000	66000	64000	64000	71000	66000	67000	64000
Acid Extractable Chromium (Cr)	ug/g	26	110	90	22	33	22	21	33	48	43	38	30	28	24	22	29	36	18	24	24
Acid Extractable Cobalt (Co)	ug/g				8.9	9	6.6	11	13	15	9.8	9.8	9.2	8.7	8.2	9.8	11	7.2	8.8	7.6	7.2
Acid Extractable Copper (Cu)	ug/g	16	110	197	41	120	54	54	67	110	120	110	78	85	91	74	84	47	38	62	79
Acid Extractable Iron (Fe)	ug/g	2%	4%		23000	25000	21000	18000	22000	22000	23000	24000	23000	24000	25000	21000	20000	21000	23000	23000	23000
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	28	45	120	110	130	160	150	230	41	43	120	110	110	52	120	67	
Acid Extractable Magnesium (Mg)	ug/g				17000	22000	19000	18000	15000	18000	15000	12000	24000	17000	13000	14000	18000	15000	21000	18000	18000
Acid Extractable Manganese (Mn)	ug/g	460	1100		490	510	470	480	590	540	500	440	610	530	450	480	500	450	520	440	
Acid Extractable Molybdenum (Mo)	ug/g				0.79	1.8	0.87	0.74	0.86	1	1.4	1.3	1.3	1.4	0.9	0.74	1.6	0.71	0.82	1.2	1
Acid Extractable Nickel (Ni)	ug/g	16	75		21	25	17	27	51	54	33	32	23	23	20	39	44	19	21	20	18
Acid Extractable Phosphorus (P)	ug/g				980	1300	850	1000	1300	1000	1400	1500	1300	1000	910	1300	780	910	1100	1200	1200
Acid Extractable Potassium (K)	ug/g				1700	1900	1200	1200	1600	1400	1100	1900	1900	1200	1200	1100	1500	1800	1500	1500	1500
Acid Extractable Selenium (Se)	ug/g				<0.50	0.74	<0.50	<0.50	<0.50	<0.50	0.59	0.67	0.54	0.56	<0.50	<0.50	<0.50	<0.50	0.54	0.51	<0.50
Acid Extractable Silver (Ag)	ug/g				<0.20	0.79	1.1	1.5	2.2	5.9	3.3	2.2	0.48	0.54	4.4	2.5	3.3	1.1	<0.20	1.7	0.66
Acid Extractable Sodium (Na)	ug/g				340	560	250	210	220	390	260	260	550	480	220	230	220	390	500	470	320
Acid Extractable Strontium (Sr)	ug/g				130	160	130	110	120	150	110	120	170	140	120	110	120	140	150	150	130
Acid Extractable Thallium (Tl)	ug/g				0.15	0.22	0.11	0.08	0.11	0.11	0.14	0.16	0.2	0.19	0.1	0.091	0.12	0.15	0.15	0.15	0.15
Acid Extractable Tin (Sn)	ug/g				2.6	5.2	20	28	9.4	5.8	11	3.6	28	10	3.4	8.3	12	9.4	1.7	12	6.8
Acid Extractable Uranium (U)	ug/g				0.63	0.74	0.54	0.51	0.55	0.57	0.55	0.56	0.67	0.63	0.53	0.51	0.53	0.54	0.57	0.61	0.66
Acid Extractable Vanadium (V)	ug/g				25	25	23	20	23	23	23	24	23	23	33	28	25	20	22	23	29
Acid Extractable Zinc (Zn)	ug/g	120	820	315	240	470	200	270	320	420	470	500	380	380	240	290	340	180	320	310	
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	0.076	0.27	0.25	0.74	0.39	0.52	0.46	0.62	0.15	0.12	9.1	0.41	0.35	1.2	0.07	2.5	0.18
PAHs																					
Acenaphthene	ug/g			88.9	<0.10	<0.10	<0.0050	0.043	0.1	0.17	0.098	8.1	<0.10	<0.10	0.044	0.086	0.16	<0.10	<0.10	0.22	<0.10
Acenaphthylene	ug/g			128	<0.10	<0.10	<0.0050	0.0093	0.029	<0.10	0.045	0.13	<0.10	<0.10	0.0088	0.025	0.035	<0.10	<0.10	<0.10	<0.10
Anthracene	ug/g	0.22	370	245	<0.10	0.17	<0.0050	0.051	0.14	0.21	0.17	11	0.13	0.16	0.065	0.096	0.25	<0.10	<0.10	0.29	<0.10
Benzo(a)anthracene	ug/g	0.32	1480	385	0.27	0.78	0.011	0.14	0.35	0.53	0.56	17	0.66	0.81	0.22	0.31	0.61	0.16	<0.10	1.1	<0.10
Benzo(a)pyrene	ug/g	0.37	1440	782	0.3	0.97	0.011	0.13	0.32	0.48	0.54	12	0.79	1	0.23	0.28	0.52	0.16	<0.10	1.5	<0.10
Benzo(b)fluoranthene	ug/g				0.52	1.7	0.22	0.21	0.5	1.4	0.82	1.6	1.4	1.7	0.79	0.47	0.77	0.28	0.14	1.9	<0.10
Benzo(g,h,i)perylene	ug/g	0.17	320		0.27	0.88	0.0098	0.098	0.24	0.38	0.39	6.3	0.76	0.74	0.19	0.21	0.33	0.12	<0.10	1.1	<0.10
Benzo(k)fluoranthene	ug/g	0.24	1340		0.18	0.56	0.0068	0.075	0.18	0.29	0.27	5.5	0.49	0.57	<0.10	0.16	0.29	<0.10	<0.10	0.69	<0.10
Chrysene	ug/g	0.34	460	862	0.36	1	0.016	0.14	0.34	0.56	0.49	14	0.89	1.1	0.25	0.31	0.57	0.17	<0.10	1.1	<0.10
Dibenzo(a,h)anthracene	ug/g	0.06	130	135	<0.10	0.14	<0.0050	0.02	0.052	<0.10	0.096	2	0.13	0.14	0.037	0.045	0.086	<0.10	<0.10	0.26	<0.10
Fluoranthene	ug/g	0.75	1020	2355	0.92	2.8	0.061	0.42	1	1.6	1.3	46	2.5	3	0.77	0.93	1.7	0.63	0.4	2.6	0.14
Fluorene	ug/g	0.19	160	144	<0.10	0.11	<0.0050	0.05	0.14	0.23	0.1	8.8	<0.10	0.11	0.06	0.12	0.19	<0.10	0.12	0.17	<0.10
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320		0.25	0.83	0.0093	0.097	0.24	0.38	0.4	6.4	0.7	0.78	0.19	0.21	0.36	0.11	<0.10	1.1	<0.10
Methylnaphthalene, 2-(1-)	ug/g			201	<0.10	<0.10	<0.0050	0.026	0.1	0.13	0.033	1	<0.10	<0.10	0.01	0.062	0.065	<0.10	<0.10	<0.10	<0.10
1-Methylnaphthalene	ug/g				<0.10	<0.10	<0.0050	0.017	0.048	<0.10	0.07	1.6	<0.10	<0.10	0.019	0.041	0.045	<0.10	<0.10	0.11	<0.10
2-Methylnaphthalene	ug/g				<0.10	<0.10	<0.0050	0.017	0.048	<0.10	0.07	1.6	<0.10	<0.10	0.019	0.041	0.045	<0.10	<0.10	0.11	<0.10
Naphthalene	ug/g			391	<0.10	<0.10	<0.0050	0.041	<0.020	<0.10	0.041	2.6	<0.10	<0.10	<0.010	<0.050	<0.050	<0.10	<0.10	0.13	<0.10
Phenanthrene	ug/g	0.56	950	515	0.32	1.1	0.012	0.26	0.75	1.1	0.65	49	0.91								

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station					CC-C05										CC-C24									
Sample ID					CC-C05-WEST-15-30	CC-C05-WEST-30-45	CC-C05-WEST-45-60	CC-C05-WEST-60-75	CC-C05-WEST-75-90	CC-C05-CENTRE-0-15	CC-C05-EAST-0-15	CC-C05-EAST-15-30	CC-C24-WEST-0-15	CC-C24-WEST-15-30	CC-C24-CENTRE-0-15	CC-C24-CENTRE-15-30	CC-C24-CENTRE-30-45	CC-C24-CENTRE-45-60	CC-C24-EAST-0-15	CC-C24-EAST-15-30	CC-C25-WEST-0-15			
Sampling Date and Time					4/20/21 10:00	4/20/21 10:00	4/20/21 10:00	4/20/21 10:00	4/20/21 11:00	4/20/21 9:30	4/20/21 8:00	4/20/21 9:00	4/20/21 12:00	4/20/21 12:00	4/20/21 11:30	4/20/21 11:30	4/20/21 11:30	4/20/21 11:00	4/20/21 11:00	4/20/21 14:00				
Quality Criteria					PSQG					CSQG														
PARAMETER	Units	O.Reg. 153/04 & LEL	SEL	PEL																				
PHYSICAL																								
Moisture	%				18	33	42	49	46	24	25	35	52	27	19	18	35	30	38	31	43			
ANIONS & NUTRIENTS																								
Total Ammonia-N	ug/g				85	188	286	269	228	25	93	157	84	<20	<20	31	119	114	43	57	113			
Nitrogen (N)	%				0.035	0.12	0.22	0.33	0.3	0.074	0.091	0.21	0.3	0.067	0.035	0.019	0.13	0.13	0.16	0.096	0.22			
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		349	1240	2200	3260	3010	736	908	2120	3010	668	353	187	1350	1260	1580	957	2250			
Nitrite (N)	ug/g				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
Nitrate (N)	ug/g				<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2			
Nitrate + Nitrite (N)	ug/g				<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3			
METALS																								
Acid Extractable Aluminum (Al)	ug/g				4900	9700	11000	12000	8900	8100	9700	11000	11000	9000	6600	3700	11000	7900	7300	9400	9300			
Acid Extractable Antimony (Sb)	ug/g				0.49	2.8	3	1.5	0.64	1	2.5	1.4	0.47	0.43	1	2.5	1.8	0.75	0.66	0.89				
Acid Extractable Arsenic (As)	ug/g	6	33	17	2.9	6.2	6.5	6.2	4.5	5.3	6.1	7.1	5.9	4.5	3.5	2.6	8.4	5.3	3.9	5.1	4.5			
Acid Extractable Barium (Ba)	ug/g				57	220	98	210	260	100	98	140	120	55	70	43	250	170	110	120	99			
Acid Extractable Beryllium (Be)	ug/g				0.29	0.51	0.56	0.61	0.46	0.47	0.53	0.65	0.59	0.45	0.39	0.23	0.61	0.45	0.39	0.5	0.5			
Acid Extractable Bismuth (Bi)	ug/g				<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
Acid Extractable Boron (B)	ug/g				12	29	31	36	26	18	19	20	20	11	16	10	36	25	15	15	20			
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	1.5	16	29	21	4	0.98	1.3	3.2	0.94	0.49	0.58	0.63	17	16	0.52	0.89	0.79			
Acid Extractable Calcium (Ca)	ug/g				67000	63000	53000	64000	67000	72000	62000	55000	62000	58000	69000	67000	59000	58000	64000	64000	67000			
Acid Extractable Chromium (Cr)	ug/g	26	110	90	18	47	56	34	20	30	34	30	20	18	15	37	18	20	23	27				
Acid Extractable Cobalt (Co)	ug/g				6	14	16	13	7.9	8.7	9	9.4	9.1	7.8	7.2	4.6	17	12	6.6	8.2	8.2			
Acid Extractable Copper (Cu)	ug/g	16	110	197	38	120	170	140	46	62	98	87	110	46	38	89	120	120	48	51	72			
Acid Extractable Iron (Fe)	ug/g	2%	4%		21000	22000	21000	22000	18000	24000	35000	25000	25000	21000	19000	17000	24000	19000	18000	18000	21000			
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	65	150	170	100	56	90	160	98	55	24	48	140	200	120	48	66	39			
Acid Extractable Magnesium (Mg)	ug/g				14000	14000	18000	12000	11000	7800	18000	17000	20000	11000	17000	15000	15000	17000	14000	21000	21000			
Acid Extractable Manganese (Mn)	ug/g	460	1100		410	510	500	540	500	590	580	670	520	550	490	390	600	520	470	530	500			
Acid Extractable Molybdenum (Mo)	ug/g				0.61	0.93	1.1	0.92	0.74	1.3	1.3	1.7	1.7	0.66	0.59	0.53	1.1	0.87	0.85	0.88	1.3			
Acid Extractable Nickel (Ni)	ug/g	16	75		16	58	58	44	22	23	24	26	24	18	17	10	69	38	16	20	20			
Acid Extractable Phosphorus (P)	ug/g				880	1500	1700	1400	890	1200	1100	1400	810	870	950	1600	1500	970	860	1300	1300			
Acid Extractable Potassium (K)	ug/g				1000	1600	1600	1700	1200	1700	1900	1600	1900	1400	1500	1800	1300	1400	1600	1700	1700			
Acid Extractable Selenium (Se)	ug/g				<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	0.68	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.5			
Acid Extractable Silver (Ag)	ug/g				0.28	4.7	12	8	1.5	0.89	0.4	0.81	0.69	<0.20	<0.20	<0.20	5.2	5.4	0.28	0.55	0.51			
Acid Extractable Sodium (Na)	ug/g				180	270	250	290	240	360	450	540	520	260	250	200	490	380	420	430	410			
Acid Extractable Strontium (Sr)	ug/g				120	120	110	150	150	140	140	120	110	110	120	100	130	99	120	120	140			
Acid Extractable Thallium (Tl)	ug/g				0.087	0.15	0.15	0.15	0.11	0.16	0.16	0.14	0.24	0.12	0.12	0.12	0.067	0.17	0.12	0.15	0.14			
Acid Extractable Tin (Sn)	ug/g				5.1	10	15	13	7.3	21	45	25	4.6	2.2	2.8	5.7	12	14	3.2	5	3.4			
Acid Extractable Uranium (U)	ug/g				0.5	0.64	0.64	0.65	0.47	0.7	0.57	0.63	0.77	0.79	0.49	0.44	0.73	0.57	0.55	1	0.62			
Acid Extractable Vanadium (V)	ug/g				30	26	25	25	21	22	40	26	27	25	20	23	26	20	22	25	22			
Acid Extractable Zinc (Zn)	ug/g	120	820	315	190	420	570	400	160	260	380	300	440	170	190	200	480	390	220	230	340			
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	0.28	0.45	0.55	0.35	0.12	0.12	0.16	0.28	0.14	0.11	0.082	0.079	0.43	0.48	0.095	0.39	0.15			
PAHs																								
Acenaphthene	ug/g				88.9	<0.050	0.14	0.51	0.2	<0.10	0.86	<0.050	<0.10	<0.050	<0.050	<0.050	2.3	0.22	<0.050	<0.050	<0.10			
Acenaphthylene	ug/g				128	<0.050	<0.050	<0.10	<0.10	<0.10	<0.050	<0.050	<0.10	<0.050	<0.050	0.073	<0.050	<0.050	<0.050	<0.10	<0.10			
Anthracene	ug/g	0.22	370	245	<0.050	0.12	0.31	0.19	<0.10	1.7	<0.050	<0.10	0.12	<0.050	<0.050	3.7	0.19	<0.050	<0.050	0.12				
Benzo(a)anthracene	ug/g	0.32	1480	385	0.2	0.39	0.53	0.48	0.16	4.9	<0.050	<0.10	0.61	0.19	0.18	4.4	0.5	0.25	0.21	0.64				
Benzo(a)pyrene	ug/g	0.37	1440	782	0.19	0.37	0.46	0.45	0.19	3.8	<0.050	<0.10	0.74	0.21	0.17	2.6	0.44	0.29	0.21	0.69				
Benzo(b)fluoranthene	ug/g				0.34	0.63	0.74	0.77	0.71	5.3	0.77	0.13	1.2	0.36	0.28	3.2	0.71	0.48	0.37	1.1				
Benzo(g,h,i)perylene	ug/g	0.17	320		0.14	0.3	0.29	0.33	0.13	2.1	<0.050	<0.10	0.62	0.18	0.13	0.95	0.33	0.24	0.17	0.52				
Benzo(k)fluoranthene	ug/g	0.24	1340		0.12	0.22	0.21	0.26	<0.10	1.6	<0.050	<0.10	0.4	0.1	0.082	1.2	0.24	0.14	0.097	0.32				
Chrysene	ug/g	0.34	460	862	0.25	0.43	0.57	0.49	0.17	4.9	0.05	<0.10	0.81	0.31	0.22	3.9	0.5	0.34	0.27	0.83				
Dibenzo(a,h)anthracene	ug/g	0.06	130	135	<0.050	0.055	<0.10	<0.050	<0.10	0.52	<0.050	<0.10	0.11	<0.050	<0.050	<0.050	0.33	0.078	<0.050	<0.050	<0.10			
Fluoranthene	ug/g	0.75	1020	2355	0.78	1.3	1.8	1.4	0.37	15	0.17	0.26	2.5	0.68	0.62	0.54	14	1.5	0.95	0.71	2.5			
Fluorene	ug/g	0.19	160	144	<0.050	0.19	<0.050	0.19	<0.10	0.79	<0.050	<0.10	<0.050	<0.050	<0.050	<0.050	3	0.25	<0.050	<0.050	<0.10			
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320		0.14	0.3	0.33	0.34	0.14	2.4	<0.050	<0.10	0.62	0.18	0.13									

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station					CC-C25										CC-C26								
Sample ID					CC-C25-WEST-15-30	CC-C25-WEST-30-45	CC-C25-WEST-45-60	CC-C25-WEST-60-75	CC-C25-CENTRE-0-15	CC-C25-CENTRE-15-30	CC-C25-CENTRE-30-45	CC-C25-CENTRE-45-60	CC-C25-EAST-0-15	CC-C25-EAST-15-30	CC-C26-WEST-0-15	CC-C26-WEST-15-30	CC-C26-WEST-30-45	CC-C26-WEST-45-60	CC-C26-CENTRE-0-15	CC-C26-CENTRE-15-30	CC-C26-CENTRE-30-45		
Sampling Date and Time					4/20/21 14:00	4/20/21 14:00	4/20/21 14:00	4/20/21 14:00	4/20/21 13:30	4/20/21 13:30	4/20/21 13:30	4/20/21 13:30	4/20/21 13:00	4/20/21 13:00	4/21/21 10:00	4/21/21 10:00	4/21/21 10:00	4/21/21 10:00	4/21/21 9:30	4/21/21 9:30	4/21/21 9:30		
Quality Criteria		PSQG		CSQG																			
PARAMETER	Units	O.Reg. 153/04 & LEL	SEL	PEL																			
PHYSICAL																							
Moisture	%				30	32	43	44	23	20	19	37	51	40	29	25	24	45	20	20	21		
ANIONS & NUTRIENTS																							
Total Ammonia-N	ug/g				168	238	387	454	22	90	98	349	219	228	65	145	133	428	35	99	146		
Nitrogen (N)	%				0.12	0.14	0.24	0.28	0.066	0.052	0.045	0.15	0.29	0.16	0.11	0.093	0.12	0.36	0.048	0.058	0.063		
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		1200	1390	2440	2830	655	515	451	1510	2950	1610	1060	932	1150	3590	479	582	629		
Nitrite (N)	ug/g				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Nitrate (N)	ug/g				<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Nitrate + Nitrite (N)	ug/g				<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		
METALS																							
Acid Extractable Aluminum (Al)	ug/g				7300	10000	14000	15000	6900	6500	6100	9800	11000	10000	6500	7700	7000	14000	5300	6400	6000		
Acid Extractable Antimony (Sb)	ug/g				0.75	2.2	3.2	3	0.78	0.52	0.68	3.2	1.4	0.77	5.4	1.6	3.8	3.7	0.41	0.41	0.36		
Acid Extractable Arsenic (As)	ug/g	6	33	17	4.6	6.1	9.2	9.7	3.3	3.9	3.7	6.8	5.4	5.8	4.3	4.7	5.1	11	3.1	3.6	3.7		
Acid Extractable Barium (Ba)	ug/g				78	190	370	260	74	69	64	230	120	97	65	100	130	260	68	63	62		
Acid Extractable Beryllium (Be)	ug/g				0.42	0.54	0.68	0.73	0.39	0.37	0.35	0.54	0.6	0.53	0.35	0.45	0.4	0.74	0.31	0.39	0.34		
Acid Extractable Bismuth (Bi)	ug/g				<1.0	<1.0	1.7	2.7	<1.0	1.1	<1.0	1.4	<1.0	<1.0	<1.0	1.1	3.9	<1.0	<1.0	<1.0	<1.0		
Acid Extractable Boron (B)	ug/g				21	34	57	46	18	21	21	45	21	18	30	47	82	15	22	25	25		
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	0.99	12	44	29	0.63	0.6	0.66	18	0.96	1.2	0.85	10	22	76	0.56	0.7	0.86		
Acid Extractable Calcium (Ca)	ug/g				67000	59000	54000	52000	70000	69000	68000	60000	68000	65000	69000	70000	63000	53000	73000	70000	70000		
Acid Extractable Chromium (Cr)	ug/g	26	110	90	24	45	90	67	21	21	18	51	34	28	21	37	63	280	18	18	19		
Acid Extractable Cobalt (Co)	ug/g				7.9	14	20	16	6.9	6.4	6.1	15	9.2	8.8	6.9	11	18	21	5.5	6.4	6.3		
Acid Extractable Copper (Cu)	ug/g	16	110	197	55	90	220	170	66	44	59	120	95	64	57	90	160	410	43	52	52		
Acid Extractable Iron (Fe)	ug/g	2%	4%		20000	21000	26000	29000	23000	19000	18000	22000	25000	23000	19000	20000	18000	30000	18000	19000	17000		
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	50	120	230	220	89	41	72	140	55	54	69	93	140	240	70	51	63		
Acid Extractable Magnesium (Mg)	ug/g				20000	14000	14000	13000	19000	17000	14000	19000	21000	19000	18000	16000	14000	16000	16000	16000	13000		
Acid Extractable Manganese (Mn)	ug/g	460	1100		500	540	560	570	460	470	460	540	530	570	460	510	610	430	480	480	480		
Acid Extractable Molybdenum (Mo)	ug/g				0.86	0.89	1.5	1.3	0.79	0.65	0.57	0.99	1.6	0.77	0.93	0.91	3.2	0.62	0.58	0.59	0.59		
Acid Extractable Nickel (Ni)	ug/g	16	75		20	58	91	62	16	16	15	68	24	23	21	29	43	91	12	15	17		
Acid Extractable Phosphorus (P)	ug/g				1100	1700	2300	2100	1200	920	1600	1500	970	1300	980	1200	1300	2500	950	920	1000		
Acid Extractable Potassium (K)	ug/g				1400	1700	2100	2200	1500	1400	1200	1700	2000	1600	1300	1400	1200	2100	1200	1300	1200		
Acid Extractable Selenium (Se)	ug/g				<0.50	<0.50	0.67	0.73	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	<0.50	<0.50	0.84	<0.50	<0.50	<0.50	<0.50		
Acid Extractable Silver (Ag)	ug/g				0.73	3.6	16	9.4	<0.20	1.6	0.21	6.1	0.86	0.56	0.28	3.1	5	11	<0.20	0.25	0.75		
Acid Extractable Sodium (Na)	ug/g				240	260	360	290	260	220	200	300	500	350	250	280	230	400	220	210	220		
Acid Extractable Strontium (Sr)	ug/g				130	120	130	110	130	120	120	130	170	140	110	120	82	100	120	120	120		
Acid Extractable Thallium (Tl)	ug/g				0.14	0.14	0.22	0.24	0.12	0.11	0.1	0.15	0.22	0.16	0.13	0.13	0.25	0.095	0.11	0.11	0.11		
Acid Extractable Tin (Sn)	ug/g				3.3	8.7	22	34	3.7	7.6	4.2	9.9	4.5	4.4	14	8.6	22	81	6.5	2.5	3.3		
Acid Extractable Uranium (U)	ug/g				0.58	0.63	0.76	0.73	0.61	0.54	0.48	0.62	0.76	0.56	0.57	0.54	0.49	0.87	0.54	0.5	0.43		
Acid Extractable Vanadium (V)	ug/g				23	24	31	21	29	24	31	22	27	25	21	20	21	28	23	22	19		
Acid Extractable Zinc (Zn)	ug/g	120	820	315	260	450	780	870	260	210	170	430	430	330	260	340	530	1500	200	240	170		
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	0.38	0.46	0.78	1.1	0.098	0.44	1.8	0.14	0.44	0.46	0.17	0.51	0.53	0.6	1.5	0.12	0.43		
PAHs																							
Acenaphthene	ug/g				88.9	0.13	0.27	0.15	0.37	0.094	<0.050	0.26	0.39	<0.10	0.074	<0.050	0.11	0.37	0.67	<0.050	<0.050	0.058	
Acenaphthylene	ug/g				128	<0.050	<0.050	<0.10	0.11	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	
Anthracene	ug/g	0.22	370	245	0.14	0.19	0.17	0.32	0.16	0.43	0.26	0.43	0.11	0.08	0.1	0.3	0.41	<0.050	<0.050	<0.050	0.086		
Benzo(a)anthracene	ug/g	0.32	1480	385	0.75	0.46	0.5	0.9	0.66	0.26	1	0.64	0.56	0.57	0.43	0.37	0.92	0.86	0.15	0.23	0.32		
Benzo(a)pyrene	ug/g	0.37	1440	782	0.72	0.41	0.48	0.78	0.62	0.3	0.69	0.54	0.66	0.61	0.44	0.36	0.85	0.75	0.16	0.23	0.3		
Benzo(b)fluoranthene	ug/g				1.2	0.59	0.77	1.2	0.97	0.5	1.2	0.83	1.1	0.69	0.6	1.2	1.1	0.26	0.39	0.45	0.45		
Benzo(g,h,i)perylene	ug/g	0.17	320		0.53	0.25	0.38	0.52	0.44	0.26	0.32	0.31	0.54	0.48	0.36	0.3	0.62	0.55	0.14	0.19	0.22		
Benzo(k)fluoranthene	ug/g	0.24	1340		0.4	0.22	0.27	0.43	0.35	0.22	0.18	0.27	0.25	0.3	0.21	0.18	0.42	0.39	0.092	0.11	0.16		
Chrysene	ug/g	0.34	460	862	0.95	0.48	0.52	0.99	0.68	0.33	0.98	0.66	0.8	0.76	0.57	0.44	0.9	1	0.2	0.29	0.4		
Dibenzo(a,h)anthracene	ug/g	0.06	130	135	0.12	0.065	0.1	0.15	0.1	<0.050	0.078	0.1	<0.10	0.091	0.051	<0.050	0.13	0.1	<0.050	<0.050	<0.050		
Fluoranthene	ug/g	0.75	1020	2355	2.9	1.5	1.5	2.5	2.1	0.86	3.1	2.1	2.2	2	1.4	1.1	2.1	2.3	0.57	0.79	1.2		
Fluorene	ug/g	0.19	160	144	0.13	0.19	0.21	0.32	0.085	0.24	0.29	0.29	<0.10	0.091	<0.050	0.096	0.3	0.39	<0.050	<0.050	0.064		
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320		0.59	0.29	0.37	0.6	0.45	0.25	0.4	0.36	0.56	0.51	0.38	0.32	0.66	0.63	0.15	0.21	0.24		
Methylnaphthalene, 2-(1-)	ug/g			201	0.16	<0.071	0.31	0.38	<0.071	<0.071	<0.071	0.28	<0.14	<0.071	<0.071	<0.071	0.35	0.58	<0.071	<0.071	<0.071		
1-Methylnaphthalene	ug/g				0.066	<0.050	0.16	<0.050	0.18	<0.050	0.17	<0.050	<0.10	<0.050	<0.050	<0.050	0.12	0.32	<0.050	<0.050	<0.050		
2-Methylnaphthalene	ug/g				0.096	<0.050	0.14	0.21	<0.050	<0.050	<0.050	0.11	<0.10	<0.050	<0.050	0.051	0.23	0.26	<0.050	<0.050	<0.050		
Naphthalene	ug/g			391	0.1																		

Table A1: Chedoke Creek Sediment Sample Analytical Results

Station					CC-C26-CENTRE-45-60	CC-C26-EAST-0-15	CC-C26-EAST-15-30	CC-C26-EAST-30-45	CC-C26-EAST-45-60
Sample ID					4/21/21 9:30	4/21/21 9:00	4/21/21 9:00	4/21/21 9:00	4/21/21 9:00
Sampling Date and Time									
Quality Criteria		PSQG		CSQG					
PARAMETER	Units	O.Reg. 153/04 & LEL	SEL	PEL					
PHYSICAL									
Moisture	%				25	46	38	33	41
ANIONS & NUTRIENTS									
Total Ammonia-N	ug/g				210	205	249	244	462
Nitrogen (N)	%				0.081	0.25	0.16	0.14	0.19
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		815	2480	1640	1380	1900
Nitrite (N)	ug/g				<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate (N)	ug/g				<2	<2	<2	<2	<2
Nitrate + Nitrite (N)	ug/g				<3	<3	<3	<3	<3
METALS									
Acid Extractable Aluminum (Al)	ug/g				6800	11000	11000	9600	12000
Acid Extractable Antimony (Sb)	ug/g				0.47	1.1	0.74	0.79	3.8
Acid Extractable Arsenic (As)	ug/g	6	33	17	4	5.3	5.9	5.1	8.9
Acid Extractable Barium (Ba)	ug/g				80	110	96	99	320
Acid Extractable Beryllium (Be)	ug/g				0.39	0.57	0.57	0.51	0.63
Acid Extractable Bismuth (Bi)	ug/g				<1.0	<1.0	<1.0	<1.0	1.1
Acid Extractable Boron (B)	ug/g				33	27	30	35	65
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	1.4	1.1	1.3	1.8	26
Acid Extractable Calcium (Ca)	ug/g				68000	73000	73000	68000	58000
Acid Extractable Chromium (Cr)	ug/g	26	110	90	24	31	29	30	72
Acid Extractable Cobalt (Co)	ug/g				7.9	8.8	9.4	8.7	20
Acid Extractable Copper (Cu)	ug/g	16	110	197	70	81	62	71	150
Acid Extractable Iron (Fe)	ug/g	2%	4%		20000	24000	24000	23000	26000
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	110	44	53	75	190
Acid Extractable Magnesium (Mg)	ug/g				15000	21000	20000	18000	15000
Acid Extractable Manganese (Mn)	ug/g	460	1100		510	550	590	560	600
Acid Extractable Molybdenum (Mo)	ug/g				0.69	1.2	1	0.95	2.8
Acid Extractable Nickel (Ni)	ug/g	16	75		22	23	23	23	76
Acid Extractable Phosphorus (P)	ug/g				1000	1300	1200	1300	2000
Acid Extractable Potassium (K)	ug/g				1200	2000	1900	1600	1700
Acid Extractable Selenium (Se)	ug/g				<0.50	0.58	0.51	<0.50	0.67
Acid Extractable Silver (Ag)	ug/g				1.9	0.52	0.46	1.1	7.6
Acid Extractable Sodium (Na)	ug/g				260	460	330	270	320
Acid Extractable Strontium (Sr)	ug/g				120	190	170	130	130
Acid Extractable Thallium (Tl)	ug/g				0.11	0.2	0.18	0.15	0.17
Acid Extractable Tin (Sn)	ug/g				6.8	3.8	4.5	7.3	17
Acid Extractable Uranium (U)	ug/g				0.51	0.65	0.57	0.63	0.67
Acid Extractable Vanadium (V)	ug/g				21	25	25	25	26
Acid Extractable Zinc (Zn)	ug/g	120	820	315	240	400	340	300	690
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	1.3	0.11	0.16	0.54	0.57
PAHs									
Acenaphthene	ug/g			88.9	0.082	<0.10	0.063	0.088	0.56
Acenaphthylene	ug/g			128	<0.050	<0.10	<0.050	<0.050	<0.050
Anthracene	ug/g	0.22	370	245	0.14	<0.10	0.12	0.11	0.26
Benzo(a)anthracene	ug/g	0.32	1480	385	0.31	0.56	0.6	0.51	0.48
Benzo(a)pyrene	ug/g	0.37	1440	782	0.26	0.69	0.65	0.55	0.43
Benzo(b)fluoranthene	ug/g				0.39	1.1	0.97	0.8	0.7
Benzo(g,h,i)perylene	ug/g	0.17	320		0.2	0.62	0.54	0.45	0.31
Benzo(k)fluoranthene	ug/g	0.24	1340		0.14	0.31	0.35	0.29	0.21
Chrysene	ug/g	0.34	460	862	0.35	0.79	0.79	0.67	0.51
Dibenzo(a,h)anthracene	ug/g	0.06	130	135	<0.050	<0.10	0.08	0.067	0.053
Fluoranthene	ug/g	0.75	1020	2355	0.99	2.1	1.9	1.8	1.6
Fluorene	ug/g	0.19	160	144	0.11	<0.10	0.072	0.087	0.36
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320		0.22	0.66	0.6	0.49	0.34
Methylnaphthalene, 2-(1-)	ug/g			201	<0.071	<0.14	<0.071	<0.071	0.32
1-Methylnaphthalene	ug/g				<0.050	<0.10	<0.050	<0.050	0.2
2-Methylnaphthalene	ug/g				<0.050	<0.10	<0.050	<0.050	0.12
Naphthalene	ug/g			391	<0.050	<0.10	<0.050	<0.050	<0.050
Phenanthrene	ug/g	0.56	950	515	0.68	0.72	0.7	0.72	1.3
Pyrene	ug/g	0.49	850	875	0.75	1.6	1.5	1.3	1.3
SIZE DISTRIBUTION									
< -1 Phi (2 mm)	%				99				
< 0 Phi (1 mm)	%				97				
< +1 Phi (0.5 mm)	%				94				
< +2 Phi (0.25 mm)	%				71				
< +3 Phi (0.12 mm)	%				39				
< +4 Phi (0.062 mm)	%				30				
< +5 Phi (0.031 mm)	%				26				
< +6 Phi (0.016 mm)	%				22				
< +7 Phi (0.0078 mm)	%				14				
< +8 Phi (0.0039 mm)	%				12				
< +9 Phi (0.0020 mm)	%				8.2				
Gravel	%				1.3				
Coarse Sand	%				41				
Fine Sand	%				28				
Silt	%				19				
Clay	%				12				
Loss on Ignition	%w/w				4.3				
Wet Bulk Density	g/cm3				2				
Liquid Limit	%w/w				COMMENT				
Plastic Limit	%w/w				COMMENT				
Plasticity Index	%w/w				COMMENT				
Dissolved BOD5	mg/L								

Notes

1. PSQG: Provincial Sediment Quality Guidelines for the protection and management of aquatic sediment quality in
2. CSQG: Canadian Council of Ministers of the Environment Canadian Sediment Quality Guidelines for the protection
3. MDL: Method Detection Limit provided by Bureau Veritas, Mississauga, ON (see raw data)
4. "Less than" indicates that the reported concentration was less than the detection limit
5. Green shaded cells indicate concentrations that exceed the PSQG LEL
6. Blue shaded values indicate concentrations that exceed the PSQG SEL
7. Purple shaded values indicate concentrations that exceed the CSQG PEL
8. Grey shaded values indicate concentrations that exceed both the PSQG SEL and CSQG PEL

Table A2: Princess Point Embayment Sediment Sample Analytical Results

PARAMETER	Quality Criteria	Units	O.Reg. 153/04 & LEL	PSQG SEL	CSQG PEL	Station	PP-C06					PP-C07					PP-C08				PP-C09						
						Sample ID	PP-C05-45-60	PP-C06-0-15	PP-C06-15-30	PP-C06-30-45	PP-C06-45-60	PP-C06-60-75	PP-C07-0-15	PP-C07-15-30	PP-C07-30-45	PP-C07-45-60	PP-C07-60-75	PP-C08-0-15	PP-C08-15-30	PP-C08-30-45	PP-C08-45-60	PP-C09-0-15	PP-C09-15-30	PP-C09-30-45	PP-C09-45-60	PP-C09-60-75	
						Sampling Date and Time	4/20/21 14:45	4/23/21 9:30	4/23/21 9:30	4/23/21 9:30	4/23/21 9:30	4/23/21 9:30	4/23/21 10:30	4/23/21 10:30	4/23/21 10:30	4/23/21 10:30	4/23/21 10:30	4/23/21 9:00	4/23/21 9:00	4/23/21 9:00	4/23/21 9:00	4/22/21 13:00	4/22/21 14:30	4/22/21 14:30	4/22/21 14:30	4/22/21 14:30	
PHYSICAL		%					38	51	44	37	41	44	45	35	36	32	30	33	23	23	20	46	42	33	35	38	
ANIONS & NUTRIENTS																											
Total Ammonia-N	ug/g						367	46	80	166	305	281	26	82	146	157	172	41	81	96	104	<20	68	151	233	279	
Nitrogen (N)	%						0.17	0.23	0.14	0.14	0.18	0.19	0.18	0.12	0.14	0.11	0.1	0.14	0.049	0.058	0.069						
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800				1720	2260	1370	1440	1750	1940	1760	1210	1430	1090	1040	1370	491	577	693	1780	1730	1370	1550	1850	
Nitrite (N)	ug/g						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Nitrate (N)	ug/g						<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2						
Nitrate + Nitrite (N)	ug/g						<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3						
METALS																											
Acid Extractable Aluminum (Al)	ug/g						11000	11000	9300	9800	11000	11000	9700	8200	8900	7600	7600	7800	5800	5500	6600	10000	11000	9800	11000	12000	
Acid Extractable Antimony (Sb)	ug/g						1.8	0.78	0.67	1	3.6	3.3	0.75	0.6	0.64	0.65	0.57	0.64	0.36	0.37	0.84	0.78	0.67	0.64	0.77	1.8	
Acid Extractable Arsenic (As)	ug/g	6	33	17			6.4	4.6	4.9	5.6	9.2	7.3	4.3	4.7	5.6	4	4.1	4.3	3	2.9	3.3	5.3	5.8	5	5.4	7.4	
Acid Extractable Barium (Ba)	ug/g						140	110	84	120	240	220	90	77	90	84	78	77	60	56	71	94	110	110	120	190	
Acid Extractable Beryllium (Be)	ug/g						0.6	0.52	0.44	0.5	0.64	0.57	0.5	0.44	0.46	0.4	0.4	0.43	0.3	0.36	0.53	0.56	0.51	0.57	0.64		
Acid Extractable Bismuth (Bi)	ug/g						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Acid Extractable Boron (B)	ug/g						80	16	15	32	50	48	20	21	31	35	38	20	18	22	32	16	21	24	42	57	
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5			3.9	1	1.2	3	2.2	1.8	0.8	1.2	0.9	0.52	0.64	0.61	0.96	1.4	1.7	1.6	1.9	6			
Acid Extractable Calcium (Ca)	ug/g						63000	75000	75000	65000	63000	62000	75000	73000	73000	68000	68000	72000	71000	70000	71000	78000	77000	69000	66000	65000	
Acid Extractable Chromium (Cr)	ug/g	26	110	90			43	29	25	33	54	48	27	23	27	23	24	21	16	17	20	29	32	28	38	55	
Acid Extractable Cobalt (Co)	ug/g						13	9	8.4	10	18	17	8.5	7.7	7.8	7.2	7.2	7.2	5.7	5.7	6.8	9	9.1	8.4	10	14	
Acid Extractable Copper (Cu)	ug/g	16	110	197			100	77	54	72	100	100	60	51	61	58	50	53	48	49	43	67	77	69	82	130	
Acid Extractable Iron (Fe)	ug/g	2%	4%				23000	23000	21000	22000	24000	23000	22000	20000	21000	19000	18000	19000	15000	15000	18000	23000	23000	22000	24000	26000	
Acid Extractable Lead (Pb)	ug/g	31	250	91.3			160	42	44	110	190	160	37	40	56	65	80	30	32	41	56	47	60	77	130	180	
Acid Extractable Magnesium (Mg)	ug/g						17000	22000	19000	18000	17000	17000	24000	19000	22000	18000	20000	20000	18000	23000	16000	17000	19000	23000	20000	18000	17000
Acid Extractable Manganese (Mn)	ug/g	460	1100				590	590	560	590	620	590	560	550	550	560	550	510	470	450	510	560	590	600	620		
Acid Extractable Molybdenum (Mo)	ug/g						1.2	1.1	1	0.81	1	0.92	1.4	0.81	0.87	0.94	0.65	0.84	0.51	<0.50	0.63	1.5	1.1	0.88	0.98	1.1	
Acid Extractable Nickel (Ni)	ug/g	16	75				36	23	21	28	66	59	21	19	20	20	20	17	14	15	17	22	24	30	40		
Acid Extractable Phosphorus (P)	ug/g						1500	1200	1300	1300	1800	1100	960	1100	1000	930	770	780	1100	840	1000	1300	1300	1300	1700	1700	
Acid Extractable Potassium (K)	ug/g						1700	1800	1400	1500	1700	1700	1900	1400	1500	1200	1300	1500	1100	1000	1300	1700	1800	1400	1500	2000	
Acid Extractable Selenium (Se)	ug/g						<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Acid Extractable Silver (Ag)	ug/g						3.4	0.56	0.51	1.8	4.9	4.8	0.41	0.3	0.41	1	0.59	0.29	0.22	<0.20	1.2	0.51	0.68	0.94	1.6	5.4	
Acid Extractable Sodium (Na)	ug/g						410	420	280	280	300	280	250	370	280	210	260	250	160	200	370	200	370	230	280	310	
Acid Extractable Strontium (Sr)	ug/g						130	190	180	140	140	130	170	150	150	120	120	140	120	110	110	190	180	130	130	140	
Acid Extractable Thallium (Tl)	ug/g						0.16	0.23	0.18	0.16	0.17	0.16	0.19	0.14	0.15	0.13	0.11	0.15	0.093	0.11	0.098	0.21	0.2	0.16	0.17	0.19	
Acid Extractable Tin (Sn)	ug/g						12	3.8	3	7.7	10	11	3.2	3.1	5.1	5.8	5.2	3.6	3.3	7.7	8.2	3.5	4.9	5	8.1	16	
Acid Extractable Uranium (U)	ug/g						0.55	0.61	0.55	0.52	0.61	0.61	0.63	0.52	0.47	0.46	0.46	0.53	0.4	0.39	0.45	0.65	0.6	0.46	0.52	0.57	
Acid Extractable Vanadium (V)	ug/g						24	22	20	21	24	23	21	20	20	18	18	18	14	15	17	21	23	20	23	25	
Acid Extractable Zinc (Zn)	ug/g	120	820	315			470	390	320	370	580	510	310	260	290	230	220	230	150	170	180	380	390	330	410	600	
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486			0.49	0.12	0.22	0.39	0.48	0.71	0.12	0.12	0.21	0.5	0.31	0.092	0.094	0.098	0.38	0.16	0.33	0.37	0.4	0.49	
PAHs																											
Acenaphthene	ug/g						88.9	0.25	<0.10	<0.10	0.085	0.11	0.12	<0.10	0.088	0.061	0.17	0.11	0.24	<0.050	0.084	0.12	<0.10	<0.10	0.065	0.078	0.07
Acenaphthylene	ug/g						128	<0.050	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.10	<0.10	<0.050	<0.050	
Anthracene	ug/g	0.22	370	245			0.25	<0.10	<0.10	0.092	0.14	0.2	<0.10	0.19	0.24	0.25	0.48	0.076	0.16	0.17	0.11	0.17	0.14	0.16	0.14	0.14	
Benzo(a)anthracene	ug/g	0.32	1480	385			0.65	0.51	0.47	0.43	0.47	0.76	0.46	0.88	0.54	0.81	0.69	1.3	0.34	0.59	0.61	0.6	0.74	0.61	0.64	0.51	
Benzo(a)pyrene	ug/g	0.37	1440	782			0.61	0.65	0.59	0.48	0.46	0.6	0.59														

Table A2: Princess Point Embayment Sediment Sample Analytical Results

Station					PP-C11						PP-C12				
Sample ID					PP-C11-0-15	PP-C11-15-30	PP-C11-30-45	PP-C11-45-60	PP-C11-60-75	PP-C11-75-90	PP-C12-0-15	PP-C12-15-30	PP-C12-30-45		
Sampling Date and Time					4/22/21 13:00	4/22/21 13:00	4/22/21 13:00	4/22/21 13:00	4/22/21 13:00	4/22/21 13:00	4/21/21 14:00	4/21/21 14:00	4/21/21 14:00		
PARAMETER	Quality Criteria	Units	PSQG		CSQG										
			O.Reg. 153/04 & LEL	SEL										PEL	
PHYSICAL															
Moisture		%				59	48	43	41	40	40	32	27	31	
ANIONS & NUTRIENTS															
Total Ammonia-N		ug/g				50	161	262	303	367	378	92	141	153	
Nitrogen (N)		%										0.16	0.1	0.15	
Calculated Total Kjeldahl Nitrogen (TKN)		ug/g	550	4800		2720	1960	1830	2100	2580	2510	1570	1050	1500	
Nitrite (N)		ug/g										<0.5	<0.5	<0.5	
Nitrate (N)		ug/g										<2	<2	<2	
Nitrate + Nitrite (N)		ug/g										<3	<3	<3	
METALS															
Acid Extractable Aluminum (Al)		ug/g				14000	14000	14000	13000	15000	15000	7600	7200	7600	
Acid Extractable Antimony (Sb)		ug/g				0.79	0.7	0.74	2.6	4.8	2.2	0.62	0.58	0.68	
Acid Extractable Arsenic (As)		ug/g	6	33	17	5.9	6.5	6.8	7.8	9.7	8.8	3.2	3.7	3.8	
Acid Extractable Barium (Ba)		ug/g				120	130	150	230	280	220	76	72	79	
Acid Extractable Beryllium (Be)		ug/g				0.66	0.67	0.64	0.68	0.74	0.69	0.46	0.4	0.45	
Acid Extractable Bismuth (Bi)		ug/g				<1.0	<1.0	1.1	1.1	2.3	1.9	<1.0	<1.0	<1.0	
Acid Extractable Boron (B)		ug/g				18	23	27	36	53	49	31	42	43	
Acid Extractable Cadmium (Cd)		ug/g	0.6	10	3.5	2.1	2.7	4.1	24	53	48	0.78	0.94	1.2	
Acid Extractable Calcium (Ca)		ug/g				87000	84000	74000	65000	63000	71000	70000	70000	71000	
Acid Extractable Chromium (Cr)		ug/g	26	110	90	35	36	45	77	110	150	23	22	25	
Acid Extractable Cobalt (Co)		ug/g				10	11	12	18	17	17	7.5	7.3	7.3	
Acid Extractable Copper (Cu)		ug/g	16	110	197	92	89	110	150	210	190	58	49	59	
Acid Extractable Iron (Fe)		ug/g	2%	4%		27000	28000	28000	28000	30000	29000	19000	19000	19000	
Acid Extractable Lead (Pb)		ug/g	31	250	91.3	57	77	130	170	210	170	48	40	48	
Acid Extractable Magnesium (Mg)		ug/g				18000	17000	15000	14000	16000	14000	21000	21000	19000	
Acid Extractable Manganese (Mn)		ug/g	460	1100		610	670	720	660	630	650	480	510	490	
Acid Extractable Molybdenum (Mo)		ug/g				1.5	1.2	0.93	1.1	1.3	1.2	0.83	0.69	0.87	
Acid Extractable Nickel (Ni)		ug/g	16	75		27	29	35	71	70	68	18	18	19	
Acid Extractable Phosphorus (P)		ug/g				1100	1200	1700	2200	2300	2500	900	900	1000	
Acid Extractable Potassium (K)		ug/g				2200	2100	1900	1800	2100	1900	1600	1500	1500	
Acid Extractable Selenium (Se)		ug/g				0.68	0.7	0.7	0.77	0.7	0.58	<0.50	<0.50	<0.50	
Acid Extractable Silver (Ag)		ug/g				0.76	1.1	2.9	7.3	12	7.8	0.33	0.3	0.51	
Acid Extractable Sodium (Na)		ug/g				560	440	340	320	340	290	240	200	240	
Acid Extractable Strontium (Sr)		ug/g				300	240	180	150	130	110	140	120	140	
Acid Extractable Thallium (Tl)		ug/g				0.25	0.24	0.21	0.24	0.24	0.23	0.15	0.14	0.16	
Acid Extractable Tin (Sn)		ug/g				4.6	5.5	11	18	35	30	4.5	2.6	3.4	
Acid Extractable Uranium (U)		ug/g				0.69	0.57	0.45	0.62	0.69	0.68	0.55	0.52	0.53	
Acid Extractable Vanadium (V)		ug/g				25	26	25	28	28	26	20	19	20	
Acid Extractable Zinc (Zn)		ug/g	120	820	315	500	480	540	660	1000	990	270	230	280	
Acid Extractable Mercury (Hg)		ug/g	0.2	2	0.486	0.17	0.26	0.37	0.57	0.93	0.76	0.77	0.12	0.38	
PAHs															
Acenaphthene		ug/g				88.9	<0.10	<0.10	<0.10	0.12	0.2	0.13	<0.10	<0.050	0.098
Acenaphthylene		ug/g				128	<0.10	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.050	<0.050
Anthracene		ug/g	0.22	370	245	<0.10	<0.10	<0.10	0.25	0.32	0.15	<0.10	0.092	0.19	
Benzo(a)anthracene		ug/g	0.32	1480	385	0.41	0.45	0.53	0.74	0.94	0.59	0.46	0.56	0.88	
Benzo(a)pyrene		ug/g	0.37	1440	782	0.57	0.64	0.66	0.81	0.98	0.66	0.52	0.57	0.88	
Benzo(b)fluoranthene		ug/g				1	1.1	1.1	1.2	1.5	1.1	0.83	0.89	1.3	
Benzo(g,h,i)perylene		ug/g	0.17	320		0.67	0.71	0.66	0.67	0.93	0.7	0.44	0.45	0.63	
Benzo(k)fluoranthene		ug/g	0.24	1340		0.35	0.38	0.39	0.41	0.55	0.36	0.27	0.25	0.46	
Chrysene		ug/g	0.34	460	862	0.55	0.66	0.69	0.8	1.1	0.69	0.53	0.59	0.96	
Dibenzo(a,h)anthracene		ug/g	0.06	130	135	0.11	0.12	0.13	0.16	0.22	0.15	<0.10	0.09	0.1	
Fluoranthene		ug/g	0.75	1020	2355	1.5	1.5	1.8	2.1	2.6	1.5	1.6	1.6	2.7	
Fluorene		ug/g	0.19	160	144	<0.10	<0.10	<0.10	0.15	0.28	0.14	<0.10	<0.050	0.096	
Indeno(1,2,3-cd)pyrene		ug/g	0.2	320		0.62	0.68	0.64	0.69	0.94	0.69	0.46	0.5	0.69	
Methylnaphthalene, 2-(1-)		ug/g			201	<0.14	<0.14	<0.14	<0.14	0.23	<0.14	<0.14	<0.071	<0.071	
1-Methylnaphthalene		ug/g				<0.10	<0.10	<0.10	<0.10	0.071	<0.10	<0.10	<0.050	<0.050	
2-Methylnaphthalene		ug/g				<0.10	<0.10	<0.10	<0.10	0.16	0.13	<0.10	<0.050	<0.050	
Naphthalene		ug/g			391	<0.10	<0.10	<0.10	<0.10	0.081	<0.10	<0.10	<0.050	<0.050	
Phenanthrene		ug/g	0.56	950	515	0.28	0.34	0.59	1.1	1.9	0.84	0.67	0.54	1	
Pyrene		ug/g	0.49	850	875	1.1	1.2	1.4	1.7	1.9	1.2	1.2	1.3	2.1	
SIZE DISTRIBUTION															
< -1 Phi (2 mm)		%													
< 0 Phi (1 mm)		%													
< +1 Phi (0.5 mm)		%													
< +2 Phi (0.25 mm)		%													
< +3 Phi (0.12 mm)		%													
< +4 Phi (0.062 mm)		%													
< +5 Phi (0.031 mm)		%													
< +6 Phi (0.016 mm)		%													
< +7 Phi (0.0078 mm)		%													
< +8 Phi (0.0039 mm)		%													
< +9 Phi (0.0020 mm)		%													
Gravel		%													
Coarse Sand		%													
Fine Sand		%													
Silt		%													
Clay		%													
Loss on Ignition		%w/w													
Wet Bulk Density		g/cm3													
Liquid Limit		%w/w													
Plastic Limit		%w/w													
Plasticity Index		%w/w													
Dissolved BOD5		mg/L													

Notes

1. PSQG: Provincial Sediment Quality Guidelines for the protection and management of aquatic sediment quality in Ontario
2. CSQG: Canadian Council of Ministers of the Environment Canadian Sediment Quality Guidelines for the protection of aquatic life
3. MDL: Method Detection Limit provided by Bureau Veritas, Mississauga, ON (see raw data)
4. "Less than" indicates that the reported concentration was less than the detection limit
5. Green shaded cells indicate concentrations that exceed the PSQG LEL
6. Blue shaded values indicate concentrations that exceed the PSQG SEL
7. Purple shaded values indicate concentrations that exceed the CSQG PEL
8. Grey shaded values indicate concentrations that exceed both the PSQG SEL and CSQG PEL

Table A3: Coote Paradise Sediment Sample Analytical Results

PARAMETER	Units	Quality Criteria	PSQG	CSQG	Station	CP-C01					CP-C02					CP-C03					CP-C04					
						Sample ID	CP-C01-0-15	CP-C01-15-30	CP-C01-30-45	CP-C01-45-60	CP-C02-0-15	CP-C02-15-30	CP-C02-30-45	CP-C02-45-60	CP-C02-60-75	CP-C03-0-15	CP-C03-15-30	CP-C03-30-45	CP-C03-45-60	CP-C03-60-75	CP-C04-0-15	CP-C04-15-30	CP-C04-30-45	CP-C04-45-60	CP-C04-60-75	CP-C04-75-90
PHYSICAL																										
Moisture	%					58	50	41	40	49	45	39	35	39	47	36	33	33	34	47	42	39	34	34	35	
ANIONS & NUTRIENTS																										
Total Ammonia-N	ug/g					41	108	92	83	48	102	132	161	245	27	75	166	178	219	45	97	123	169	162	208	
Nitrogen (N)	%																			0.17	0.15	0.14	0.14	0.14	0.12	
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800			2420	2010	1620	1650	1960	1680	1450	1340	1750	1890	1260	1290	1280	1360	1740	1460	1390	1360	1360	1220	
Nitrite (N)	ug/g																			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Nitrate (N)	ug/g																			<2	<2	<2	<2	<2	<2	
Nitrate + Nitrite (N)	ug/g																			<3	<3	<3	<3	<3	<3	
METALS																										
Acid Extractable Aluminum (Al)	ug/g					13000	13000	12000	10000	11000	10000	10000	10000	10000	12000	9900	8700	8200	9500	9900	10000	10000	10000	10000	10000	8600
Acid Extractable Antimony (Sb)	ug/g					0.79	0.63	0.5	0.65	0.77	0.83	0.52	0.82	1.7	0.67	0.54	0.71	1.1	2	0.72	0.57	0.45	0.49	0.5	0.56	
Acid Extractable Arsenic (As)	ug/g	6	33	17		5.9	6.4	6.4	5.8	5.1	5.7	5.4	5.3	7.2	4.6	4.6	4.8	5.8	6.2	4.6	5.1	5.5	5	5.1	4.6	
Acid Extractable Barium (Ba)	ug/g					110	120	110	110	94	100	110	120	180	87	85	95	120	160	95	97	100	100	110	93	
Acid Extractable Beryllium (Be)	ug/g					0.63	0.65	0.61	0.5	0.52	0.53	0.48	0.54	0.63	0.5	0.45	0.4	0.51	0.5	0.54	0.57	0.52	0.5	0.53	0.43	
Acid Extractable Bismuth (Bi)	ug/g					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Acid Extractable Boron (B)	ug/g					16	16	17	15	18	19	24	35	47	17	22	33	45	57	15	16	20	32	35	36	
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5		1.7	2	2.5	2.8	1.3	1.7	1.7	1.7	4.9	0.91	1.5	1.3	3.8	8.2	0.99	1.3	1.2	1.4	1.5		
Acid Extractable Calcium (Ca)	ug/g					85000	81000	69000	64000	81000	77000	73000	74000	69000	81000	74000	70000	70000	68000	81000	80000	75000	69000	70000	66000	
Acid Extractable Chromium (Cr)	ug/g	26	110	90		35	34	35	34	29	29	29	35	49	25	25	26	30	40	27	25	28	26	30	25	
Acid Extractable Cobalt (Co)	ug/g					10	11	11	12	9.1	8.7	8.7	10	14	8.5	7.7	8.3	10	13	8.8	9	8.3	8.7	9.3	8.9	
Acid Extractable Copper (Cu)	ug/g	16	110	197		82	77	78	69	66	65	71	76	110	83	63	64	83	61	59	68	61	63	58		
Acid Extractable Iron (Fe)	ug/g	2%	4%			27000	27000	26000	24000	24000	23000	23000	24000	26000	22000	20000	21000	21000	22000	23000	23000	21000	22000	23000	21000	
Acid Extractable Lead (Pb)	ug/g	31	250	91.3		52	67	91	83	44	60	67	120	180	65	43	77	120	140	44	46	54	73	95	92	
Acid Extractable Magnesium (Mg)	ug/g					17000	16000	15000	13000	22000	20000	19000	19000	18000	23000	21000	19000	19000	19000	19000	22000	21000	19000	19000	18000	
Acid Extractable Manganese (Mn)	ug/g	460	1100			650	700	710	660	650	620	650	660	690	620	560	580	640	630	620	640	610	610	680	590	
Acid Extractable Molybdenum (Mo)	ug/g					1.5	1.1	0.8	0.75	1.3	1.1	0.95	0.84	1	1.2	0.91	0.84	0.78	0.87	1.3	0.96	1	0.77	0.69	0.66	
Acid Extractable Nickel (Ni)	ug/g	16	75			26	28	31	32	22	23	24	30	38	20	21	23	28	43	22	22	22	24	28	25	
Acid Extractable Phosphorus (P)	ug/g					940	1200	1600	1500	1000	1000	1300	1300	1000	870	1000	910	900	1100	1300	1400	1300	1400	1100	1100	
Acid Extractable Potassium (K)	ug/g					2200	2000	1700	1300	2000	1600	1600	1700	1700	1600	1600	1300	1600	1700	1900	1600	1600	1700	1600	1300	
Acid Extractable Selenium (Se)	ug/g					0.63	0.67	0.67	0.61	<0.50	0.72	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Acid Extractable Silver (Ag)	ug/g					0.62	0.8	1.2	1.1	0.42	0.65	0.77	1.3	4.4	0.48	0.31	1	1.4	3	0.36	0.46	0.49	1.1	0.91	1.2	
Acid Extractable Sodium (Na)	ug/g					440	320	250	200	370	280	290	260	260	280	270	300	260	270	370	300	260	270	250	240	
Acid Extractable Strontium (Sr)	ug/g					280	230	160	150	210	180	160	140	140	180	150	130	130	130	210	190	160	130	140	120	
Acid Extractable Thallium (Tl)	ug/g					0.25	0.24	0.24	0.22	0.21	0.17	0.17	0.18	0.18	0.16	0.14	0.13	0.15	0.15	0.19	0.16	0.16	0.16	0.15	0.13	
Acid Extractable Tin (Sn)	ug/g					4.1	4.6	6.4	7.2	3.3	3.9	4.4	6.7	15	3	3.7	8.6	8.2	13	3.1	2.8	4.9	5	6	6.1	
Acid Extractable Uranium (U)	ug/g					0.71	0.57	0.46	0.43	0.62	0.57	0.49	0.53	0.55	0.57	0.48	0.48	0.49	0.51	0.59	0.49	0.49	0.48	0.43	0.42	
Acid Extractable Vanadium (V)	ug/g					25	25	24	22	23	22	22	24	24	21	19	19	20	21	22	22	21	22	22	19	
Acid Extractable Zinc (Zn)	ug/g	120	820	315		450	430	400	390	360	350	330	360	550	310	250	290	320	400	340	330	310	290	310	280	
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486		0.17	0.22	0.4	0.31	0.15	0.45	0.31	0.6	0.52	0.21	0.16	0.27	0.35	0.52	0.45	0.12	0.11	0.21	0.35		
PAHs																										
Acenaphthene	ug/g			88.9		<0.10	<0.10	0.2	<0.050	<0.10	0.1	0.073	0.68	<0.10	<0.10	0.18	0.13	0.36	0.24	<0.010	<0.050	<0.10	0.077	0.061	0.025	
Acenaphthylene	ug/g			128		<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.010	<0.050	<0.10	<0.050	<0.050	0.008	
Anthracene	ug/g	0.22	370	245		<0.10	<0.10	0.26	0.089	0.1	0.19	0.15	1.2	0.19	<0.10	0.3	0.24	0.57	0.41	0.018	0.069	0.12	0.15	0.1	0.054	
Benzo(a)anthracene	ug/g	0.32	1480	385		0.34	0.43	0.79	0.44	0.54	0.74	0.71	2	0.65	0.5	1	0.75	1.3	0.89	0.089	0.33	0.57	0.67	0.44	0.19	
Benzo(a)pyrene	ug/g	0.37	1440	782		0.5	0.61	0.79	0.53	0.7	0.82	0.84	1.6	0.69	0.67	1.1	0.8	1.1	0.78	0.12	0.4	0.69	0.74	0.51	0.21	
Benzo(b)fluoranthene	ug/g					0.92	1.1	1.3	0.9	1.2	1.3	1.4	2.3	1.1	1.1	1.6	1.3	1.6	1.2	0.2	0.67	1.2	1.1	0.79	0.32	
Benzo(g,h,i)perylene	ug/g	0.17	320			0.54	0.65	0.68	0.49	0.74	0.69	0.74	1	0.6	0.66	0.81	0.64	0.71								

Table A3: Coote Paradise Sediment Sample Analytical Results

Station	CP-C05																				CP-C06																				CP-C07																				CP-C08																			
	Sample ID	CP-C05-0-15	CP-C05-15-30	CP-C05-30-45	CP-C05-45-60	CP-C05-60-75	CP-C05-75-90	CP-C06-0-15	CP-C06-15-30	CP-C07-0-15	CP-C07-15-30	CP-C07-30-45	CP-C07-45-60	CP-C07-60-75	CP-C08-0-15	CP-C08-15-30	CP-C08-30-45	CP-C08-45-60	CP-C08-60-75	CP-C08-75-90	CP-REF-1-0-15																																																											
Sampling Date and Time	4/23/21 11:30	4/23/21 11:30	4/23/21 11:30	4/23/21 11:30	4/23/21 11:30	4/23/21 11:30	4/23/21 13:30	4/23/21 13:30	4/26/21 11:30	4/26/21 11:30	4/26/21 11:30	4/26/21 11:30	4/26/21 11:30	4/23/21 14:00	4/23/21 14:00	4/23/21 14:00	4/23/21 14:00	4/23/21 14:00	4/23/21 14:00	4/26/21 9:30																																																												
PARAMETER	Quality Criteria	PSQG			CSQG																																																																											
		Units	O.Reg. 153/04 & LEL	SEL		PEL																																																																										
PHYSICAL																																																																																
Moisture	%				48	41	37	40	38	39	28	45	55	44	40	37	44	58	51	48	41	43	43	33																																																								
ANIONS & NUTRIENTS																																																																																
Total Ammonia-N	ug/g				<20	50	66	68	68	71	<20	66	24	110	173	185	349	56	143	218	257	326	365	36																																																								
Nitrogen (N)	%				0.19	0.15	0.14	0.15	0.19	0.18	0.094	0.37	0.21	0.15	0.15	0.21	0.23	0.2	0.21	0.18	0.19	0.2	0.1																																																									
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800		1920	1490	1410	1540	1930	1800	944	3690	2070	1530	1450	1450	2100	2330	2000	2130	1850	1910	1990	1020																																																								
Nitrite (N)	ug/g				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																																								
Nitrate (N)	ug/g				<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2																																																								
Nitrate + Nitrite (N)	ug/g				<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3																																																								
METALS																																																																																
Acid Extractable Aluminum (Al)	ug/g				11000	11000	11000	12000	11000	13000	5100	8200	11000	11000	12000	10000	14000	13000	13000	14000	13000	13000	14000	5200																																																								
Acid Extractable Antimony (Sb)	ug/g				0.54	0.65	2	3.1	2.3	2.1	0.25	<0.20	0.6	0.53	0.45	0.83	1.8	0.58	0.41	0.53	0.44	0.5	0.48	<0.20																																																								
Acid Extractable Arsenic (As)	ug/g	6	33	17	5	5.4	7	8.5	6.9	7.3	2.7	3.1	5.6	5.7	8.4	5.1	6	6.4	6.3	6.1	6.1	6.7	6.7	2.7																																																								
Acid Extractable Barium (Ba)	ug/g				98	100	160	220	190	160	44	69	97	100	110	120	180	100	110	110	120	110	120	41																																																								
Acid Extractable Beryllium (Be)	ug/g				0.51	0.49	0.59	0.64	0.58	0.61	0.25	0.33	0.56	0.53	0.58	0.52	0.64	0.56	0.62	0.6	0.63	0.58	0.64	0.29																																																								
Acid Extractable Bismuth (Bi)	ug/g				<1.0	<1.0	<1.0	<1.0	1.4	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0																																																								
Acid Extractable Boron (B)	ug/g				13	19	28	26	32	36	<5.0	8.9	15	19	25	35	45	16	15	24	27	31	34	<5.0																																																								
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5	1.1	1.5	5.4	18	31	35	0.42	0.15	0.98	1.3	1.5	2.3	42	1.1	1.3	1.4	1.4	1.5	1.8	0.19																																																								
Acid Extractable Calcium (Ca)	ug/g				81000	74000	70000	69000	73000	62000	63000	58000	82000	71000	72000	68000	69000	83000	84000	78000	74000	70000	72000	60000																																																								
Acid Extractable Chromium (Cr)	ug/g	26	110	90	26	28	48	78	78	110	13	36	12	25	26	30	32	46	27	30	30	31	30	33	10																																																							
Acid Extractable Cobalt (Co)	ug/g				8.8	9.4	13	17	17	15	5.4	5.3	9.2	9.1	9.9	11	16	9.6	9.8	10	10	10	11	5																																																								
Acid Extractable Copper (Cu)	ug/g	16	110	197	60	61	85	100	120	130	28	85	21	60	62	61	83	62	60	69	68	62	69	20																																																								
Acid Extractable Iron (Fe)	ug/g	2%	4%		23000	23000	23000	24000	23000	26000	14000	15000	24000	24000	25000	23000	27000	25000	26000	27000	27000	27000	26000	14000																																																								
Acid Extractable Lead (Pb)	ug/g	31	250	91.3	42	57	130	160	130	110	33	15	42	59	80	120	150	44	47	60	66	86	92	13																																																								
Acid Extractable Magnesium (Mg)	ug/g				20000	20000	17000	17000	16000	15000	8900	6500	18000	17000	16000	17000	15000	17000	15000	16000	16000	15000	14000	11000																																																								
Acid Extractable Manganese (Mn)	ug/g	460	1100		670	640	640	670	670	650	400	470	660	750	700	750	700	770	770	780	790	830	490																																																									
Acid Extractable Molybdenum (Mo)	ug/g				1.1	0.99	0.92	0.85	0.75	0.97	<0.50	<0.50	1.4	0.99	0.63	0.86	0.85	1.3	0.94	0.91	0.84	0.9	0.68	<0.50																																																								
Acid Extractable Nickel (Ni)	ug/g	16	75		22	24	34	58	59	53	11	12	22	24	28	30	48	23	25	27	28	29	31	10																																																								
Acid Extractable Phosphorus (P)	ug/g				960	1100	1400	1600	2000	1900	800	1000	1100	1100	1400	1200	1700	940	950	1200	1200	1200	1100	840																																																								
Acid Extractable Potassium (K)	ug/g				1800	1700	1700	1800	1600	1900	840	1100	1800	1600	1900	1900	2100	2100	1900	1800	1900	1900	1800	780																																																								
Acid Extractable Selenium (Se)	ug/g				<0.50	<0.50	0.62	0.63	<0.50	0.52	<0.50	0.53	<0.50	0.55	<0.50	0.81	<0.50	0.51	0.6	0.63	0.65	0.63	<0.50																																																									
Acid Extractable Silver (Ag)	ug/g				0.42	0.73	2.8	3.8	5.4	3.8	<0.20	<0.20	0.48	0.71	0.83	2.3	3.4	0.37	0.42	0.58	0.69	0.89	1.2	<0.20																																																								
Acid Extractable Sodium (Na)	ug/g				320	300	260	290	260	330	210	290	220	350	270	220	310	290	240	260	310	290	240	150																																																								
Acid Extractable Strontium (Sr)	ug/g				200	170	140	130	110	94	130	120	240	160	160	130	160	260	240	200	170	160	150	130																																																								
Acid Extractable Thallium (Tl)	ug/g				0.2	0.18	0.17	0.17	0.19	0.22	0.15	0.094	0.22	0.19	0.17	0.17	0.25	0.23	0.21	0.25	0.21	0.2	0.21	0.16																																																								
Acid Extractable Tin (Sn)	ug/g				3.6	4.1	8.9	11	18	20	1.8	<1.0	2.8	3.6	5.1	13	8.4	2.7	2.9	3.5	4.2	5	6.4	<1.0																																																								
Acid Extractable Uranium (U)	ug/g				0.53	0.54	0.54	0.56	0.52	0.59	0.34	0.46	0.62	0.52	0.45	0.55	0.64	0.52	0.58	0.47	0.48	0.45	0.34																																																									
Acid Extractable Vanadium (V)	ug/g				22	23	23	25	24	26	16	23	18	22	23	24	22	26	24	25	26	27	25	15																																																								
Acid Extractable Zinc (Zn)	ug/g	120	820	315	330	320	450	520	660	810	160	70	330	310	310	370	520	340	350	370	340	330	350	110																																																								
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486	0.16	0.15	0.38	0.37	0.68	0.56	<0.050	<0.050	0.19	0.32	0.22	0.37	0.34	0.11	0.12	0.19	0.21	0.35	0.25	<0.050																																																								
PAHs																																																																																
Acenaphthene	ug/g				88.9	<0.10	<0.10	0.063	<0.10	0.1	0.16	<0.050	<0.10	<0.10	<0.010	<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050																																																								
Acenaphthylene	ug/g				128	<0.10	<0.10	<0.050	<0.10	<0.050	<0.10	<0.050	<0.10	<0.10	<0.010	<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050																																																								
Anthracene	ug/g	0.22	370	245	<0.10	<0.10	0.078	0.11	0.17	<0.10	<0.10	<0.050	<0.10	<0.019	<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050																																																								
Benzo(a)anthracene	ug/g	0.32	1480	385	0.39	0.42	0.39	0.4	0.66	0.44	0.14	<0.10	0.34	0.092	0.16	0.11	0.32	0.31	0.29	0.35	0.34	0.29	0.33	<0.050																																																								
Benzo(a)pyrene	ug/g	0.37	1440	782	0.51	0.5	0.41	0.4	0.67	0.47	0.2	<0.10	0.44	0.11	0.19	0.12	0.35	0.43	0.39	0.45	0.41	0.35	0.38	<0.050																																																								
Benzo(b)fluoranthene	ug/g				0.79	0.77	0.62	0.61	0.95	0.82	0.32	<0.10	0.7	0.19	0.31	0.19	0.5	0.69	0.61	0.72	0.74	0.57	0.65	0.081																																																								
Benzo(g,h,i)perylene	ug/g	0.17	320		0.46	0.42	0.34	0.32	0.51	0.36	0.18	<0.10	0.17	0.1	0.17	0.29	0.42	0.36	0.41	0.31	0.26	0.27	0.65	<0.050																																																								
Benzo(k)fluoranthene	ug/g	0.24	1340		0.28	0.27	0.22	0.2	0.34	0.24	0.11	<0.10	0.24	0.058	0.11	0.059	0.18	0.22	0.21	0.25	0.25	0.2	0.19	<0.050																																																								
Chrysene	ug/g	0.34	460	862	0.47	0.5	0.44	0.43	0.68	0.46	0.21	<0.10	0.39	0.12	0.2	0.13	0.35	0.38	0.36	0.45	0.41	0.34	0.37	0.059																																																								
Dibenz(a,h)anthracene	ug/g	0.06	130	135	<0.10	<0.10	0.06	<0.10	0.12	<0.10	<0.050	<0.10	0.021	<0.050	<0.10	<0.050	<0.10	<0.10	<0.10																																																													

Table A3: Coote Paradise Sediment Sample Analytical Results

PARAMETER	Quality Criteria	Units	Station			CP-REF-1			CP-REF-02				
			O.Reg. 153/04 & LEL	PSQG	CSQG	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	
						CP-REF-1-15-30	CP-REF-1-30-45	CP-REF-1-45-60	CP-REF-2-0-15	CP-REF-2-15-30	CP-REF-2-30-45	CP-REF-2-45-60	CP-REF-2-60-75
			Sampling Date and Time			4/26/21 9:30	4/26/21 9:30	4/26/21 9:30	4/26/21 10:30	4/26/21 10:30	4/26/21 10:30	4/26/21 11:30	
PHYSICAL													
Moisture	%					29	38	59	59	46	51	47	44
ANIONS & NUTRIENTS													
Total Ammonia-N	ug/g					<20	72	126	39	81	102	152	210
Nitrogen (N)	%					0.078	0.27	0.63	0.27	0.22	0.26	0.32	0.3
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	550	4800			782	2670	6320	2740	2210	2590	3210	2960
Nitrite (N)	ug/g					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate (N)	ug/g					<2	<2	<2	<2	<2	<2	<2	<2
Nitrate + Nitrite (N)	ug/g					<3	<3	<3	<3	<3	<3	<3	<3
METALS													
Acid Extractable Aluminum (Al)	ug/g					5800	15000	15000	14000	15000	16000	21000	25000
Acid Extractable Antimony (Sb)	ug/g					<0.20	<0.20	<0.20	0.25	0.45	0.56	0.47	<0.20
Acid Extractable Arsenic (As)	ug/g	6	33	17		2.8	6	8.1	4.9	5.9	7.2	6.9	4.6
Acid Extractable Barium (Ba)	ug/g					40	95	120	110	110	120	130	190
Acid Extractable Beryllium (Be)	ug/g					0.28	0.66	0.65	0.66	0.66	0.69	0.88	1.1
Acid Extractable Bismuth (Bi)	ug/g					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g					<5.0	6.2	6.1	8.2	11	12	15	7.4
Acid Extractable Cadmium (Cd)	ug/g	0.6	10	3.5		0.25	0.34	0.35	0.7	1.3	2.5	1.7	0.19
Acid Extractable Calcium (Ca)	ug/g					55000	44000	16000	96000	82000	70000	48000	22000
Acid Extractable Chromium (Cr)	ug/g	26	110	90		11	22	21	24	28	33	41	32
Acid Extractable Cobalt (Co)	ug/g					5.2	11	11	10	11	12	13	13
Acid Extractable Copper (Cu)	ug/g	16	110	197		20	39	39	41	48	53	44	31
Acid Extractable Iron (Fe)	ug/g	2%	4%			14000	25000	25000	27000	29000	30000	33000	36000
Acid Extractable Lead (Pb)	ug/g	31	250	91.3		15	32	27	33	51	69	68	15
Acid Extractable Magnesium (Mg)	ug/g					11000	13000	10000	11000	12000	12000	10000	9000
Acid Extractable Manganese (Mn)	ug/g	460	1100			430	810	410	870	780	720	630	480
Acid Extractable Molybdenum (Mo)	ug/g					<0.50	0.57	0.68	0.8	0.72	0.74	0.77	0.77
Acid Extractable Nickel (Ni)	ug/g	16	75			12	25	26	25	30	38	38	34
Acid Extractable Phosphorus (P)	ug/g					770	890	870	890	940	1100	1000	800
Acid Extractable Potassium (K)	ug/g					760	1800	1600	2200	2000	2100	2800	2900
Acid Extractable Selenium (Se)	ug/g					<0.50	<0.50	<0.50	<0.50	0.72	0.74	0.65	<0.50
Acid Extractable Silver (Ag)	ug/g					<0.20	<0.20	<0.20	<0.20	0.44	0.75	0.35	<0.20
Acid Extractable Sodium (Na)	ug/g					120	170	180	270	250	270	240	210
Acid Extractable Strontium (Sr)	ug/g					96	81	43	350	230	160	110	67
Acid Extractable Thallium (Tl)	ug/g					0.11	0.14	0.14	0.22	0.25	0.28	0.28	0.2
Acid Extractable Tin (Sn)	ug/g					1.1	1.4	<1.0	1.8	3.2	3.9	3.3	<1.0
Acid Extractable Uranium (U)	ug/g					0.33	0.55	0.78	0.54	0.56	0.59	0.78	0.88
Acid Extractable Vanadium (V)	ug/g					15	28	28	25	28	29	34	39
Acid Extractable Zinc (Zn)	ug/g	120	820	315		94	220	270	250	280	320	210	98
Acid Extractable Mercury (Hg)	ug/g	0.2	2	0.486		<0.050	<0.050	<0.050	<0.050	0.12	0.13	0.096	<0.050
PAHs													
Acenaphthene	ug/g			88.9		<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	ug/g			128		<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	ug/g	0.22	370	245		<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene	ug/g	0.32	1480	385		0.054	<0.050	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	ug/g	0.37	1440	782		0.059	0.054	<0.10	<0.10	0.1	0.1	<0.10	<0.10
Benzo(b)fluoranthene	ug/g					0.1	0.079	<0.10	0.16	0.21	0.19	0.17	<0.10
Benzo(g,h,i)perylene	ug/g	0.17	320			<0.050	0.068	<0.10	<0.10	<0.10	<0.10	0.12	<0.10
Benzo(k)fluoranthene	ug/g	0.24	1340			<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	ug/g	0.34	460	862		0.064	<0.050	<0.10	<0.10	0.11	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene	ug/g	0.06	130	135		<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	ug/g	0.75	1020	2355		0.11	<0.050	<0.10	0.16	0.17	0.19	0.16	<0.10
Fluorene	ug/g	0.19	160	144		<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	ug/g	0.2	320			<0.050	0.051	<0.10	<0.10	<0.10	<0.10	0.12	<0.10
Methylnaphthalene, 2-(1-)	ug/g			201		<0.071	<0.071	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
1-Methylnaphthalene	ug/g					<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	ug/g					<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Naphthalene	ug/g			391		<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	ug/g	0.56	950	515		<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	ug/g	0.49	850	875		0.094	<0.050	<0.10	0.14	0.15	0.16	0.15	<0.10
SIZE DISTRIBUTION													
< -1 Phi (2 mm)	%												
< 0 Phi (1 mm)	%												
< +1 Phi (0.5 mm)	%												
< +2 Phi (0.25 mm)	%												
< +3 Phi (0.12 mm)	%												
< +4 Phi (0.062 mm)	%												
< +5 Phi (0.031 mm)	%												
< +6 Phi (0.016 mm)	%												
< +7 Phi (0.0078 mm)	%												
< +8 Phi (0.0039 mm)	%												
< +9 Phi (0.0020 mm)	%												
Gravel	%												
Coarse Sand	%												
Fine Sand	%												
Silt	%												
Clay	%												
Loss on Ignition	%w/w												
Wet Bulk Density	g/cm3												
Liquid Limit	%w/w												
Plastic Limit	%w/w												
Plasticity Index	%w/w												
Dissolved BOD5	mg/L												

Notes

1. PSQG: Provincial Sediment Quality Guidelines for the protection and management of aquatic sediment quality in Ontario
2. CSQG: Canadian Council of Ministers of the Environment Canadian Sediment Quality Guidelines for the protection of aquatic life
3. MDL: Method Detection Limit provided by Bureau Veritas, Mississauga, ON (see raw data)
4. "Less than" indicates that the reported concentration was less than the detection limit
5. Green shaded cells indicate concentrations that exceed the PSQG LEL
6. Blue shaded values indicate concentrations that exceed the PSQG SEL
7. Purple shaded values indicate concentrations that exceed the CSQG PEL
8. Grey shaded values indicate concentrations that exceed both the PSQG SEL and CSQG PEL

TECH MEMO

09.17.2021

Comparison of Sediment Contaminants in Surficial
and Deep Layers in Chedoke
Creek and Princess Point Sediment Cores and
Recommended Dredge Target
Modifications



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Technical Memorandum

To: Tim Crowley
Public Works, City of Hamilton

From: Lance Lombard; Suzy Baird; Michael Coveney, PhD
Wood Environment & Infrastructure Solutions (Wood)

Date: September 17, 2021

Ref: WW20101062 City of Hamilton – Chedoke Creek Remediation Project

Re: Comparison of Sediment Contaminants in Surficial and Deep Layers in Chedoke Creek and Princess Point Sediment Cores and Recommended Dredge Target Modifications

1.0 INTRODUCTION

This technical memorandum provides a comparison of select sediment contaminants in existing surficial soft sediments and deep firm sediment layers that may be exposed following dredging within Chedoke Creek and the Princess Point Embayment. The existing surficial sediments in these areas show some metal concentrations that exceed the Provincial Sediment Quality Guidelines (PSQG) Severe Effect Levels (SELs) or the Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (CSQG) Probable Effect Levels (PELs). Examples are nickel at multiple sites, and cadmium, zinc, mercury, and lead at several locations. This information is summarized in the previous technical memorandum titled "Evaluation of Chedoke Creek and Princess Point Sediment Cores and Preliminary Estimate of In-Situ Total Phosphorus and Total Nitrogen Mass, City of Hamilton" and dated July 7, 2021. The focus of this comparison is to determine whether removal of sediment to a particular depth will leave a new surface sediment that 1) is similar in its contamination profile to the original sediment, 2) shows less-severe contamination, or 3) shows more-severe contamination. The information in this technical memorandum is supplemental to the previous technical memorandum (referenced above, dated July 7, 2021) and includes recommendations about locations and depths of potential sediment removal operations.

2.0 METHODS

Soft sediment cores were collected using a piston tube sampler and sectioned for analyses as described in the July 7, 2021 technical memo. During the April 2021 sampling effort, five sediment core intervals including 0-15 cm, 15-30 cm, 30-45 cm, 30-45 cm, and 45-60 cm were collected for the majority of locations shown in Figure 1. Analysis of these samples indicated that additional samples were needed from deeper intervals at select locations. Wood collected the deeper core samples in August 2021 using a hand auger beginning at the subsequent depth interval where the piston core samples terminated at select locations in Chedoke Creek. In addition, new soft sediment cores were collected at two new locations in Princess Point, and at two new locations in Cootes Paradise (Figure 1). Depth intervals were not identical at each location because samplers encountered hard substrate, likely gravel or rocks, in some areas. Samples were submitted to the analytical laboratory, Bureau Veritas, for analysis of metals and polycyclic aromatic hydrocarbons (PAHs).

Contaminant concentrations in the surficial intervals (April 2021) were compared to contaminant concentrations in deeper intervals (August 2021 for Chedoke Creek and April and August 2021 for Princess Point). We analyzed data for potentially toxic metals and PAHs. In addition to examining concentrations, we normalized concentrations with respect to potential toxicity by calculating hazard quotients (HQs), the ratio of the concentration of a substance to its environmental quality guideline. We compared concentrations to two quality guidelines: the PSQG SEL¹ and the CSQG PEL². A sediment concentration exceeding the SEL (HQ > 1) is considered heavy contamination.¹ The SEL was derived from long-term effects that the contaminant may have on sediment organisms. A sediment concentration exceeding the PEL (HQ > 1) is frequently associated with adverse biological effects for aquatic life.² We emphasize that because the SEL and PEL are high-level guidelines, even low values could indicate risk to sensitive organisms. We chose these quality guidelines for comparison because of the known existing contamination of surficial sediments in these areas. We wanted to examine the potential for improvement or worsening of the current contamination levels if sediments were removed.

3.0 RESULTS

3.1 PAHs

PAH compounds showed low concentrations at both Chedoke Creek and Princess Point sites (Appendix A and Appendix B). We calculated HQs using SEL and PEL guidelines as described above, and no samples in either area exceeded either of these guidelines. The maximum HQ for both SEL

¹ Provincial Sediment Quality Guidelines (PSQGs) – Ontario, available at: <https://www.ontario.ca/document/guidelines-identifying-assessing-and-managing-contaminated-sediments-ontario/identification-and-assessment> (accessed September 2021)

² Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (CSQG), available at: <https://ccme.ca/en/resources/sediment> (accessed September 2021)

and PEL in all PAH samples was 0.011 for Chedoke Creek and 0.02 for Princess Point. We also examined HQs for PAH values using a much lower sediment quality guideline – the PSQG Lowest Effect Level (LEL)¹. The LEL indicates a sediment concentration that can be tolerated by the majority of sediment-dwelling organisms. As concentrations exceed LELs, sensitive organisms are expected to be affected. A significant number of PAH values exceeded the LELs, especially for Princess Point samples. However, these levels of PAHs are not unexpected in an industrial setting. We used the higher-level guidelines SEL and PEL for PAHs as we did for metals for consistency and to reflect the industrial nature of the Chedoke Creek watershed. As stated above, we found no exceedances of SEL or PEL for PAHs. Because PAH concentrations were much lower than their SELs and PELs compared to metals, only metal data will be used to refine dredge targets as discussed below.

3.2 CHEDOKE CREEK METALS

Chedoke Creek metals concentrations with comparison to HQs based on the SELs and PELs are included below for the surficial (0-15 cm) sample and deep sample intervals collected at select locations. The raw sample concentration data is included in Appendix A (April 2021 data) and Appendix B (August 2021 data). Tables 1 and 2 below show metals HQs, with light green indicating HQs < 0.5, darker green indicating HQs between 0.5 and 1 ($0.5 \leq \text{HQ} \leq 1.0$), and orange indicating HQs greater than 1.0.

3.2.1 SEL HQs

Hazard quotients calculated using SELs for Chedoke Creek metal concentrations are included in Table 1. The nickel HQs were the most common HQs greater than 1.0.

3.2.2 PEL HQs

Hazard quotients calculated using PELs for Chedoke Creek metal concentrations are included in Table 2. HQs exceeded 1 for cadmium, lead, mercury and zinc; no PEL is available for nickel.

3.3 PRINCESS POINT METALS

Princess Point metals concentrations with comparison to HQs based on the SELs and PELs are included below. The raw sample concentration data is included in Appendix A (April 2021 data) and Appendix B (August 2021 data). Tables 3 and 4 below show metals HQs, with light green indicating HQs < 0.5, darker green indicating HQs between 0.5 and 1 ($0.5 \leq \text{HQ} \leq 1.0$), and orange indicating HQs greater than 1.0.

3.3.1 SEL HQs

Hazard quotients calculated using SELs for Princess Point metal concentrations are included in Table 3. Like in the Chedoke Creek samples, the nickel HQ was frequently greater than 1. Other metals producing HQs > 1 included cadmium, chromium, copper, nickel, and zinc. Lead and mercury HQs exceeded 1 at only one location (PP-C21).

3.3.2 PEL HQs

Hazard quotients calculated using PELs for Princess Point metal concentrations are included in Table 4. HQs exceeded 1 for cadmium, chromium, copper, lead, mercury, and zinc (no PEL is available for nickel).

Table 1 – Chedoke Creek Metal SEL HQs

Location	Interval (cm)	HQ (SEL)							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
CC-C13	0-15	0.1	0.1	0.2	0.5	0.1	0.0	1.2	0.3
	75-90	0.2	0.6	0.3	0.7	0.7	0.1	5.3	0.6
	90-105	0.2	0.1	0.3	0.6	0.2	0.0	1.7	0.4
CC-C17	0-15	0.1	0.1	0.2	0.7	0.1	0.0	1.2	0.3
	75-90	0.1	0.1	0.1	0.3	0.1	0.0	0.7	0.1
	90-105	0.2	1.5	0.4	0.8	0.5	0.1	2.2	0.5
CC-C19	0-15	0.2	1.1	0.3	0.8	0.3	0.1	1.9	0.3
	75-90	0.1	1.1	0.3	0.9	0.3	2.3	1.8	0.3
	90-105	0.2	3.0	0.6	1.2	0.6	0.2	3.4	0.5
CC-C20	0-15	0.2	1.0	0.3	0.7	0.4	0.1	1.8	0.3
	105-120	0.2	0.8	0.2	0.6	0.4	0.1	1.5	0.3
	120-135	0.1	0.0	0.2	0.4	0.2	0.6	1.1	0.2
CC-C23	0-15	0.1	0.3	0.2	0.6	0.3	0.5	1.8	0.3
	105-120	0.1	0.3	0.2	0.8	0.5	0.1	2.1	0.3
	120-135	0.1	0.1	0.2	0.8	0.3	0.1	0.7	0.2
CC-C26	0-15	0.1	0.3	0.2	0.6	0.4	1.0	1.4	0.3
	105-120	0.1	0.4	0.2	0.6	0.4	0.2	1.8	0.3
	120-135	0.1	0.4	0.2	0.6	0.4	0.2	1.8	0.3

Table 2 – Chedoke Creek Metal PEL HQs

Location	Interval (cm)	HQ (PEL)							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
CC-C13	0-15	0.3	0.2	0.3	0.3	0.4	0.2	NO PEL AVAILABLE	0.7
	75-90	0.4	1.6	0.4	0.4	1.9	0.5		1.6
	90-105	0.4	0.1	0.3	0.3	0.6	0.2		0.9
CC-C17	0-15	0.2	0.3	0.3	0.4	0.3	0.2		0.7
	75-90	0.1	0.4	0.1	0.2	0.3	0.1		0.2
	90-105	0.3	4.3	0.4	0.5	1.3	0.6		1.2
CC-C19	0-15	0.3	3.1	0.3	0.4	0.8	0.5		0.9
	75-90	0.3	3.1	0.4	0.5	0.8	9.5		0.8
	90-105	0.3	8.6	0.7	0.7	1.5	0.9		1.4
CC-C20	0-15	0.4	2.7	0.3	0.4	1.0	0.6		0.8
	105-120	0.3	2.2	0.3	0.4	1.0	0.3		0.8
	120-135	0.3	0.1	0.2	0.2	0.6	2.5		0.6
CC-C23	0-15	0.2	0.9	0.3	0.3	0.7	2.1		0.7
	105-120	0.3	0.9	0.3	0.4	1.3	0.4		0.7
	120-135	0.3	0.2	0.2	0.5	0.8	0.2		0.6
CC-C26	0-15	0.2	0.8	0.3	0.3	1.2	4.1	0.7	
	105-120	0.2	1.1	0.3	0.4	1.2	0.6	0.8	
	120-135	0.3	1.1	0.3	0.4	1.2	0.6	0.8	

Table 3 – Princess Point Metal SEL HQs

Location	Interval (cm)	HQ (SEL)							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
PP-C01	0-15	0.1	0.1	0.3	0.7	0.2	0.1	1.3	0.5
PP-C01	15-30	0.1	0.1	0.2	0.5	0.2	0.1	1.2	0.4
PP-C01	30-45	0.1	0.1	0.2	0.6	0.3	0.2	1.2	0.3
PP-C01	45-60	0.1	0.2	0.3	0.5	0.4	0.2	1.5	0.3
PP-C02	0-15	0.1	0.1	0.1	0.6	0.1	0.1	0.8	0.2
PP-C02	15-30	0.1	0.1	0.2	0.6	0.2	0.1	1.1	0.3
PP-C02	30-45	0.1	0.1	0.2	0.7	0.4	0.1	1.3	0.3
PP-C03	0-15	0.1	0.1	0.1	0.5	0.2	0.0	0.9	0.2
PP-C03	15-30	0.1	0.1	0.2	0.6	0.3	0.3	1.0	0.3
PP-C03	30-45	0.1	0.1	0.2	0.5	0.4	0.2	1.3	0.3
PP-C03	45-60	0.1	0.2	0.2	0.6	0.3	0.3	1.2	0.2
PP-C03	60-75	0.3	4.0	0.8	1.5	0.8	0.5	4.6	0.9
PP-C03	75-90	0.2	3.7	0.7	1.5	0.6	0.3	2.8	0.7
PP-C04	0-15	0.1	0.1	0.3	0.8	0.2	0.1	1.3	0.5
PP-C04	15-30	0.2	0.1	0.2	0.5	0.2	0.1	1.2	0.4
PP-C04	30-45	0.1	0.1	0.2	0.5	0.2	0.1	1.2	0.3
PP-C04	45-60	0.2	0.2	0.3	0.7	0.5	0.2	1.6	0.4
PP-C05	0-15	0.1	0.1	0.3	0.8	0.2	0.1	1.4	0.5
PP-C05	15-30	0.2	0.1	0.2	0.5	0.2	0.1	1.2	0.4
PP-C05	30-45	0.1	0.1	0.2	0.5	0.3	0.1	1.2	0.3
PP-C05	45-60	0.2	0.4	0.4	0.9	0.6	0.2	2.1	0.6
PP-C06	0-15	0.1	0.1	0.3	0.7	0.2	0.1	1.4	0.5
PP-C06	15-30	0.1	0.1	0.2	0.5	0.2	0.1	1.2	0.4
PP-C06	30-45	0.2	0.3	0.3	0.7	0.4	0.2	1.6	0.5
PP-C06	45-60	0.3	2.2	0.5	0.9	0.8	0.2	3.9	0.7
PP-C06	60-75	0.2	1.8	0.4	0.9	0.6	0.4	3.5	0.6
PP-C07	0-15	0.1	0.1	0.2	0.5	0.1	0.1	1.2	0.4
PP-C07	15-30	0.1	0.1	0.2	0.5	0.2	0.1	1.1	0.3
PP-C07	30-45	0.1	0.1	0.2	0.6	0.2	0.1	1.2	0.4
PP-C07	45-60	0.1	0.1	0.2	0.5	0.3	0.3	1.2	0.3
PP-C07	60-75	0.1	0.1	0.2	0.5	0.3	0.2	1.2	0.3
PP-C08	0-15	0.1	0.1	0.2	0.5	0.1	0.0	1.0	0.3
PP-C08	15-30	0.1	0.1	0.1	0.4	0.1	0.0	0.8	0.2
PP-C08	30-45	0.1	0.1	0.2	0.4	0.2	0.0	0.9	0.2
PP-C08	45-60	0.1	0.1	0.2	0.4	0.2	0.2	1.0	0.2
PP-C09	0-15	0.2	0.1	0.3	0.6	0.2	0.1	1.3	0.5
PP-C09	15-30	0.2	0.2	0.3	0.7	0.2	0.2	1.4	0.5
PP-C09	30-45	0.2	0.2	0.3	0.6	0.3	0.2	1.4	0.4
PP-C09	45-60	0.2	0.2	0.3	0.7	0.5	0.2	1.8	0.5
PP-C09	60-75	0.2	0.6	0.5	1.2	0.7	0.2	2.4	0.7
PP-C11	0-15	0.2	0.2	0.3	0.8	0.2	0.1	1.6	0.6
PP-C11	15-30	0.2	0.3	0.3	0.8	0.3	0.1	1.7	0.6
PP-C11	30-45	0.2	0.4	0.4	1.0	0.5	0.2	2.1	0.7
PP-C11	45-60	0.2	2.4	0.7	1.4	0.7	0.3	4.2	0.8
PP-C11	60-75	0.3	5.3	1.0	1.9	0.8	0.5	4.1	1.2
PP-C11	75-90	0.3	4.8	1.4	1.7	0.7	0.4	4.0	1.2
PP-C12	0-15	0.1	0.1	0.2	0.5	0.2	0.4	1.1	0.3
PP-C12	15-30	0.1	0.1	0.2	0.4	0.2	0.1	1.1	0.3
PP-C12	30-45	0.1	0.1	0.2	0.5	0.2	0.2	1.1	0.3
PP-C20	0-15	0.2	0.3	0.4	0.9	0.3	0.1	1.7	0.7
PP-C20	15-30	0.2	0.8	0.5	1.1	0.5	0.2	2.4	0.7
PP-C20	30-45	0.2	2.6	0.8	1.6	0.8	0.3	4.2	1.0
PP-C20	45-60	0.3	5.4	1.7	2.4	0.8	0.5	4.5	1.5
PP-C20	60-75	0.2	2.3	0.9	1.5	0.6	0.3	3.0	1.0
PP-C21	0-15	0.2	2.2	0.8	2.1	0.6	0.4	2.8	1.1
PP-C21	15-30	0.4	5.0	1.8	4.6	1.2	1.1	4.4	2.7
PP-C21	30-45	0.3	0.4	0.3	1.2	0.7	0.9	1.9	1.2
PP-C21	45-60	0.2	1.0	0.5	1.3	0.4	0.4	2.1	0.9

Table 4 – Princess Point Metal PEL HQs

Location	Interval (cm)	HQ (PEL)							Nickel	Zinc
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury			
PP-C01	0-15	0.3	0.3	0.3	0.4	0.4	0.3		1.2	
PP-C01	15-30	0.3	0.3	0.3	0.3	0.5	0.3		1.0	
PP-C01	30-45	0.3	0.4	0.3	0.3	0.8	0.7		0.9	
PP-C01	45-60	0.3	0.4	0.3	0.3	1.0	0.6		0.9	
PP-C02	0-15	0.2	0.2	0.2	0.3	0.3	0.6		0.6	
PP-C02	15-30	0.2	0.3	0.3	0.3	0.6	0.3		0.7	
PP-C02	30-45	0.2	0.3	0.3	0.4	1.1	0.6		0.8	
PP-C03	0-15	0.2	0.2	0.2	0.3	0.4	0.1		0.5	
PP-C03	15-30	0.2	0.3	0.2	0.3	0.8	1.0		0.7	
PP-C03	30-45	0.2	0.4	0.2	0.3	1.1	0.9		0.8	
PP-C03	45-60	0.2	0.6	0.2	0.3	0.9	1.3		0.6	
PP-C03	60-75	0.5	11.4	1.0	0.9	2.3	1.9		2.4	
PP-C03	75-90	0.4	10.6	0.9	0.9	1.8	1.4		1.9	
PP-C04	0-15	0.3	0.2	0.3	0.4	0.4	0.3		1.2	
PP-C04	15-30	0.3	0.3	0.3	0.3	0.4	0.2		0.9	
PP-C04	30-45	0.3	0.3	0.3	0.3	0.7	0.6		0.9	
PP-C04	45-60	0.3	0.7	0.4	0.4	1.4	0.9		1.1	
PP-C05	0-15	0.3	0.3	0.3	0.5	0.5	0.4		1.2	
PP-C05	15-30	0.3	0.3	0.3	0.3	0.5	0.4		1.0	
PP-C05	30-45	0.3	0.3	0.3	0.3	0.7	0.5		0.9	
PP-C05	45-60	0.4	1.1	0.5	0.5	1.8	1.0		1.5	
PP-C06	0-15	0.3	0.3	0.3	0.4	0.5	0.2		1.2	
PP-C06	15-30	0.3	0.3	0.3	0.3	0.5	0.5		1.0	
PP-C06	30-45	0.3	0.9	0.4	0.4	1.2	0.8		1.2	
PP-C06	45-60	0.5	6.3	0.6	0.5	2.1	1.0		1.8	
PP-C06	60-75	0.4	5.1	0.5	0.5	1.8	1.5		1.6	
PP-C07	0-15	0.3	0.2	0.3	0.3	0.4	0.2		1.0	
PP-C07	15-30	0.3	0.3	0.3	0.3	0.4	0.2		0.8	
PP-C07	30-45	0.3	0.3	0.3	0.3	0.6	0.4		0.9	
PP-C07	45-60	0.2	0.3	0.3	0.3	0.7	1.0		0.7	
PP-C07	60-75	0.2	0.3	0.3	0.3	0.9	0.6		0.7	
PP-C08	0-15	0.2	0.2	0.2	0.3	0.3	0.2		0.7	
PP-C08	15-30	0.2	0.1	0.2	0.2	0.4	0.2		0.5	
PP-C08	30-45	0.2	0.2	0.2	0.2	0.4	0.2		0.5	
PP-C08	45-60	0.2	0.3	0.2	0.2	0.6	0.8		0.6	
PP-C09	0-15	0.3	0.4	0.3	0.3	0.5	0.3		1.2	
PP-C09	15-30	0.3	0.5	0.4	0.4	0.7	0.7		1.2	
PP-C09	30-45	0.3	0.5	0.3	0.4	0.8	0.8		1.0	
PP-C09	45-60	0.3	0.5	0.4	0.4	1.4	0.8		1.3	
PP-C09	60-75	0.4	1.7	0.6	0.7	2.0	1.0		1.9	
PP-C11	0-15	0.3	0.6	0.4	0.5	0.6	0.3		1.6	
PP-C11	15-30	0.4	0.8	0.4	0.5	0.8	0.5		1.5	
PP-C11	30-45	0.4	1.2	0.5	0.6	1.4	0.8		1.7	
PP-C11	45-60	0.5	6.9	0.9	0.8	1.9	1.2		2.1	
PP-C11	60-75	0.6	15.1	1.2	1.1	2.3	1.9		3.2	
PP-C11	75-90	0.5	13.7	1.7	1.0	1.9	1.6		3.1	
PP-C12	0-15	0.2	0.2	0.3	0.3	0.5	1.6		0.9	
PP-C12	15-30	0.2	0.3	0.2	0.2	0.4	0.2		0.7	
PP-C12	30-45	0.2	0.3	0.3	0.3	0.5	0.8		0.9	
PP-C20	0-15	0.4	1.0	0.4	0.5	0.7	0.5		1.7	
PP-C20	15-30	0.4	2.4	0.6	0.6	1.3	0.8		1.9	
PP-C20	30-45	0.5	7.4	1.0	0.9	2.1	1.2		2.6	
PP-C20	45-60	0.6	15.4	2.1	1.3	2.2	2.1		3.8	
PP-C20	60-75	0.5	6.6	1.0	0.9	1.5	1.2		2.5	
PP-C21	0-15	0.4	6.3	1.0	1.2	1.6	1.7		2.9	
PP-C21	15-30	0.7	14.3	2.2	2.6	3.3	4.5		7.0	
PP-C21	30-45	0.5	1.1	0.4	0.7	1.9	3.7		3.2	
PP-C21	45-60	0.4	2.9	0.6	0.7	1.2	1.6		2.3	

NO PEL AVAILABLE

4.0 SUMMARY

For Chedoke Creek, Wood examined the pattern of exceedances of SEL or PEL metal guidelines and selected the optimal dredge target elevation for sediment removal based on exceedance values. The optimal exposed new sediment layer interval varied from 75 – 90 cm to 120 – 135 cm at various sites (Table 5). We assessed the overall effect of removal of sediment to target depths by comparing numbers of exceedances of the SEL and PEL guidelines for existing surficial soft sediments and for the new firm sediment layer at the proposed dredging target elevations. For Chedoke Creek, this comparison showed a potential decline in total SEL/PEL exceedances from fifteen to twelve (Table 6)

For Princess Point sites, total exceedances increased with the proposed sediment removal. Wood evaluated two target dredging depths: exposing the 30 - 45 cm interval and exposing the 45 - 60 cm interval. For Princess Point, the comparison of total SEL/PEL exceedances at the existing surface (0 – 15 cm) versus the 30 – 45 cm interval showed a potential increase from 27 to 33 (Table 7). Exposing the 45 – 60 cm sediment interval increased potential SEL/PEL exceedances from 25 to 45 (Table 8) (the number of surficial, baseline exceedances in these two cases changed because fewer sites were available with data at 45 – 60 cm). Metal concentrations within the new locations collected at PP-C20 and PP-C21 were among the highest of any locations collected from the Princess Point embayment.

Table 9 includes metal and PAHs concentrations from the additional samples collected in Cootes Paradise near the fishway in August 2021 (Figure 1). Raw data is included in Appendix B. Although the concentrations of metals and PAHs at these locations do not appear to preclude dredging, dredging in this area would not be economical given the distance to the dredge material management area.

Table 5 – Chedoke Creek Target Exposed Intervals

Location	Target Exposed Interval
CC-C13	90-105
CC-C17	75-90
CC-C19	75-90
CC-C20	105-120
CC-C23	120-135
CC-C26	120-135

Table 6 – Count of SEL and PEL Exceedances in Chedoke Creek Existing Surficial Interval and Target Exposed Intervals

Interval	Count
Existing Surficial Interval	15
Target Exposed Interval	12

Table 7 – Count of SEL and PEL Exceedances in Princess Point in 0 – 15 cm and 30 – 45 cm Intervals

Interval (cm)	Count
0 – 15	27
30 – 45	33

Table 8 – Count of SEL and PEL Exceedances in Princess Point in 0 – 15 cm and 45 – 60 cm Intervals

Interval (cm)	Count
0 – 15	25
45 – 60	45

Table 9 – Metal and PAH Concentrations in Cootes Paradise Samples Collected in August 2021

Analyte	Sample Location								
	CP-C09-0-15	CP-C09-15-30	CP-C09-30-45	CP-C09-45-60	CP-C09A-60-75	CP-C10-0-15	CP-C10-15-30	CP-C10-30-45	CP-C10-45-60
Metals (ug/g)									
Arsenic	5	5.8	6.2	5.9	5.8	4.6	5.8	5.9	5.4
Cadmium	1	1.2	1.8	1.2	1.4	0.77	0.93	1.2	1.1
Chromium	26	28	30	28	28	24	26	26	25
Copper	59	57	65	58	60	53	52	52	52
Lead	44	54	90	55	68	40	42	57	49
Mercury	0.084	0.15	0.26	0.16	0.22	0.091	0.12	0.14	0.11
Nickel	24	24	27	25	25	22	25	25	24
Zinc	350	340	360	340	340	320	320	310	310
PAHs (ug/g)									
Acenaphthene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Acenaphthylene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Anthracene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Benzo(a)anthracene	0.29	0.31	0.25	0.3	0.37	0.18	0.17	0.27	0.22
Benzo(a)pyrene	0.39	0.41	0.29	0.4	0.43	0.23	0.2	0.31	0.28
Benzo(ghi)perylene	0.43	0.36	0.25	0.35	0.36	0.21	0.2	0.26	0.26
Benzo(k)fluoranthene	0.2	0.22	0.16	0.21	0.22	<0.15	0.12	0.17	0.15
Chrysene	0.33	0.39	0.3	0.38	0.43	0.21	0.18	0.3	0.27
Dibenzo(a,h)anthracene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Fluoranthene	0.93	0.95	0.75	0.9	1.1	0.53	0.47	0.78	0.63
Fluorene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	0.41	0.37	0.26	0.36	0.36	0.21	0.2	0.28	0.26
1-Methylnaphthalene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
2-Methylnaphthalene	<0.20	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Naphthalene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Phenanthrene	0.22	0.27	0.32	0.24	0.44	<0.15	0.13	0.34	0.19
Pyrene	0.75	0.77	0.6	0.73	0.89	0.42	0.38	0.61	0.52

5.0 RECOMMENDATIONS

Revised dredging recommendations for Chedoke Creek and Princess Point are included below. These recommendations supersede the recommendations included in the previous technical memorandum titled "Evaluation of Chedoke Creek and Princess Point Sediment Cores and Preliminary Estimate of In-Situ Total Phosphorus and Total Nitrogen Mass, City of Hamilton" and dated July 7, 2021.

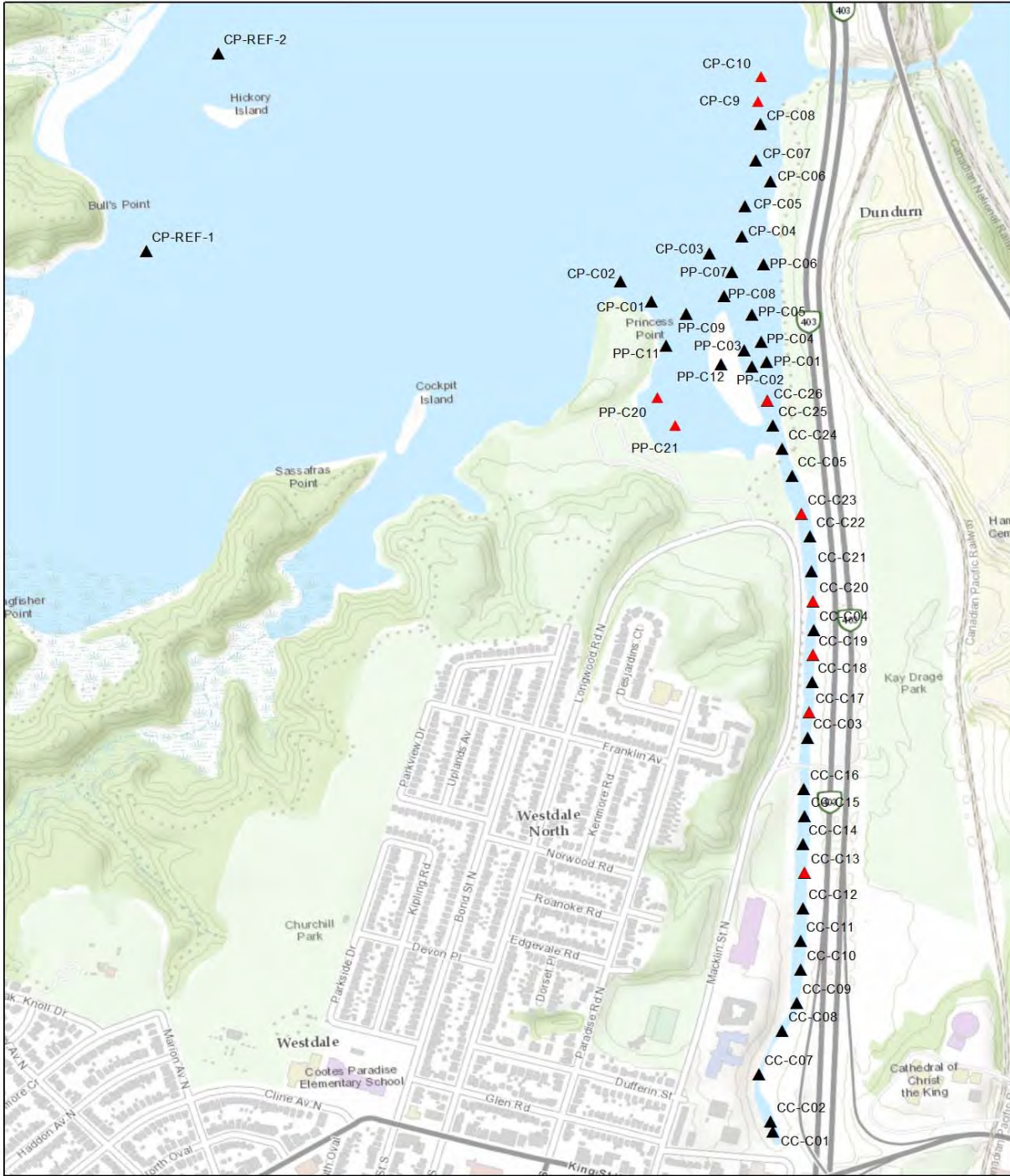
Recommendations for Chedoke Creek:

- Proceed with dredging in zones 2 and 3 as shown in Figure 2.
- Target dredge elevations for sediment removal will be determined using the top of the exposed target interval shown in Table 5.

Recommendations for Princess Point:

- Dredging is not recommended in zones 4 or 5 due to underlying metal contaminants.
- Sediments near the fishway may be suitable for dredging as part of future restoration efforts, but the distance from this site to the dredge material management area is cost prohibitive.

Revised material quantities and load reductions associated with the revised dredge template will be provided with the 90% design plans. While removal of the Princess Point embayment from the dredge template reduces the potential mass reductions stated in the previous technical memorandum, dredging to deeper target depths within Chedoke Creek should provide at least 50% of the maximum total phosphorus and total Kjeldahl nitrogen load reduction estimates and is consistent with the original concept plan for targeted dredging within Chedoke Creek.



<p>Data sources: ESRI, USGS, Wood 2021</p> <p>Created by: SB Checked by: LL</p>	<p>Legend</p> <ul style="list-style-type: none"> ▲ Sediment Sample Locations (April 2021) ▲ Sediment Sample Locations (August 2021) <p>0 0.125 0.25 0.5 Kilometers</p>	<p>Sediment Sample Locations</p> 
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Figure 1. Chedoke Creek, Cootes Paradise, and Princess Point Sediment Sample Locations



Figure 2. Recommended Dredge Zones

Appendix A

Sediment Analysis Results Tables – April 2021

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C01			CC-C02			CC-07							
Sample ID	CC-C01-CW-0-15	CC-C02WEST-0-15	CC-C02WEST-15-30	CC-C02WEST-30-45	CC-C02CENTRE-0-15	CC-C02EAST-0-15	CC-C07WEST-0-15	CC-C07WEST-15-30	CC-C07WEST-30-45	CC-C07CENTRE-0-15	CC-C07CENTRE-15-30	CC-C07CENTRE-30-45	CC-C08WEST-0-15	
BV Labs Sample ID	PGU189	PGU190	PGU191	PGU192	PGU194	PGU193	PGU186	PGU187	PGU188	PGU182	PGU183	PGU185	PGU179	
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/8/21 14:05	4/8/21 14:05	4/8/21 14:05	4/8/21 13:40	4/8/21 13:40	4/8/21 13:40	4/8/21 10:40	4/8/21 10:40	4/8/21 10:40	4/8/21 9:58	4/8/21 9:58	4/8/21 9:58	4/8/21 8:30	
Parameter Name	Units													
PHYSICAL														
Moisture	%	28	36	44	38	21	29	67	76	79	19	19	19	44
ANIONS & NUTRIENTS														
Total Ammonia-N	ug/g	42	302	586	381	<20	47	<20	<20	<20	<20	<20	<20	
Nitrogen (N)	%	0.081	0.16	0.25	0.18	0.025	0.14	0.34	0.3	0.36	0.025	0.042	0.047	0.17
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	805	1620	2480	1800	247	1400	3370	3000	3650	252	418	473	1650
Nitrite (N)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Nitrate (N)	ug/g	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Nitrate + Nitrite (N)	ug/g	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
METALS														
Acid Extractable Aluminum (Al)	ug/g	9500	9000	7700	9900	11000	12000	920	270	420	11000	11000	10000	9600
Acid Extractable Antimony (Sb)	ug/g	0.56	0.59	0.68	0.66	0.51	0.28	<0.20	<0.20	<0.20	0.43	0.42	0.43	0.86
Acid Extractable Arsenic (As)	ug/g	4	3.9	5.8	6.9	5.1	4.3	20	11	7.4	4	4.7	4.1	5.2
Acid Extractable Barium (Ba)	ug/g	110	110	79	110	95	310	260	260	120	170	120	170	97
Acid Extractable Beryllium (Be)	ug/g	0.57	0.51	0.45	0.56	0.66	0.59	<0.20	<0.20	<0.20	0.59	0.61	0.6	0.55
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1
Acid Extractable Boron (B)	ug/g	20	20	17	13	19	8.2	5.1	6.8	25	26	24	24	17
Acid Extractable Cadmium (Cd)	ug/g	0.32	0.42	0.83	1	0.33	0.39	0.17	<0.10	<0.10	0.33	0.37	0.28	0.57
Acid Extractable Calcium (Ca)	ug/g	61000	65000	66000	69000	61000	36000	300000	270000	240000	59000	59000	54000	67000
Acid Extractable Chromium (Cr)	ug/g	21	22	27	33	26	19	1.9	<1.0	1.2	20	26	22	26
Acid Extractable Cobalt (Co)	ug/g	8.9	8.5	8.4	9.1	10	9.7	2.1	0.99	0.95	9.8	9.9	9.8	8.7
Acid Extractable Copper (Cu)	ug/g	47	51	63	81	35	34	5	2.2	2.9	43	37	56	71
Acid Extractable Iron (Fe)	ug/g	25000	23000	21000	23000	30000	23000	21000	15000	16000	29000	29000	29000	23000
Acid Extractable Lead (Pb)	ug/g	22	23	48	61	28	36	1.1	<1.0	1.2	14	46	20	36
Acid Extractable Magnesium (Mg)	ug/g	23000	27000	26000	25000	24000	13000	5600	4200	4700	23000	23000	21000	21000
Acid Extractable Manganese (Mn)	ug/g	560	550	620	660	690	690	690	750	580	600	570	510	
Acid Extractable Molybdenum (Mo)	ug/g	0.89	1.2	1.1	1.1	1	<0.50	4.4	4.1	4.1	0.92	0.94	0.9	1.3
Acid Extractable Nickel (Ni)	ug/g	22	22	21	24	26	22	3	1.4	1.8	24	25	25	22
Acid Extractable Phosphorus (P)	ug/g	880	1000	1100	970	950	320	190	240	800	870	870	870	870
Acid Extractable Potassium (K)	ug/g	1800	1900	1500	1900	2500	1800	280	<200	<200	2400	2600	2400	1900
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	0.5	<0.50	<0.50	<0.50	1.5	1.2	1.4	<0.50	<0.50	<0.50	0.51
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	0.28	0.31	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.4
Acid Extractable Sodium (Na)	ug/g	450	390	430	430	450	510	450	340	420	270	310	300	290
Acid Extractable Strontium (Sr)	ug/g	110	110	120	130	120	72	260	200	180	99	110	83	120
Acid Extractable Thallium (Tl)	ug/g	0.11	0.12	0.15	0.18	0.098	0.11	<0.050	<0.050	<0.050	0.097	0.11	0.11	0.19
Acid Extractable Tin (Sn)	ug/g	1.2	1.5	2.5	2.8	1	3.7	<1.0	<1.0	<1.0	1.7	1.6	1.5	2.7
Acid Extractable Uranium (U)	ug/g	0.6	0.62	0.65	0.57	0.61	0.53	24	21	29	0.62	0.62	0.61	0.89
Acid Extractable Vanadium (V)	ug/g	22	21	21	24	25	25	<5.0	<5.0	<5.0	25	25	25	23
Acid Extractable Zinc (Zn)	ug/g	230	240	350	410	200	150	39	11	13	220	240	190	380
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.079	0.096	0.12	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.17
PAHs														
Acenaphthene	ug/g	0.16	0.053	0.16	0.16	<0.050	<0.050	<0.015	<0.020	<0.020	0.075	<0.050	<0.050	<0.10
Acenaphthylene	ug/g	0.053	<0.050	<0.10	<0.10	<0.050	<0.050	<0.015	<0.020	<0.020	<0.050	0.063	<0.050	<0.10
Anthracene	ug/g	0.31	0.09	0.25	0.066	0.29	0.066	<0.015	<0.020	<0.020	0.14	0.25	<0.050	<0.10
Benzo(a)anthracene	ug/g	1	0.55	1.1	1.2	<0.050	0.17	<0.015	<0.020	<0.020	0.33	0.99	0.16	0.41
Benzo(a)pyrene	ug/g	0.89	0.66	1.1	1.3	<0.050	0.16	0.019	<0.020	<0.020	0.31	0.96	0.17	0.47
Benzo(b)fluoranthene	ug/g	1.3	1	1.6	1.8	0.053	0.23	0.031	<0.020	<0.020	0.47	1.4	0.27	0.74
Benzo(g,h,i)perylene	ug/g	0.6	0.51	0.81	0.91	<0.050	0.12	0.019	<0.020	<0.020	0.24	0.87	0.14	0.4
Benzo(k)fluoranthene	ug/g	0.47	0.28	0.59	0.67	<0.050	0.082	<0.015	<0.020	<0.020	0.16	0.48	0.082	0.21
Chrysene	ug/g	1.1	0.76	1.2	1.5	<0.050	0.16	0.017	<0.020	<0.020	0.34	1	0.2	0.46
Dibenzo(a,h)anthracene	ug/g	0.16	0.087	0.18	0.2	<0.050	<0.050	<0.015	<0.020	<0.020	0.053	0.19	<0.050	<0.10
Fluoranthene	ug/g	3.5	2.1	3.6	3.8	0.1	0.45	0.043	<0.020	<0.020	1.3	2.8	0.68	1.5
Fluorene	ug/g	0.15	0.067	0.19	0.19	<0.050	<0.050	<0.015	<0.020	<0.020	0.085	0.054	<0.050	<0.10
Indeno(1,2,3-cd)pyrene	ug/g	0.66	0.53	0.88	0.13	<0.050	0.02	<0.020	<0.020	<0.020	0.25	0.84	0.14	0.41
Methylnaphthalene, 2-(1-)	ug/g	<0.071	<0.071	<0.14	<0.14	<0.071	<0.071	<0.021	<0.028	<0.028	<0.071	<0.071	<0.071	<0.14
1-Methylnaphthalene	ug/g	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.015	<0.020	<0.020	<0.050	<0.050	<0.050	<0.10
2-Methylnaphthalene	ug/g	0.066	<0.050	0.11	<0.10	<0.050	0.11	<0.015	<0.020	<0.020	<0.050	<0.050	<0.050	<0.10
Naphthalene	ug/g	0.14	<0.050	<0.10	<0.10	<0.050	<0.050	<0.015	<0.020	<0.020	<0.050	<0.050	<0.050	<0.10
Phenanthrene	ug/g	2.4	1	1.8	0.062	1.8	0.29	1.8	0.02	<0.020	<0.020	0.9	1.1	0.53
Pyrene	ug/g	2.5	1.6	2.7	2.8	0.077	0.35	0.031	<0.020	<0.020	0.88	2.1	0.49	1.1
SIZE DISTRIBUTION														
< -1 Phi (2 mm)	%	97	100	100	100	51	89							87
< 0 Phi (1 mm)	%	92	99	99	100	32	85							83
< +1 Phi (0.5 mm)	%	84	97	98	99	22	83							81
< +2 Phi (0.25 mm)	%	64	82	91	92	17	80							79
< +3 Phi (0.12 mm)	%	43	51	73	79	13	76							76
< +4 Phi (0.062 mm)	%	32	34	55	66	11	72							70
< +5 Phi (0.031 mm)	%	27	29	42	54	9.4	63							59
< +6 Phi (0.016 mm)	%	21	21	31	39	7.4	50							42
< +7 Phi (0.0078 mm)	%	14	14	19	23	4.7	33							24
< +8 Phi (0.0039 mm)	%	11	11	16	19	4	28							19
< +9 Phi (0.0020 mm)	%	7.8	7.9	11	14	2.7	21							12
Gravel	%	2.6	0.28	0.34	<0.10	49	11							13
Coarse Sand	%	42	30	13	36	16	11							8.7
Fine Sand	%	24	36	29	20	4.4	6.2							7.8
Silt	%	20	23	39	47	6.7	44							51
Clay	%	11	11	16	19	4	28							19
Loss on Ignition	%w/w	2.8	3.9	6.4	5.5	1.7	5.5							5.4
Wet Bulk Density	g/cm ³	1.8	1.7	1.6		2	1.8							1.6
Liquid Limit	%w/w													61
Plastic Limit	%w/w													33
Plasticity Index	%w/w													

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C08			CC-C09	CC-C10			CC-C11							
Sample ID	CC-C08WEST-15-30	CC-C08WEST-30-45	CC-C08CENTRE-0-15	CC-C09-EAST-0-15	CC-C10-CENTRE-0-15	CC-C10-EAST-0-15	CC-C11-WEST-0-15	CC-C11-WEST-15-30	CC-C11-CENTRE-0-15	CC-C11-CENTRE-15-30	CC-C11-CENTRE-30-45	CC-C11-CENTRE-45-60	CC-C11-EAST-0-15	CC-C12WEST-0-15	
BV Labs Sample ID	PGU180	PGU181	PGU178	PHJ586	PHJ588	PHJ587	PHJ594	PHJ595	PHJ590	PHJ591	PHJ592	PHJ593	PHJ589	PGU172	
Matrix	Sediment	Sediment	Sediment	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Sediment	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/8/21 8:30	4/8/21 8:30	4/8/21 12:45	4/9/21 9:10	4/9/21 9:50	4/9/21 10:10	4/9/21 10:45	4/9/21 10:45	4/9/21 12:00	4/9/21 12:00	4/9/21 12:00	4/9/21 12:00	4/9/21 13:12	4/7/21 12:25	
Parameter Name	Units														
PHYSICAL															
Moisture	%	28	19	17	19	20	18	44	22	16	19	29	30	17	45
ANIONS & NUTRIENTS															
Total Ammonia-N	ug/g	<20	26	<20	<20	<20	<20	167	129	<20	<20	<20	<20	<20	139
Nitrogen (N)	%	0.08	0.03	0.034											0.2
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	803	298	339	570	269	241	2230	754	344	258	801	919	269	1960
Nitrite (N)	ug/g	<0.5	<0.5	<0.5											<0.5
Nitrate (N)	ug/g	<2	<2	<2											<2
Nitrate + Nitrite (N)	ug/g	<3	<3	<3											<3
METALS															
Acid Extractable Aluminum (Al)	ug/g	9400	11000	9400	8000	9000	8400	10000	7400	8300	8800	12000	16000	8700	10000
Acid Extractable Antimony (Sb)	ug/g	0.59	<0.20	0.38	0.7	3.4	0.46	0.9	0.63	0.38	1.2	5.1	2	1.2	1
Acid Extractable Arsenic (As)	ug/g	7.1	4.8	4.4	4	5.6	6.9	4.5	4.1	4.4	6.5	6.8	5.3	5.5	4.6
Acid Extractable Barium (Ba)	ug/g	80	76	190	70	130	86	120	92	130	140	230	190	87	120
Acid Extractable Beryllium (Be)	ug/g	0.5	0.55	0.51	0.42	0.54	0.48	0.55	0.44	0.48	0.56	0.71	0.82	0.45	0.57
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	1.1
Acid Extractable Boron (B)	ug/g	14	8.3	24	12	20	17	23	18	18	20	32	16	17	22
Acid Extractable Cadmium (Cd)	ug/g	0.47	0.11	0.48	0.23	0.67	0.61	0.65	0.45	0.65	1.4	25	13	0.83	0.68
Acid Extractable Calcium (Ca)	ug/g	71000	87000	64000	66000	71000	79000	66000	72000	71000	66000	48000	20000	65000	64000
Acid Extractable Chromium (Cr)	ug/g	21	18	22	15	27	21	27	22	21	27	39	33	19	28
Acid Extractable Cobalt (Co)	ug/g	8.6	11	9.3	7.1	8.7	8	8.5	6.8	7.6	10	16	13	7.6	8.7
Acid Extractable Copper (Cu)	ug/g	39	32	59	33	130	58	84	65	59	89	140	62	40	90
Acid Extractable Iron (Fe)	ug/g	23000	25000	28000	18000	29000	23000	23000	21000	25000	30000	25000	26000	25000	23000
Acid Extractable Lead (Pb)	ug/g	23	12	42	20	74	21	40	31	50	260	120	59	94	38
Acid Extractable Magnesium (Mg)	ug/g	18000	14000	25000	17000	22000	24000	25000	23000	25000	20000	14000	7700	17000	25000
Acid Extractable Manganese (Mn)	ug/g	530	680	590	510	630	600	540	530	520	690	570	350	580	540
Acid Extractable Molybdenum (Mo)	ug/g	1.1	<0.50	0.92	0.74	1	0.81	1.2	0.87	0.92	1	0.88	0.51	0.95	1.4
Acid Extractable Nickel (Ni)	ug/g	20	23	22	17	21	19	22	18	19	27	51	41	19	25
Acid Extractable Phosphorus (P)	ug/g	730	780	930	780	870	780	1200	960	910	960	1400	1000	980	1300
Acid Extractable Potassium (K)	ug/g	1900	2000	2400	1600	2100	1900	2200	1700	1700	1800	2000	2200	1500	2200
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.55
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	4.4	0.22	0.51	<0.20	<0.20	0.56	3.6	1.3	2.8	1
Acid Extractable Sodium (Na)	ug/g	180	200	280	560	670	290	370	180	270	200	250	170	320	470
Acid Extractable Strontium (Sr)	ug/g	130	160	97	140	96	100	120	120	95	92	88	48	120	120
Acid Extractable Thallium (Tl)	ug/g	0.15	0.11	0.11	0.096	0.1	0.098	0.18	0.11	0.1	0.094	0.14	0.14	0.099	0.2
Acid Extractable Tin (Sn)	ug/g	1.6	<1.0	1.2	2.8	11	4	4.6	4.8	2	49	20	9.2	11	4.2
Acid Extractable Uranium (U)	ug/g	0.91	0.61	0.56	0.52	0.59	0.7	0.68	0.6	0.53	0.73	0.83	0.52	0.52	0.66
Acid Extractable Vanadium (V)	ug/g	23	24	25	20	26	22	24	21	24	25	27	29	22	24
Acid Extractable Zinc (Zn)	ug/g	220	66	270	130	340	270	340	230	260	250	400	210	210	370
Acid Extractable Mercury (Hg)	ug/g	0.072	<0.050	<0.050	0.053	11	0.1	0.1	0.051	0.49	1	0.58	0.16	0.061	0.67
PAHs															
Acenaphthene	ug/g	<0.050	<0.0050	<0.050	<0.050	0.06	<0.050	<0.10	<0.050	<0.050	0.062	0.1	0.16	<0.050	<0.10
Acenaphthylene	ug/g	<0.050	<0.0050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	<0.050	0.051	<0.050	<0.10
Anthracene	ug/g	<0.050	<0.0050	<0.050	0.066	0.085	<0.050	0.15	0.091	<0.050	0.077	0.26	0.057	0.11	0.11
Benzo(a)anthracene	ug/g	0.21	0.0064	0.13	0.27	0.37	<0.050	0.61	0.34	<0.050	0.12	0.38	0.98	0.11	0.56
Benzo(a)pyrene	ug/g	0.23	0.0071	0.12	0.28	0.36	<0.050	0.78	0.38	<0.050	0.09	0.35	1.1	0.096	0.67
Benzo(b,j)fluoranthene	ug/g	0.38	0.014	0.16	0.44	0.54	<0.050	1.3	0.6	0.093	0.13	0.52	1.5	0.14	0.96
Benzo(g,h,i)perylene	ug/g	0.21	0.0091	0.083	0.19	0.27	<0.050	0.68	0.32	0.05	0.061	0.25	0.7	0.068	0.5
Benzo(k)fluoranthene	ug/g	0.11	<0.0050	0.06	0.15	0.19	<0.050	0.43	0.19	<0.050	0.19	0.53	0.052	0.33	0.33
Chrysene	ug/g	0.22	0.011	0.13	0.31	0.36	<0.050	0.89	0.38	0.064	0.11	0.34	0.78	0.099	0.69
Dibenzo(a,h)anthracene	ug/g	<0.050	<0.0050	<0.050	<0.050	0.056	<0.050	0.12	0.053	<0.050	<0.050	0.055	0.22	<0.050	<0.10
Fluoranthene	ug/g	0.74	0.027	0.34	0.87	1.3	0.05	2.7	1.2	0.22	0.38	1.1	1.6	0.34	2.1
Fluorene	ug/g	<0.050	<0.0050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	0.1	0.18	<0.050	<0.10
Indeno(1,2,3-cd)pyrene	ug/g	0.21	0.0061	0.089	0.2	0.27	<0.050	0.66	0.31	<0.050	0.065	0.29	0.78	0.068	0.51
Methylnaphthalene, 2-(1-)	ug/g	<0.071	<0.0071	<0.071	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	<0.050	0.056	<0.050	<0.10
1-Methylnaphthalene	ug/g	<0.050	<0.0050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	<0.050	0.056	<0.050	<0.10
2-Methylnaphthalene	ug/g	<0.050	<0.0050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	0.055	0.076	<0.050	<0.10
Naphthalene	ug/g	<0.050	<0.0050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	0.081	<0.050	<0.10	<0.10
Phenanthrene	ug/g	0.21	0.015	0.13	0.39	0.66	<0.050	1.1	0.51	0.056	0.51	1.3	0.23	0.82	0.82
Pyrene	ug/g	0.57	0.024	0.25	0.65	0.85	<0.050	2	0.83	0.16	0.28	0.72	1.1	0.26	1.6
SIZE DISTRIBUTION															
< -1 Phi (2 mm)	%	82	98	73				93	80	60	71	87	99	47	
< 0 Phi (1 mm)	%	76	97	63				91	72	52	54	78	98	34	
< +1 Phi (0.5 mm)	%	74	97	50				89	66	40	32	66	97	24	
< +2 Phi (0.25 mm)	%	72	94	35				76	49	19	11	55	92	15	
< +3 Phi (0.12 mm)	%	67	90	27				60	27	10	6.2	51	83	9.2	
< +4 Phi (0.062 mm)	%	62	86	25				49	19	7.6	5	46	77	6.9	
< +5 Phi (0.031 mm)	%	54	78	23				38	15	6.3	4.1	37	67	5.5	
< +6 Phi (0.016 mm)	%	42	64	20				27	11	4.9	3.1	30	57	4.2	
< +7 Phi (0.0078 mm)	%	25	40	14				16	6.5	3	2	20	39	2.6	
< +8 Phi (0.0039 mm)	%	20	37	12				13	5.5	2.5	1.6	17	34	2.1	
< +9 Phi (0.0020 mm)	%	14	25	8				8.7	3.8	1.7	1.2	13	26	1.5	
Gravel	%	18	2.2	27				6.9	20	40	29	13	0.8	53	
Coarse Sand	%	11	5.7	41				24	40	44	62	34	11	34	
Fine Sand	%	8.2	6.2	6.7				21	21	8	4.3	7.1	11	5.6	
Silt	%	41	49	13		</									

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C12				CC-C13											
	CC-C12WEST-15-30	CC-C12WEST-30-50	CC-C12CENTRE-0-15	CC-C12EAST-0-15	CC-C13WEST-0-15	CC-C13WEST-15-30	CC-C13WEST-30-45	CC-C13CENTRE-0-15	CC-C13CENTRE-15-30	CC-C13CENTRE-30-45	CC-C13EAST-0-15	CC-C13EAST-15-30	CC-C13EAST-30-50	CC-C14-WEST-0-15	CC-C14-WEST-15-30	
Sample ID	PGU174	PGU175	PGU177	PGU176	PGU163	PGU164	PGU165	PGU166	PGU167	PGU168	PGU169	PGU170	PGU171	PIX228	PIX229	
BV Labs Sample ID	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Soil	Soil	
Matrix	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampled By																
Sampling Date and Time	4/7/21 12:25	4/7/21 12:25	4/7/21 12:10	4/7/21 11:45	4/7/21 17:10	4/7/21 17:10	4/7/21 17:10	4/7/21 16:30	4/7/21 16:30	4/7/21 16:30	4/7/21 15:00	4/7/21 15:00	4/7/21 15:00	4/19/21 11:00	4/19/21 11:00	
Parameter Name	Units															
PHYSICAL																
Moisture	%	20	43	23	18	42	20	23	16	15	16	16	21	42	44	18
ANIONS & NUTRIENTS																
Total Ammonia-N	ug/g	37	98	38	74	207	87	72	<20	48	59	<20	36	141	91	<20
Nitrogen (N)	%	0.072	0.24	0.068	0.058	0.21	0.067	0.083	0.03	0.03	0.052	0.03	0.064	0.28	0.25	0.036
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	715	2380	677	578	2130	665	832	302	303	521	304	640	2780	2490	360
Nitrite (N)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate (N)	ug/g	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nitrate + Nitrite (N)	ug/g	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
METALS																
Acid Extractable Aluminum (Al)	ug/g	11000	14000	7700	8900	9600	9700	12000	8600	8900	8400	7000	9800	13000	12000	9700
Acid Extractable Antimony (Sb)	ug/g	3.5	5.6	1	1.5	1.2	7.7	2.9	0.45	2.9	2.6	5.4	3.3	5.2	1.4	0.91
Acid Extractable Arsenic (As)	ug/g	5.8	6.6	5	7.4	5.1	6.3	7.9	4.5	5.7	4.6	4.6	7.1	8.4	5.1	4.3
Acid Extractable Barium (Ba)	ug/g	160	250	120	120	110	160	210	110	110	160	110	150	280	120	92
Acid Extractable Beryllium (Be)	ug/g	0.62	0.71	0.5	0.5	0.56	0.56	0.68	0.48	0.49	0.52	0.44	0.54	0.67	0.55	0.5
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	<1.0	<1.0	1.3	1.1	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	1.3	<1.0
Acid Extractable Boron (B)	ug/g	33	41	22	22	21	22	22	22	25	26	18	27	38	20	20
Acid Extractable Cadmium (Cd)	ug/g	18	37	1.7	3.6	0.82	4.3	22	0.58	4.9	10	0.42	19	44	0.97	0.65
Acid Extractable Calcium (Ca)	ug/g	53000	36000	63000	57000	59000	62000	57000	67000	68000	65000	60000	58000	50000	66000	72000
Acid Extractable Chromium (Cr)	ug/g	38	44	33	25	30	33	46	25	26	30	22	35	66	33	26
Acid Extractable Cobalt (Co)	ug/g	13	17	8.7	8.6	8.9	9.5	14	8.4	11	11	7	12	17	8.8	8.4
Acid Extractable Copper (Cu)	ug/g	120	100	46	95	85	100	200	52	93	98	49	87	150	99	63
Acid Extractable Iron (Fe)	ug/g	25000	24000	27000	26000	24000	26000	29000	25000	24000	23000	26000	24000	24000	25000	27000
Acid Extractable Lead (Pb)	ug/g	110	95	120	140	52	180	170	37	180	100	170	110	180	55	120
Acid Extractable Magnesium (Mg)	ug/g	16000	11000	22000	18000	24000	21000	17000	23000	20000	22000	20000	16000	13000	26000	24000
Acid Extractable Manganese (Mn)	ug/g	600	490	580	580	540	580	670	580	710	650	530	650	610	550	550
Acid Extractable Molybdenum (Mo)	ug/g	1	0.79	2.3	1.1	1.5	1.6	1.5	0.81	0.92	1	0.9	0.92	1.3	1.5	1.2
Acid Extractable Nickel (Ni)	ug/g	39	59	33	24	24	28	44	21	42	32	18	42	61	25	22
Acid Extractable Phosphorus (P)	ug/g	1300	1200	980	1100	1400	1400	1900	1100	980	1300	1100	1300	2200	1500	960
Acid Extractable Potassium (K)	ug/g	2200	2100	1700	1800	2000	2000	2200	1900	1600	1600	1600	1600	2000	2100	2000
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	0.61	0.56	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	0.68	<0.50
Acid Extractable Silver (Ag)	ug/g	3.1	3.1	5.9	3.8	1.1	2.7	6	<0.20	0.95	2.7	0.28	2.3	9.8	0.88	<0.20
Acid Extractable Sodium (Na)	ug/g	350	240	310	340	360	250	290	260	260	270	330	260	390	250	270
Acid Extractable Strontium (Sr)	ug/g	93	78	91	96	120	110	110	100	94	95	100	96	100	120	110
Acid Extractable Thallium (Tl)	ug/g	0.16	0.15	0.11	0.12	0.21	0.17	0.2	0.11	0.097	0.13	0.11	0.12	0.17	0.21	0.13
Acid Extractable Tin (Sn)	ug/g	24	20	5	26	6.6	19	26	4.1	8.5	12	22	30	33	8.5	32
Acid Extractable Uranium (U)	ug/g	0.72	0.78	0.54	0.54	0.7	0.74	0.74	0.58	0.56	0.75	0.55	0.97	0.75	0.78	0.69
Acid Extractable Vanadium (V)	ug/g	25	28	24	25	24	24	28	23	22	22	26	23	28	24	21
Acid Extractable Zinc (Zn)	ug/g	360	370	230	290	410	360	510	220	250	320	190	320	580	430	270
Acid Extractable Mercury (Hg)	ug/g	0.63	0.33	19	0.21	0.36	1.4	0.74	0.092	0.27	0.36	<0.050	0.45	1	0.26	0.059
PAHs																
Acenaphthene	ug/g	0.43	0.15	0.05	<0.050	<0.10	0.088	0.4	<0.050	0.076	0.067	0.0074	0.18	0.58	<0.10	<0.050
Acenaphthylene	ug/g	<0.050	<0.010	0.0079	<0.050	<0.10	<0.050	0.055	<0.050	<0.050	<0.0050	<0.0050	<0.050	<0.10	<0.10	<0.050
Anthracene	ug/g	0.35	0.047	0.052	<0.050	<0.10	0.13	0.32	<0.050	0.091	0.092	0.017	0.24	0.45	0.25	0.058
Benzo(a)anthracene	ug/g	1.5	0.098	0.14	0.11	0.45	0.35	1.2	0.061	0.2	0.23	0.065	0.64	0.98	0.87	0.2
Benzo(a)pyrene	ug/g	1.2	0.084	0.13	0.17	0.54	0.38	0.99	0.056	0.18	0.22	0.063	0.48	0.89	1	0.19
Benzo(b,j)fluoranthene	ug/g	1.6	0.11	0.18	0.25	0.86	0.5	1.4	0.085	0.24	0.27	0.094	0.62	1.3	1.6	0.29
Benzo(g,h,i)perylene	ug/g	0.62	0.057	0.086	0.16	0.44	0.26	0.58	<0.050	0.12	0.13	0.045	0.25	0.53	0.95	0.15
Benzo(k)fluoranthene	ug/g	0.63	0.042	0.054	0.079	0.24	0.17	0.54	<0.050	0.077	0.099	0.026	0.23	0.38	0.55	0.099
Chrysene	ug/g	1.6	0.089	0.15	0.14	0.56	0.36	1.4	0.084	0.21	0.23	0.068	0.55	0.95	1	0.22
Dibenzo(a,h)anthracene	ug/g	0.18	0.015	0.022	<0.050	<0.10	0.062	0.16	<0.050	<0.050	0.034	0.01	0.076	0.14	0.2	<0.050
Fluoranthene	ug/g	4.8	0.32	0.48	0.45	1.6	1	4.1	0.28	0.62	0.68	0.25	1.9	3	3.3	0.67
Fluorene	ug/g	0.32	0.086	0.04	<0.050	<0.10	0.086	0.33	<0.050	0.072	0.063	0.0051	0.18	0.55	<0.10	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	0.78	0.065	0.097	0.15	0.44	0.29	0.68	<0.050	0.13	0.15	0.049	0.3	0.61	0.96	0.16
Methylnaphthalene, 2-(1-)	ug/g	0.19	0.044	0.013	<0.071	<0.14	<0.071	0.48	<0.071	<0.071	0.049	<0.0071	<0.071	0.69	<0.14	<0.071
1-Methylnaphthalene	ug/g	0.088	0.013	0.0068	<0.050	<0.10	0.054	0.2	<0.050	<0.050	0.025	<0.0050	<0.050	0.32	<0.10	<0.050
2-Methylnaphthalene	ug/g	0.11	0.031	0.0064	<0.050	<0.10	<0.050	0.28	<0.050	<0.050	0.024	<0.0050	<0.050	0.36	<0.10	<0.050
Naphthalene	ug/g	0.089	0.032	0.0056	<0.050	<0.10	<0.050	0.35	<0.050	<0.050	0.014	<0.0050	<0.050	<0.10	<0.10	<0.050
Phenanthrene	ug/g	4.2	0.39	0.23	0.14	0.62	0.63	3.8	0.14	0.42	0.41	0.065	1.4	2.5	1.4	0.24
Pyrene	ug/g	3.5	0.24	0.35	0.34	1.2	0.78	2.9	0.21	0.47	0.49	0.18	1.4	2.2	2.4	0.46
SIZE DISTRIBUTION																
< -1 Phi (2 mm)	%					85	64	74	77	65	65	64	84	99		
< 0 Phi (1 mm)	%					75	44	54	64	51	47	53	69	99		
< +1 Phi (0.5 mm)	%					66	29	44	48	37	33	37	54	98		
< +2 Phi (0.25 mm)	%					60	22	39	27	21	23	18	41	97		
< +3 Phi (0.12 mm)	%					57	18	38	17	17	16	10	36	96		
< +4 Phi (0.062 mm)	%					53	15	37	14	12	12	7.9	31	89		
< +5 Phi (0.031 mm)	%					45	13	34	13	10	10	7	27	80		
< +6 Phi (0.016 mm)	%					35	9.5	30	11	7.8	7.9	5.6	22	63		
< +7 Phi (0.0078 mm)	%					22	5.9	21	8	4.9	5.1	3.9	15	41		

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C14								CC-C15						
Sample ID	CC-C14-WEST-30-45	CC-C14-CENTRE-0-15	CC-C14-CENTRE-15-30	CC-C14-CENTRE-30-45	CC-C14-EAST-0-15	CC-C14-EAST-15-30	CC-C14-EAST-30-45	CC-C15-WEST-0-15	CC-C15-WEST-15-30	CC-C15-WEST-30-45	CC-C15-CENTRE-0-15	CC-C15-CENTRE-15-30	CC-C15-EAST-0-15	CC-C15-EAST-15-30	
BV Labs Sample ID	PIX230	PIX225	PIX226	PIX227	PIX222	PIX223	PIX224	PHJ602	PHJ603	PHJ604	PHJ600	PHJ601	PHJ596	PHJ597	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/19/21 11:00	4/19/21 10:30	4/19/21 10:30	4/19/21 10:30	4/19/21 10:00	4/19/21 10:00	4/19/21 10:00	4/12/21 11:00	4/12/21 11:00	4/12/21 11:00	4/12/21 10:30	4/12/21 10:30	4/9/21 14:00	4/9/21 14:00	
Parameter Name	Units														
PHYSICAL															
Moisture	%	18	17	19	18	26	24	38	53	54	24	20	18	20	31
ANIONS & NUTRIENTS															
Total Ammonia-N	ug/g	<20	21	47	43	23	67	146	347	247	<20	24	<20	<20	46
Nitrogen (N)	%	0.021	0.034	0.028	0.025	0.044	0.086	0.22							
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	205	336	278	255	440	858	2200	4080	3980	683	553	286	506	1570
Nitrite (N)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5							
Nitrate (N)	ug/g	<2	<2	<2	<2	<2	<2	<2							
Nitrate + Nitrite (N)	ug/g	<3	<3	<3	<3	<3	<3	<3							
METALS															
Acid Extractable Aluminum (Al)	ug/g	11000	8100	7300	8800	7500	13000	18000	11000	9800	12000	8800	10000	8200	9300
Acid Extractable Antimony (Sb)	ug/g	1.7	0.36	0.41	1.7	3.4	5.4	2.5	1.5	1.8	2.1	0.54	0.56	1.6	1.2
Acid Extractable Arsenic (As)	ug/g	6.4	3.2	4.2	5.4	5	9.6	8.8	5.3	7.4	3.2	5	6.2	4.2	
Acid Extractable Barium (Ba)	ug/g	140	150	100	110	100	230	190	120	120	180	110	120	110	100
Acid Extractable Beryllium (Be)	ug/g	0.57	0.46	0.37	0.48	0.38	0.62	0.76	0.59	0.53	0.64	0.51	0.6	0.48	0.47
Acid Extractable Bismuth (Bi)	ug/g	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	1.4	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g	19	21	16	19	16	25	21	23	20	17	22	23	17	13
Acid Extractable Cadmium (Cd)	ug/g	0.85	0.49	0.62	1.1	0.72	28	13	0.79	0.78	2	0.38	0.59	1.1	3.8
Acid Extractable Calcium (Ca)	ug/g	67000	74000	67000	71000	64000	57000	44000	64000	66000	67000	72000	69000	64000	46000
Acid Extractable Chromium (Cr)	ug/g	28	20	29	25	23	46	34	33	29	35	21	26	33	19
Acid Extractable Cobalt (Co)	ug/g	11	7	6.9	8.3	6.9	15	14	9.1	8.6	10	7.5	9.5	8.1	7.8
Acid Extractable Copper (Cu)	ug/g	110	59	61	99	97	140	69	110	95	120	55	69	98	47
Acid Extractable Iron (Fe)	ug/g	31000	22000	24000	26000	24000	31000	32000	25000	25000	27000	23000	28000	27000	20000
Acid Extractable Lead (Pb)	ug/g	140	44	92	120	230	250	110	52	90	190	21	91	140	54
Acid Extractable Magnesium (Mg)	ug/g	19000	25000	20000	20000	19000	13000	12000	24000	26000	23000	26000	22000	17000	9100
Acid Extractable Manganese (Mn)	ug/g	640	500	540	630	490	720	700	540	530	570	520	640	550	530
Acid Extractable Molybdenum (Mo)	ug/g	1.3	0.83	0.77	1.1	1.5	1.6	1	1.8	1.6	1.8	0.8	0.94	2	0.82
Acid Extractable Nickel (Ni)	ug/g	29	17	17	21	22	50	39	25	24	29	21	23	26	22
Acid Extractable Phosphorus (P)	ug/g	950	940	870	1000	930	1500	1200	1600	1500	1100	880	920	1100	920
Acid Extractable Potassium (K)	ug/g	2000	2000	1500	1800	1500	1800	2300	2200	1900	1800	2200	2300	1600	1500
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	1.4	0.7	0.67	0.62	<0.50	<0.50	<0.50	<0.50
Acid Extractable Silver (Ag)	ug/g	0.54	<0.20	<0.20	0.23	0.32	4.1	1.6	0.73	0.67	0.95	1.6	<0.20	0.4	0.88
Acid Extractable Sodium (Na)	ug/g	250	250	200	240	370	580	380	430	420	260	220	190	300	280
Acid Extractable Strontium (Sr)	ug/g	97	100	110	98	110	110	93	120	120	130	100	95	110	82
Acid Extractable Thallium (Tl)	ug/g	0.15	0.11	0.07	0.098	0.13	0.17	0.22	0.22	0.2	0.22	0.14	0.12	0.13	0.1
Acid Extractable Tin (Sn)	ug/g	40	1.8	31	38	44	87	22	5.3	33	75	1.9	30	72	32
Acid Extractable Uranium (U)	ug/g	0.66	0.58	0.48	0.49	0.53	0.65	0.6	0.79	0.77	0.61	0.6	0.57	0.56	0.49
Acid Extractable Vanadium (V)	ug/g	24	21	21	20	20	27	31	25	24	27	20	24	24	23
Acid Extractable Zinc (Zn)	ug/g	320	220	280	270	300	570	410	430	430	510	210	240	280	160
Acid Extractable Mercury (Hg)	ug/g	0.057	<0.050	0.18	0.058	0.62	1.7	0.23	0.31	0.22	0.66	0.34	0.17	0.13	0.12
PAHs															
Acenaphthene	ug/g	<0.050	0.049	0.82	0.043	0.026	0.17	0.09	<0.10	<0.10	0.23	<0.050	<0.050	0.069	0.47
Acenaphthylene	ug/g	<0.050	<0.0050	<0.0050	<0.0050	0.013	<0.050	0.022	<0.10	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050
Anthracene	ug/g	<0.050	0.11	0.061	0.053	0.25	0.14	0.14	0.14	0.12	0.47	0.065	<0.050	<0.050	1.1
Benzo(a)anthracene	ug/g	0.088	0.25	2.3	0.21	0.15	0.62	0.31	0.79	0.66	0.77	0.33	0.054	0.1	0.43
Benzo(a)pyrene	ug/g	0.098	0.22	1.3	0.22	0.16	0.62	0.3	0.99	0.83	0.63	0.34	0.062	0.098	0.28
Benzo(b,j)fluoranthene	ug/g	0.15	0.33	1.7	0.31	0.25	0.95	0.46	1.7	1.5	0.93	0.54	0.11	0.16	0.41
Benzo(g,h,i)perylene	ug/g	0.096	0.17	0.55	0.18	0.15	0.49	0.28	0.91	0.8	0.42	0.26	<0.050	0.073	0.23
Benzo(k)fluoranthene	ug/g	<0.050	0.11	0.64	0.11	0.084	0.3	0.16	0.57	0.46	0.34	0.19	<0.050	0.056	0.15
Chrysene	ug/g	0.11	0.27	1.9	0.23	0.18	0.68	0.31	1.1	0.83	0.67	0.34	0.069	0.11	0.4
Dibenzo(a,h)anthracene	ug/g	<0.050	0.043	0.27	0.04	0.036	0.12	0.076	0.15	0.15	0.099	<0.050	<0.050	<0.050	<0.050
Fluoranthene	ug/g	0.35	0.89	5.3	0.74	0.62	2.3	0.87	2.9	2.5	2.4	1.1	0.15	0.38	4.1
Fluorene	ug/g	<0.050	0.054	0.98	0.032	0.023	0.22	0.11	<0.10	<0.10	0.25	<0.050	<0.050	<0.050	0.48
Indeno(1,2,3-cd)pyrene	ug/g	0.084	0.18	0.67	0.19	0.16	0.53	0.28	0.83	0.73	0.43	0.27	<0.050	0.068	0.2
Methylnaphthalene, 2-(1-)	ug/g	<0.071	0.019	0.1	<0.0071	0.015	0.12	0.071							
1-Methylnaphthalene	ug/g	<0.050	0.0077	0.056	<0.0050	0.0053	0.061	0.031	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050
2-Methylnaphthalene	ug/g	<0.050	0.011	0.049	<0.0050	0.0097	0.054	0.04	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050
Naphthalene	ug/g	<0.050	0.021	0.02	<0.0050	0.0086	<0.050	0.035	<0.10	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050
Phenanthrene	ug/g	0.099	0.53	5.8	0.35	0.2	1.4	0.6	1.1	0.91	1.6	0.4	0.069	0.16	5.5
Pyrene	ug/g	0.26	0.63	3.8	0.53	0.44	1.6	0.67	2	1.7	1.7	0.76	0.1	0.25	2.7
SIZE DISTRIBUTION															
< -1 Phi (2 mm)	%								99	96	85	88	77	71	96
< 0 Phi (1 mm)	%								98	88	60	78	54	58	94
< +1 Phi (0.5 mm)	%								97	79	39	65	29	42	91
< +2 Phi (0.25 mm)	%								96	74	31	46	12	23	85
< +3 Phi (0.12 mm)	%								92	71	28	22	7.6	16	70
< +4 Phi (0.062 mm)	%								80	64	26	14	6	12	56
< +5 Phi (0.031 mm)	%								65	50	21	11	5	10	44
< +6 Phi (0.016 mm)	%								47	36	16	8.4	3.7	7.3	35
< +7 Phi (0.0078 mm)	%								28	21	10	5	2.2	4.6	24
< +8 Phi (0.0039 mm)	%								22	18	8.6	4.1	1.8	3.8	21
< +9 Phi (0.0020 mm)	%								13	10	6	2.8	1.2	2.7	15
Gravel	%								1	3.9	15	12	23	29	3.8
Coarse Sand	%								4.7	23	55	52	66	51	18
Fine Sand	%								14	8.5	4.1	22	4.5	7.9	23
Silt	%								57	47	17	9.9	4.2	8.4	35
Clay	%								22	18	8.6	4.1	1.8	3.8	21
Loss on Ignition	%w/w								7.7	3	3.8	2.4	1.7	2.8	6

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C16										CC-C03				
	Sample ID	CC-C15-EAST-30-45	CC-C15-EAST-45-60	CC-C16-WEST-0-15	CC-C16-WEST-15-30	CC-C16-CENTRE-0-15	CC-C16-CENTRE-15-30	CC-C16-CENTRE-30-45	CC-C16-CENTRE-45-60	CC-C16-EAST-0-15	CC-C16-EAST-15-30	CC-C03-WEST-0-15	CC-C03-WEST-15-30	CC-C03-WEST-30-45	CC-C03-CENTRE-0-15
BV Labs Sample ID	PHJ598	PHJ599	PHJ611	PHJ612	PHJ607	PHJ608	PHJ609	PHJ610	PHJ605	PHJ606	PHY922	PHY923	PHY924	PHY919	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/9/21 14:00	4/9/21 14:00	4/12/21 14:30	4/12/21 14:30	4/12/21 13:30	4/12/21 13:30	4/12/21 13:30	4/12/21 13:30	4/12/21 15:30	4/12/21 15:30	4/13/21 11:30	4/13/21 11:30	4/13/21 11:30	4/13/21 10:30	
Parameter Name	Units														
PHYSICAL															
Moisture	%	36	62	50	37	26	23	29	32	28	24	56	27	25	21
ANIONS & NUTRIENTS															
Total Ammonia-N	ug/g	56	<20	37	<20	34	39	88	89	<20	34	425	85	69	<20
Nitrogen (N)	%														
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	1730	7260	3060	1410	631	349	778	1300	961	558	3800	753	613	388
Nitrite (N)	ug/g														
Nitrate (N)	ug/g														
Nitrate + Nitrite (N)	ug/g														
METALS															
Acid Extractable Aluminum (Al)	ug/g	10000	10000	10000	9700	8400	8900	10000	13000	8100	11000	12000	7200	8200	7800
Acid Extractable Antimony (Sb)	ug/g	1.9	2.8	1.3	1.9	0.58	0.62	4.1	4.6	0.85	3.6	1.4	0.83	1.5	0.56
Acid Extractable Arsenic (As)	ug/g	4.7	6.3	5.2	5.4	3.3	4.5	6.3	8	4.2	7.6	5.4	4.2	3.6	3.1
Acid Extractable Barium (Ba)	ug/g	120	180	120	91	89	100	130	230	94	170	120	83	76	89
Acid Extractable Beryllium (Be)	ug/g	0.54	0.51	0.55	0.53	0.48	0.52	0.57	0.64	0.44	0.56	0.61	0.41	0.42	0.44
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	1.4	1.4	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	2.2	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g	17	26	20	17	19	22	19	39	19	26	20	13	9.7	17
Acid Extractable Cadmium (Cd)	ug/g	9.6	6.1	0.81	0.93	0.45	0.89	11	32	0.65	20	0.87	1.4	8.3	0.34
Acid Extractable Calcium (Ca)	ug/g	49000	47000	65000	70000	69000	74000	65000	59000	69000	64000	64000	65000	63000	70000
Acid Extractable Chromium (Cr)	ug/g	24	24	33	31	23	25	30	53	25	40	35	27	20	22
Acid Extractable Cobalt (Co)	ug/g	9.6	9.4	9.1	8.8	7.4	8.7	13	16	7.3	13	9.5	7.2	8.3	6.6
Acid Extractable Copper (Cu)	ug/g	55	100	100	75	47	46	89	140	55	140	130	87	46	49
Acid Extractable Iron (Fe)	ug/g	22000	22000	24000	23000	22000	26000	24000	26000	22000	28000	25000	22000	19000	21000
Acid Extractable Lead (Pb)	ug/g	68	170	41	120	50	110	110	180	43	120	49	76	42	80
Acid Extractable Magnesium (Mg)	ug/g	8800	13000	24000	23000	23000	26000	18000	15000	21000	17000	24000	19000	10000	23000
Acid Extractable Manganese (Mn)	ug/g	590	420	520	500	510	590	740	700	500	650	530	470	570	490
Acid Extractable Molybdenum (Mo)	ug/g	0.7	1.3	1.8	1.3	1	1	0.92	1.2	0.96	4.4	2.2	1.5	0.52	0.96
Acid Extractable Nickel (Ni)	ug/g	29	36	25	23	20	22	35	50	18	43	26	19	22	18
Acid Extractable Phosphorus (P)	ug/g	1100	910	1400	910	820	1000	1200	1900	1000	1200	1700	850	870	830
Acid Extractable Potassium (K)	ug/g	1600	1600	1900	1700	1900	1900	1900	2200	1700	2100	2000	1300	1400	1700
Acid Extractable Selenium (Se)	ug/g	<0.50	0.56	0.65	0.51	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	0.76	<0.50	<0.50	<0.50
Acid Extractable Silver (Ag)	ug/g	1.1	1.1	0.7	0.47	0.23	0.65	2.8	6.5	0.29	2.5	0.99	0.33	0.92	<0.20
Acid Extractable Sodium (Na)	ug/g	300	510	510	410	320	380	560	740	370	510	560	150	140	250
Acid Extractable Strontium (Sr)	ug/g	94	94	120	120	110	120	110	120	120	120	130	100	110	100
Acid Extractable Thallium (Tl)	ug/g	0.12	0.14	0.2	0.19	0.12	0.12	0.13	0.18	0.14	0.17	0.27	0.16	0.11	0.13
Acid Extractable Tin (Sn)	ug/g	12	21	5	4.3	3	9	12	26	11	110	4.9	5.5	5.8	5.7
Acid Extractable Uranium (U)	ug/g	0.57	0.7	0.77	0.76	0.64	0.66	0.66	0.66	0.6	0.67	0.83	0.59	0.5	0.58
Acid Extractable Vanadium (V)	ug/g	25	22	25	25	19	23	24	29	22	27	27	23	21	21
Acid Extractable Zinc (Zn)	ug/g	230	320	430	360	200	250	270	540	260	470	520	280	170	180
Acid Extractable Mercury (Hg)	ug/g	0.17	0.23	0.18	0.5	0.064	3.8	0.34	0.66	0.1	0.33	0.22	0.082	0.085	<0.050
PAHs															
Acenaphthene	ug/g	0.49	0.46	<0.10	0.051	0.074	<0.050	0.16	0.25	0.09	0.023	<0.10	<0.050	<0.050	<0.050
Acenaphthylene	ug/g	<0.050	<0.15	<0.10	<0.050	<0.050	<0.050	<0.20	<0.20	<0.050	0.0057	<0.10	<0.050	<0.050	<0.050
Anthracene	ug/g	0.26	0.69	0.14	0.1	0.13	<0.050	0.2	0.37	0.18	0.037	0.17	<0.050	<0.050	0.092
Benzo(a)anthracene	ug/g	0.48	0.93	0.81	0.62	0.25	0.12	0.52	0.94	0.44	0.09	0.7	0.23	0.16	0.29
Benzo(a)pyrene	ug/g	0.38	0.78	1	0.75	0.2	0.12	0.51	0.89	0.43	0.087	0.86	0.26	0.15	0.25
Benzo(b)fluoranthene	ug/g	0.55	1.1	1.8	1.3	0.32	0.19	0.78	1.4	0.68	0.14	1.6	0.46	0.23	0.37
Benzo(g,h,i)perylene	ug/g	0.23	0.38	0.98	0.69	0.11	0.09	0.37	0.66	0.33	0.071	0.84	0.24	0.12	0.17
Benzo(k)fluoranthene	ug/g	0.21	0.39	0.61	0.44	0.11	0.065	0.28	0.48	0.24	0.046	0.52	0.16	0.091	0.12
Chrysene	ug/g	0.42	0.87	1.1	0.67	0.27	0.15	0.5	0.95	0.42	0.097	0.98	0.26	0.12	0.3
Dibenzo(a,h)anthracene	ug/g	0.053	<0.15	0.15	0.12	<0.050	<0.050	0.084	0.16	0.064	0.019	0.14	<0.050	<0.050	<0.050
Fluoranthene	ug/g	1.5	3.2	3	2.1	1.1	0.53	1.5	2.9	1.5	0.31	2.7	0.86	0.49	0.95
Fluorene	ug/g	0.29	0.36	<0.10	<0.050	0.085	<0.050	0.19	0.37	0.079	0.017	<0.10	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	0.25	0.43	0.91	0.66	0.12	0.082	0.38	0.7	0.32	0.07	0.77	0.23	0.13	0.19
Methylnaphthalene, 2-(1-)	ug/g											<0.14	<0.071	<0.071	<0.071
1-Methylnaphthalene	ug/g	0.061	<0.15	<0.10	<0.050	<0.050	<0.050	0.18	0.36	<0.050	0.0056	<0.10	<0.050	<0.050	<0.050
2-Methylnaphthalene	ug/g	<0.050	<0.15	<0.10	<0.050	<0.050	<0.050	0.18	0.45	<0.050	0.0058	0.1	<0.050	<0.050	<0.050
Naphthalene	ug/g	<0.050	<0.15	<0.10	<0.10	0.086	<0.050	<0.10	<0.20	<0.050	<0.0050	<0.10	<0.050	<0.050	<0.050
Phenanthrene	ug/g	1.3	2.9	1.1	0.56	0.9	0.22	1	2	0.66	0.11	1	0.25	0.075	0.47
Pyrene	ug/g	0.96	2.4	2.1	1.5	0.75	0.38	0.97	1.9	1	0.22	1.8	0.6	0.37	0.7
SIZE DISTRIBUTION															
< -1 Phi (2 mm)	%	91	98			92	83	94	97			99	91	97	95
< 0 Phi (1 mm)	%	89	95			82	66	84	89			98	79	94	85
< +1 Phi (0.5 mm)	%	87	91			63	42	71	77			97	62	88	60
< +2 Phi (0.25 mm)	%	82	87			39	21	63	70			95	36	79	32
< +3 Phi (0.12 mm)	%	70	83			22	13	60	68			93	25	65	21
< +4 Phi (0.062 mm)	%	59	76			15	9.3	49	64			86	21	47	17
< +5 Phi (0.031 mm)	%	51	66			12	7.6	38	53			77	19	35	14
< +6 Phi (0.016 mm)	%	40	56			9.9	6.1	29	42			58	14	24	12
< +7 Phi (0.0078 mm)	%	27	39			6.6	3.8	18	26			31	8.3	14	7.9
< +8 Phi (0.0039 mm)	%	22	32			5.6	3.1	16	22			23	6.2	12	6.6
< +9 Phi (0.0020 mm)	%	16	23			3.9	2.1	11	15			9.1	1.8	8.5	4.7
Gravel	%	8.8	2.4			7.5	17	6.3	3.1			0.76	8.7	2.6	5.2
Coarse Sand	%	14	12			60	65	32	28			5.2	60	24	67
Fine Sand	%	18	9.8			17	8.5	13	5.2			7.6	10	26	11
Silt	%	37	43			9.3	6.2	33	42			63	15	35	10
Clay	%	22	32			5.6	3.1	16	22			23	6.2	12	6.6
Loss on Ignition	%w/w	6.1	32.2			2.9	1.6	3.3	4.3			9.8	3.1	1.9	2.5
Wet Bulk Density															

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C17														
Sample ID	CC-C03-CENTRE-15-30	CC-C03-CENTRE-30-45	CC-C03-EAST-0-15	CC-C17-WEST-0-15	CC-C17-WEST-15-30	CC-C17-WEST-30-45	CC-C17-WEST-45-60	CC-C17-CENTRE-0-15	CC-C17-CENTRE-15-30	CC-C17-CENTRE-30-45	CC-C17-EAST-0-15	CC-C18-WEST-0-15	CC-C18-WEST-15-30	CC-C18-WEST-30-45	
BV Labs Sample ID	PHY920	PHY921	PHY918	PHY929	PHY930	PHY931	PHY932	PHY926	PHY927	PHY928	PHY925	PHY937	PHY938	PHY939	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/13/21 10:30	4/13/21 10:30	4/13/21 9:30	4/13/21 14:00	4/13/21 14:00	4/13/21 14:00	4/13/21 14:00	4/13/21 13:30	4/13/21 13:30	4/13/21 13:30	4/13/21 13:00	4/14/21 10:00	4/14/21 10:00	4/14/21 10:00	
Parameter Name	Units														
PHYSICAL															
Moisture	%	21	17	24	42	23	33	33	23	23	26	37	34	33	35
ANIONS & NUTRIENTS															
Total Ammonia-N	ug/g	40	<20	<20	145	171	216	135	46	86	84	<20	284	211	175
Nitrogen (N)	%														
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	422	309	657	1810	573	1280	1340	594	746	823	1250	1660	1040	1590
Nitrite (N)	ug/g														
Nitrate (N)	ug/g														
Nitrate + Nitrite (N)	ug/g														
METALS															
Acid Extractable Aluminum (Al)	ug/g	7800	6300	5600	8900	7800	11000	10000	8400	9400	7000	8200	8600	9900	12000
Acid Extractable Antimony (Sb)	ug/g	0.94	0.73	0.37	0.98	1.1	3.5	3.2	0.78	1.9	1.6	0.8	1.2	1.9	2.7
Acid Extractable Arsenic (As)	ug/g	4.6	3.3	2.6	4.2	3.9	7	7	3.9	5.7	4.1	4.8	4.3	6.5	7.1
Acid Extractable Barium (Ba)	ug/g	95	50	49	100	73	130	190	100	110	95	67	94	110	180
Acid Extractable Beryllium (Be)	ug/g	0.45	0.33	0.32	0.51	0.46	0.58	0.49	0.46	0.52	0.4	0.44	0.49	0.56	0.64
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	0.49	0.56	0.64
Acid Extractable Boron (B)	ug/g	13	6	8.8	20	17	29	22	18	18	13	14	18	23	25
Acid Extractable Cadmium (Cd)	ug/g	3.4	4.9	0.29	0.71	1.5	10	23	1.1	8.3	10	0.59	0.71	7.6	21
Acid Extractable Calcium (Ca)	ug/g	69000	60000	63000	63000	64000	64000	59000	68000	65000	54000	70000	67000	67000	58000
Acid Extractable Chromium (Cr)	ug/g	23	14	13	27	23	27	39	24	29	23	21	24	29	42
Acid Extractable Cobalt (Co)	ug/g	8.3	6.9	5.4	8	8.4	12	13	7.8	10	8.4	7.2	7.6	10	14
Acid Extractable Copper (Cu)	ug/g	52	31	32	89	46	88	120	74	70	60	51	76	61	110
Acid Extractable Iron (Fe)	ug/g	22000	16000	16000	23000	21000	24000	22000	22000	22000	17000	21000	21000	23000	24000
Acid Extractable Lead (Pb)	ug/g	92	23	24	42	50	85	120	27	68	59	38	41	83	120
Acid Extractable Magnesium (Mg)	ug/g	16000	7400	12000	22000	19000	19000	13000	23000	16000	8900	17000	22000	20000	12000
Acid Extractable Manganese (Mn)	ug/g	540	490	440	530	550	790	610	510	720	570	470	490	640	680
Acid Extractable Molybdenum (Mo)	ug/g	0.7	<0.50	0.67	1.2	0.72	0.89	1	0.85	0.78	0.6	1.1	1.3	0.96	1.1
Acid Extractable Nickel (Ni)	ug/g	22	16	12	21	20	36	41	20	31	24	18	20	27	42
Acid Extractable Phosphorus (P)	ug/g	1000	810	880	1200	830	1000	1600	890	1100	990	840	1200	1100	1600
Acid Extractable Potassium (K)	ug/g	1400	1000	1000	1800	1400	1900	1500	1700	1600	1100	1500	1600	1800	1900
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Acid Extractable Silver (Ag)	ug/g	0.63	0.5	<0.20	0.56	0.75	2.2	5.1	0.41	2.5	2	0.27	0.78	1.2	5.3
Acid Extractable Sodium (Na)	ug/g	250	150	200	370	200	280	250	260	270	210	310	330	240	240
Acid Extractable Strontium (Sr)	ug/g	120	110	120	120	96	100	110	110	120	110	160	120	110	110
Acid Extractable Thallium (Tl)	ug/g	0.1	0.077	0.099	0.17	0.12	0.12	0.13	0.14	0.12	0.1	0.14	0.15	0.16	0.16
Acid Extractable Tin (Sn)	ug/g	11	3.5	4.1	12	7.3	10	20	4.8	9.1	8.2	2.7	4	7.1	18
Acid Extractable Uranium (U)	ug/g	0.55	0.44	0.42	0.65	0.51	0.63	0.56	0.62	0.58	0.44	0.62	0.66	0.57	0.65
Acid Extractable Vanadium (V)	ug/g	21	19	18	23	19	24	23	20	23	19	21	22	23	27
Acid Extractable Zinc (Zn)	ug/g	200	85	130	300	190	260	400	230	230	200	250	300	320	360
Acid Extractable Mercury (Hg)	ug/g	0.11	0.053	<0.050	0.12	0.12	0.36	0.6	0.093	0.32	0.23	0.12	0.46	0.25	0.62
PAHs															
Acenaphthene	ug/g	<0.050	0.0076	0.028	0.12	0.073	0.21	0.34	0.081	0.13	0.13	<0.10	<0.050	0.11	0.31
Acenaphthylene	ug/g	<0.050	0.009	0.0052	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	0.025	<0.10	<0.050	<0.050	<0.050
Anthracene	ug/g	<0.050	0.036	0.088	0.32	0.12	0.3	0.43	0.37	0.14	0.21	0.11	0.078	0.19	0.43
Benzo(a)anthracene	ug/g	0.11	0.15	0.25	0.92	0.32	0.73	1.1	1.8	0.49	0.5	0.34	0.32	0.65	1
Benzo(a)pyrene	ug/g	0.1	0.15	0.28	0.89	0.28	0.65	0.97	1.1	0.42	0.45	0.39	0.38	0.69	0.9
Benzo(b)fluoranthene	ug/g	0.16	0.22	0.47	1.5	0.38	0.9	1.3	1.8	0.58	0.73	0.64	0.62	1.1	1.3
Benzo(g,h,i)perylene	ug/g	0.08	0.12	0.24	0.66	0.19	0.4	0.58	0.51	0.26	0.31	0.36	0.32	0.59	0.53
Benzo(k)fluoranthene	ug/g	<0.050	0.079	0.15	0.52	0.14	0.27	0.48	0.64	0.23	0.26	0.18	0.17	0.41	0.39
Chrysene	ug/g	0.12	0.12	0.29	0.93	0.33	0.65	1	1.5	0.54	0.48	0.42	0.42	0.7	0.93
Dibenzo(a,h)anthracene	ug/g	<0.050	0.027	0.045	0.15	<0.050	0.099	0.15	0.15	0.062	0.091	<0.10	<0.050	0.13	0.13
Fluoranthene	ug/g	0.39	0.45	0.91	2.8	0.97	2	3.2	4.5	1.6	1.5	1.3	1.3	2	2.9
Fluorene	ug/g	<0.050	0.0069	0.031	0.15	0.076	0.25	0.48	0.066	0.14	0.19	<0.10	0.058	0.16	0.44
Indeno(1,2,3-cd)pyrene	ug/g	0.082	0.12	0.23	0.65	0.2	0.45	0.67	0.56	0.34	0.36	0.32	0.6	0.61	
Methylnaphthalene, 2-(1-)	ug/g	<0.071	<0.0071	0.017	0.095	<0.071	0.27	0.63	<0.071	0.19	0.34	<0.14	<0.071	0.17	0.59
1-Methylnaphthalene	ug/g	<0.050	<0.0050	<0.0050	0.021	<0.050	0.12	0.26	<0.050	0.089	0.15	<0.10	<0.050	0.079	0.24
2-Methylnaphthalene	ug/g	<0.050	0.0054	0.017	0.074	<0.050	0.15	0.37	<0.050	0.098	0.18	<0.10	<0.050	0.089	0.36
Naphthalene	ug/g	<0.050	0.0056	0.0064	0.037	<0.050	<0.050	<0.050	<0.050	0.052	<0.050	<0.10	<0.050	<0.050	0.054
Phenanthrene	ug/g	0.11	0.072	0.33	1.3	0.57	1.5	2.5	1.5	1.3	1	0.39	0.55	0.99	2.3
Pyrene	ug/g	0.29	0.33	0.61	1.9	0.71	1.5	2.4	3.2	1.1	1	0.96	0.93	1.3	2.2
SIZE DISTRIBUTION															
< -1 Phi (2 mm)	%	83	98	100	97	95	99		98		99		92		
< 0 Phi (1 mm)	%	70	96	100	94	88	98		91		88		92		
< +1 Phi (0.5 mm)	%	49	94	98	87	76	97		76		75		91		
< +2 Phi (0.25 mm)	%	25	87	77	68	34	95		50		63		88		
< +3 Phi (0.12 mm)	%	18	68	45	59	20	93		27		52		68		
< +4 Phi (0.062 mm)	%	15	42	26	52	15	76		20		39		49		
< +5 Phi (0.031 mm)	%	12	25	17	40	11	58		18		28		36		
< +6 Phi (0.016 mm)	%	9.6	17	13	33	8.9	44		15		21		28		
< +7 Phi (0.0078 mm)	%	6.3	9.9	8.2	20	5.6	27		10		13		18		
< +8 Phi (0.0039 mm)	%	5.3	8.2	7	17	4.7	23		7.7		11		15		
< +9 Phi (0.0020 mm)	%	3.8	6.1	5.2	9.2	3.2	16		2.7		8		11		
Gravel	%	17	2.4	<0.10	3.4	5.2	1.1		2.2		4.4		7.6		
Coarse Sand	%	61	18	36	33	66	4.4		57		37		19		
Fine Sand	%	8.1	37	38	12	13	19		21		19		31		
Silt	%	9.2	34	19	35	10	53		13		28		34		
Clay	%	5.3	8.2	7	17	4.7	23		7.7		11		15		
Loss on Ignition	%w/w	2	1.4	2.3	5.5	2.1	4		2.4		2.8		2.6		
Wet Bulk Density	g/cm³	2	2	1.9	1.6	1.9	1.7								

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C04												CC-C20-WEST-0-15	CC-C20-WEST-15-30	CC-C20-WEST-30-45
Sample ID	CC-C19-EAST-0-15	CC-C04-WEST-0-15	CC-C04-WEST-15-30	CC-C04-WEST-30-45	CC-C04-WEST-45-60	CC-C04-CENTRE-0-15	CC-C04-CENTRE-15-30	CC-C04-CENTRE-30-45	CC-C04-CENTRE-45-60	CC-C04-EAST-0-15	CC-C04-EAST-15-30	PHY954	PHY953	PHY955	
BV Labs Sample ID	PHY941	PIX237	PIX238	PIX239	PIX240	PIX233	PIX234	PIX235	PIX236	PIX231	PIX232	PHY954	PHY953	PHY955	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Water	Soil	Soil	Soil	Soil	Soil	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/14/21 11:00	4/19/21 13:00	4/19/21 13:00	4/19/21 13:00	4/19/21 13:00	4/19/21 12:30	4/19/21 12:30	4/19/21 12:30	4/19/21 12:30	4/19/21 12:00	4/19/21 12:00	4/14/21 15:00	4/14/21 15:00	4/14/21 15:00	
Parameter Name	Units														
PHYSICAL															
Moisture	%	40	37	34	34	32	20	32	34	55	25	57	57	32	
ANIONS & NUTRIENTS															
Total Ammonia-N	ug/g	<20	152	179	181	140	43	133	155	29	<20	341	463	218	
Nitrogen (N)	%		0.17	0.18	0.14	0.11	0.056	0.13	0.12	0.26	0.055				
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	1900	1720	1810	1360	1130	560	1300	1170	2590	554	3800	3800	1290	
Nitrite (N)	ug/g		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5				
Nitrate (N)	ug/g		<2	<2	<2	<2	<2	<2	<2	<2	<2				
Nitrate + Nitrite (N)	ug/g		<3	<3	<3	<3	<3	<3	<3	<3	<3				
METALS															
Acid Extractable Aluminum (Al)	ug/g	9200	9800	9300	11000	11000	7600	12000	12000	11000	5500	11000	10000	9500	
Acid Extractable Antimony (Sb)	ug/g	0.97	1.6	2.1	2.1	1.8	0.56	2	2	1.3	0.42	1.3	1.8	1.3	
Acid Extractable Arsenic (As)	ug/g	4.7	5.7	5.5	6.5	5.7	4.1	7.3	6.2	5.9	2.9	5	5.1	5.2	
Acid Extractable Barium (Ba)	ug/g	86	160	190	220	120	89	240	150	100	46	120	150	110	
Acid Extractable Beryllium (Be)	ug/g	0.5	0.44	0.44	0.51	0.5	0.41	0.56	0.6	0.51	0.25	0.56	0.58	0.48	
Acid Extractable Bismuth (Bi)	ug/g	<1.0	3	1.5	<1.0	<1.0	<1.0	1.2	<1.0	1.1	<1.0	1.3	1.5	<1.0	
Acid Extractable Boron (B)	ug/g	18	22	25	22	23	17	27	25	16	7	21	22	18	
Acid Extractable Cadmium (Cd)	ug/g	0.65	14	26	30	7.9	3.2	30	14	0.81	0.28	1.1	7.7	2.6	
Acid Extractable Calcium (Ca)	ug/g	66000	63000	57000	58000	61000	66000	66000	62000	66000	70000	64000	58000	78000	
Acid Extractable Chromium (Cr)	ug/g	25	40	51	56	30	23	57	37	29	12	31	39	26	
Acid Extractable Cobalt (Co)	ug/g	8.2	11	13	14	11	7.1	15	12	8.5	4.5	8.9	11	8.6	
Acid Extractable Copper (Cu)	ug/g	67	150	150	130	76	46	120	83	83	29	93	130	67	
Acid Extractable Iron (Fe)	ug/g	22000	23000	19000	23000	22000	20000	25000	24000	25000	15000	25000	24000	24000	
Acid Extractable Lead (Pb)	ug/g	33	110	98	110	72	40	140	85	39	15	43	88	100	
Acid Extractable Magnesium (Mg)	ug/g	22000	20000	16000	15000	15000	20000	19000	16000	22000	11000	23000	20000	22000	
Acid Extractable Manganese (Mn)	ug/g	510	510	500	590	710	490	630	720	520	410	520	540	620	
Acid Extractable Molybdenum (Mo)	ug/g	1.3	1.2	0.83	1	0.75	0.63	1.2	0.88	1.6	0.65	1.7	1.6	1.2	
Acid Extractable Nickel (Ni)	ug/g	20	41	53	56	32	20	53	40	23	11	26	34	26	
Acid Extractable Phosphorus (P)	ug/g	1000	1300	1400	1500	1100	1700	1200	1100	1100	800	1300	1500	1100	
Acid Extractable Potassium (K)	ug/g	1800	1600	1400	1500	1600	1500	1900	1900	1900	850	2100	1700	1600	
Acid Extractable Selenium (Se)	ug/g	<0.50	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.71	<0.50	0.62	0.56	<0.50	
Acid Extractable Silver (Ag)	ug/g	0.3	7.8	11	5.3	5	0.85	5.7	0.47	3.1	<0.20	0.74	2.7	0.95	
Acid Extractable Sodium (Na)	ug/g	370	440	320	310	260	270	510	450	250	120	540	420	230	
Acid Extractable Strontium (Sr)	ug/g	140	130	96	110	98	99	120	110	160	130	140	140	170	
Acid Extractable Thallium (Tl)	ug/g	0.17	0.16	0.11	0.12	0.12	0.1	0.14	0.13	0.19	0.073	0.19	0.2	0.15	
Acid Extractable Tin (Sn)	ug/g	2.9	9.2	16	23	7.8	3.1	24	11	4.3	1.2	6.4	9.9	8.1	
Acid Extractable Uranium (U)	ug/g	0.68	0.63	0.59	0.61	0.57	0.44	0.65	0.62	0.76	0.45	0.75	0.74	0.62	
Acid Extractable Vanadium (V)	ug/g	23	23	19	22	22	19	25	24	24	16	24	25	23	
Acid Extractable Zinc (Zn)	ug/g	320	440	420	440	260	210	520	300	420	120	400	480	340	
Acid Extractable Mercury (Hg)	ug/g	0.13	3.8	0.47	0.42	0.29	0.14	0.45	0.3	0.12	0.051	0.12	0.3	0.18	
PAHs															
Acenaphthene	ug/g	0.052	0.11	0.39	0.48	0.31	0.1	0.38	0.31	<0.10	0.018	0.11	<0.10	<0.050	
Acenaphthylene	ug/g	0.015	<0.050	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	0.0061	<0.10	<0.10	<0.050	
Anthracene	ug/g	0.18	0.15	0.5	0.39	0.37	0.2	0.47	0.29	0.16	0.034	0.25	0.16	0.078	
Benzo(a)anthracene	ug/g	0.66	0.48	0.95	0.82	0.75	0.5	1.1	0.58	0.64	0.16	1	0.83	0.33	
Benzo(a)pyrene	ug/g	0.76	0.54	0.86	0.82	0.71	0.47	1	0.58	0.85	0.22	1.1	0.97	0.36	
Benzo(b)fluoranthene	ug/g	1.3	0.89	1.2	1.2	1	0.71	1.6	0.86	1.5	0.39	1.9	1.8	0.65	
Benzo(g,h,i)perylene	ug/g	0.66	0.52	0.62	0.67	0.51	0.34	0.84	0.49	0.92	0.26	0.99	0.94	0.33	
Benzo(k)fluoranthene	ug/g	0.45	0.3	0.45	0.39	0.36	0.24	0.55	0.3	0.44	0.12	0.67	0.55	0.22	
Chrysene	ug/g	0.76	0.59	0.95	0.93	0.76	0.48	1.2	0.65	0.96	0.26	1.2	1	0.44	
Dibenzo(a,h)anthracene	ug/g	0.12	0.12	0.18	0.16	0.16	0.079	0.2	0.14	0.15	0.05	0.17	0.15	0.057	
Fluoranthene	ug/g	2.4	1.8	3	2.5	2.4	1.8	3.8	2.8	2.8	0.66	3.4	3	1.1	
Fluorene	ug/g	0.075	0.15	0.53	0.52	0.3	0.13	0.51	0.33	<0.10	0.016	0.14	<0.10	0.062	
Indeno(1,2,3-cd)pyrene	ug/g	0.63	0.54	0.64	0.68	0.57	0.38	0.84	0.5	0.84	0.24	0.92	0.87	0.32	
Methylnaphthalene, 2-(1-)	ug/g	0.062	<0.11	0.62	1.4	0.8	0.12	1.6	1.1	<0.14	0.015	<0.14	<0.14	<0.071	
1-Methylnaphthalene	ug/g	0.011	0.1	0.48	0.82	0.36	0.058	0.72	0.48	<0.10	<0.0050	<0.10	<0.10	<0.050	
2-Methylnaphthalene	ug/g	0.052	<0.10	0.13	0.56	0.44	0.058	0.92	0.63	<0.10	0.015	0.12	0.11	<0.050	
Naphthalene	ug/g	0.03	<0.050	0.097	<0.20	<0.10	<0.050	<0.20	<0.20	<0.10	<0.0050	<0.10	<0.10	<0.050	
Phenanthrene	ug/g	0.79	0.82	2.9	2.8	3.3	2.1	1.1	3.3	0.82	0.15	1.5	1.1	0.33	
Pyrene	ug/g	1.6	1.4	2.3	1.9	1.8	1.3	2.8	1.3	2	0.49	2.3	2.1	0.77	
SIZE DISTRIBUTION															
< -1 Phi (2 mm)	%	99					94	90	100						
< 0 Phi (1 mm)	%	99					89	83	99						
< +1 Phi (0.5 mm)	%	98					79	70	99						
< +2 Phi (0.25 mm)	%	92					55	61	98						
< +3 Phi (0.12 mm)	%	85					26	55	97						
< +4 Phi (0.062 mm)	%	76					17	50	84						
< +5 Phi (0.031 mm)	%	61					13	42	67						
< +6 Phi (0.016 mm)	%	45					10	35	51						
< +7 Phi (0.0078 mm)	%	22					6.6	23	32						
< +8 Phi (0.0039 mm)	%	10					5.4	20	27						
< +9 Phi (0.0020 mm)	%	3.2					3.9	14	19						
Gravel	%	0.65					6.1	9.6	0.32						
Coarse Sand	%	10					50	32	2.1						
Fine Sand	%	13					27	8.7	14						
Silt	%	66					12	29	57						
Clay	%	10					5.4	20	27						
Loss on Ignition	%w/w	6.7					2	4.3	4						
Wet Bulk Density	g/cm³	1.5					2	1.8	1.7						
Liquid Limit	%w/w	48	51	COMMENT	36	COMMENT	45	26	69	COMMENT					
Plastic Limit	%w/w	28	29	COMMENT	23	COMMENT	25	24	35	COMMENT					
Plasticity Index	%w/w	20	22	COMMENT	19	COMMENT	20	12	24	COMMENT					
Dissolved BOD5	mg/L						<8		<10						

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C20					CC-C21									
	Sample ID	CC-C20-WEST-45-60	CC-C20-CENTRE-0-15	CC-C20-CENTRE-15-30	CC-C20-CENTRE-30-45	CC-C20-EAST-0-15	CC-C21-WEST-0-15	CC-C21-WEST-15-30	CC-C21-WEST-30-45	CC-C21-CENTRE-0-15	CC-C21-CENTRE-15-30	CC-C21-EAST-0-15	CC-C21-EAST-15-30	CC-C22-WEST-0-15	CC-C22-WEST-15-30
BV Labs Sample ID	PHY956	PHY950	PHY951	PHY952	PHY949	PIH405	PIH406	PIH407	PIH403	PIH404	PIH401	PIH402	PIH412	PIH413	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/14/21 15:00	4/14/21 14:30	4/14/21 14:30	4/14/21 14:30	4/14/21 14:00	4/15/21 10:00	4/15/21 10:00	4/15/21 10:00	4/15/21 9:30	4/15/21 9:30	4/15/21 9:00	4/15/21 9:00	4/15/21 12:00	4/15/21 12:00	
Parameter Name	Units														
PHYSICAL															
Moisture	%	35	36	38	39	50	57	36	28	30	38	51	59	53	20
ANIONS & NUTRIENTS															
Total Ammonia-N	ug/g	214	150	174	137	<20	61	<20	<20	<20	<20	126	474	317	90
Nitrogen (N)	%														
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	1650	1390	1750	1630	2160	3240	1230	671	1010	1490	2580	5500	3240	367
Nitrite (N)	ug/g														
Nitrate (N)	ug/g														
Nitrate + Nitrite (N)	ug/g														
METALS															
Acid Extractable Aluminum (Al)	ug/g	11000	14000	9300	11000	10000	12000	10000	8600	7400	11000	11000	12000	11000	6900
Acid Extractable Antimony (Sb)	ug/g	2	2	1.8	2.2	0.79	1.6	1.7	1.9	1.1	2	1.5	0.56	1.6	1
Acid Extractable Arsenic (As)	ug/g	6.4	7.6	5.1	6.3	5.7	5.8	6.4	6.6	4.1	6.5	5.5	5.1	5.5	3.5
Acid Extractable Barium (Ba)	ug/g	270	200	200	250	100	120	110	92	100	180	120	110	130	86
Acid Extractable Beryllium (Be)	ug/g	0.55	0.65	0.43	0.54	0.49	0.59	0.5	0.52	0.38	0.57	0.55	0.54	0.55	0.36
Acid Extractable Bismuth (Bi)	ug/g	1.2	1.2	<1.0	<1.0	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	1.7	<1.0
Acid Extractable Boron (B)	ug/g	27	25	21	25	20	19	13	7.9	15	16	20	14	19	14
Acid Extractable Cadmium (Cd)	ug/g	32	30	27	36	0.62	1.2	13	5.3	7.1	17	0.88	0.72	0.94	0.65
Acid Extractable Calcium (Ca)	ug/g	42000	64000	56000	57000	65000	64000	61000	60000	71000	57000	70000	57000	64000	74000
Acid Extractable Chromium (Cr)	ug/g	61	61	42	85	23	33	32	23	27	35	30	22	33	22
Acid Extractable Cobalt (Co)	ug/g	17	16	12	15	8.5	9.4	11	7.7	7.5	12	9.1	8.9	9	6.6
Acid Extractable Copper (Cu)	ug/g	130	130	110	180	51	110	76	55	91	86	87	41	120	54
Acid Extractable Iron (Fe)	ug/g	21000	28000	19000	23000	25000	25000	22000	18000	19000	23000	25000	23000	25000	21000
Acid Extractable Lead (Pb)	ug/g	140	140	110	130	41	51	74	87	110	100	44	28	45	120
Acid Extractable Magnesium (Mg)	ug/g	13000	15000	13000	13000	24000	23000	14000	8400	19000	16000	23000	17000	22000	19000
Acid Extractable Manganese (Mn)	ug/g	490	660	470	490	540	520	420	340	450	460	540	490	510	470
Acid Extractable Molybdenum (Mo)	ug/g	1.2	1.2	0.85	1.2	0.94	1.8	0.96	1.2	0.81	1	1.5	0.79	1.8	0.87
Acid Extractable Nickel (Ni)	ug/g	61	58	47	61	22	25	35	23	23	40	23	21	25	17
Acid Extractable Phosphorus (P)	ug/g	1500	1500	1300	1500	1200	1500	770	730	1100	890	1400	980	1300	850
Acid Extractable Potassium (K)	ug/g	1400	2200	1400	1600	2000	2000	1600	1200	1400	1700	2000	1700	1900	1200
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	0.65	<0.50	<0.50	0.57	<0.50	0.74	<0.50
Acid Extractable Silver (Ag)	ug/g	7.6	6	5.9	14	<0.20	0.89	2.6	1.3	4	3	0.64	<0.20	0.79	1.1
Acid Extractable Sodium (Na)	ug/g	210	330	310	440	440	1600	940	710	580	1000	650	340	560	250
Acid Extractable Strontium (Sr)	ug/g	90	120	99	110	130	110	96	120	110	91	170	130	160	130
Acid Extractable Thallium (Tl)	ug/g	0.15	0.17	0.11	0.16	0.17	0.22	0.12	0.14	0.12	0.13	0.2	0.15	0.22	0.11
Acid Extractable Tin (Sn)	ug/g	15	23	16	15	3	7.9	10	20	9.2	13	4.4	2.6	5.2	20
Acid Extractable Uranium (U)	ug/g	0.67	0.69	0.55	0.69	0.56	0.77	0.6	0.78	0.55	0.59	0.65	0.63	0.74	0.54
Acid Extractable Vanadium (V)	ug/g	26	29	23	27	23	26	24	23	20	25	24	25	25	23
Acid Extractable Zinc (Zn)	ug/g	540	440	390	480	320	480	290	210	270	340	400	240	470	200
Acid Extractable Mercury (Hg)	ug/g	0.48	0.45	0.3	0.41	0.057	0.21	0.23	0.26	7.1	0.3	0.15	0.076	0.27	0.25
PAHs															
Acenaphthene	ug/g	0.24	0.53	0.69	0.3	<0.10	0.79	0.054	0.016	0.57	0.33	<0.10	<0.10	<0.10	<0.0050
Acenaphthylene	ug/g	0.053	<0.20	<0.20	<0.10	<0.10	<0.20	<0.050	0.022	0.035	0.05	<0.10	<0.10	<0.10	<0.0050
Anthracene	ug/g	0.22	0.73	0.29	0.23	0.86	0.12	0.072	0.71	0.57	0.13	<0.10	<0.10	<0.0050	
Benzo(a)anthracene	ug/g	0.61	0.92	1.4	0.57	0.76	2.6	0.45	0.26	2	1.9	0.65	0.27	0.78	0.011
Benzo(a)pyrene	ug/g	0.59	0.84	1.2	0.48	0.8	2.3	0.5	0.25	1.7	1.6	0.77	0.3	0.97	0.011
Benzo(b,j)fluoranthene	ug/g	0.99	1.4	2.1	0.74	1.2	3.8	0.8	0.35	2.6	2.4	1.4	0.52	1.7	0.022
Benzo(g,h,i)perylene	ug/g	0.45	0.64	0.97	0.33	0.64	1.5	0.33	0.17	1	1	0.73	0.27	0.88	0.0098
Benzo(k)fluoranthene	ug/g	0.35	0.49	0.69	0.22	0.34	1.3	0.27	0.12	0.91	0.83	0.47	0.18	0.56	0.0068
Chrysene	ug/g	0.7	0.95	1.5	0.61	0.88	3	0.33	0.19	1.9	1.8	0.87	0.36	1	0.016
Dibenzo(a,h)anthracene	ug/g	0.1	0.14	0.22	<0.10	0.11	0.34	0.077	0.044	0.28	0.31	0.12	<0.10	0.14	<0.0050
Fluoranthene	ug/g	2	2.9	4.5	1.9	2.8	9.7	1.4	0.57	6	5	2.4	0.92	2.8	0.061
Fluorene	ug/g	0.3	0.6	0.99	0.4	0.1	0.8	<0.050	0.018	0.5	0.3	<0.10	<0.10	0.11	<0.0050
Indeno(1,2,3-cd)pyrene	ug/g	0.46	0.65	0.93	0.36	0.66	1.6	0.37	0.18	1.1	1.1	0.67	0.25	0.83	0.0093
Methylnaphthalene, 2-(1-)	ug/g	1	2.1	3.1	0.81	<0.14									
1-Methylnaphthalene	ug/g	0.62	0.94	1.6	0.51	<0.10	0.38	<0.050	0.0063	0.084	0.17	<0.10	<0.10	<0.10	<0.0050
2-Methylnaphthalene	ug/g	0.4	1.2	1.6	0.3	<0.10	0.62	<0.050	0.013	0.15	0.25	<0.10	<0.10	<0.10	<0.0050
Naphthalene	ug/g	<0.20	<0.20	<0.30	<0.10	<0.10	1.8	<0.050	0.014	0.25	0.17	<0.10	<0.10	<0.10	<0.0050
Phenanthrene	ug/g	1.4	2.9	4.4	1.1	1.3	9	0.34	0.18	4.8	4.1	0.89	0.32	1.1	0.012
Pyrene	ug/g	1.4	2	3.1	1.5	2	6.2	1.1	0.42	4.4	3.5	1.7	0.66	2	0.041
SIZE DISTRIBUTION															
< -1 Phi (2 mm)	%						99	94	100						
< 0 Phi (1 mm)	%						98	93	100						
< +1 Phi (0.5 mm)	%						95	87	98						
< +2 Phi (0.25 mm)	%						92	77	90						
< +3 Phi (0.12 mm)	%						87	73	66						
< +4 Phi (0.062 mm)	%						82	69	48						
< +5 Phi (0.031 mm)	%						67	55	40						
< +6 Phi (0.016 mm)	%						52	43	31						
< +7 Phi (0.0078 mm)	%						31	27	19						
< +8 Phi (0.0039 mm)	%						25	23	16						
< +9 Phi (0.0020 mm)	%						7.5	17	12						
Gravel	%						1.3	5.7	0.16						
Coarse Sand	%						8.5	19	20						
Fine Sand	%						8.1	6.2	32						
Silt	%						57	46	32						
Clay	%						25	23	16						
Loss on Ignition	%w/w						6.3	3.4	2.5						
Wet Bulk Density	g/cm ³						1.6	1.9	1.8						
Liquid Limit	%w/w						54	38	COMMENTS						
Plastic Limit	%w/w						22	21	COMMENTS						
Plasticity Index	%w/w						32	17	COMMENTS						
Dissolved BOD5	mg/L														

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Station	CC-C05													CC
Sample ID	CC-C05-WEST-0-15	CC-C05-WEST-15-30	CC-C05-WEST-30-45	CC-C05-WEST-45-60	CC-C05-WEST-60-75	CC-C05-WEST-75-90	CC-C05-CENTRE-0-15	CC-C05-EAST-0-15	CC-C05-EAST-15-30	CC-C24-WEST-0-15	CC-C24-WEST-15-30	CC-C24-CENTRE-0-15	CC-C24-CENTRE-15-30	
BV Labs Sample ID	PJ1863	PJ1864	PJ1865	PJ1866	PJ1867	PJ1868	PJ1862	PJ1860	PJ1861	PJ1875	PJ1876	PJ1871	PJ1872	
Matrix	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/20/21 10:00	4/20/21 10:00	4/20/21 10:00	4/20/21 10:00	4/20/21 10:00	4/20/21 11:00	4/20/21 9:30	4/20/21 8:00	4/20/21 9:00	4/20/21 12:00	4/20/21 12:00	4/20/21 11:30	4/20/21 11:30	
Parameter Name	Units													
PHYSICAL														
Moisture	%	42	18	33	42	49	46	24	25	35	52	27	19	18
ANIONS & NUTRIENTS														
Total Ammonia-N	ug/g	178	85	188	286	269	228	25	93	157	84	<20	<20	31
Nitrogen (N)	%	0.21	0.035	0.12	0.22	0.33	0.3	0.074	0.091	0.21	0.3	0.067	0.035	0.019
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	2080	349	1240	2200	3260	3010	736	908	2120	3010	668	353	187
Nitrite (N)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate (N)	ug/g	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nitrate + Nitrite (N)	ug/g	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
METALS														
Acid Extractable Aluminum (Al)	ug/g	7500	4900	9700	11000	12000	8900	8100	9700	11000	11000	9000	6600	3700
Acid Extractable Antimony (Sb)	ug/g	0.84	0.49	2.8	3	1.5	0.64	1	2.5	1.4	1.4	0.47	0.43	1
Acid Extractable Arsenic (As)	ug/g	3.7	2.9	6.2	6.5	6.2	4.5	5.3	6.1	7.1	5.9	4.5	3.5	2.6
Acid Extractable Barium (Ba)	ug/g	94	57	220	260	210	100	98	100	140	120	55	70	43
Acid Extractable Beryllium (Be)	ug/g	0.42	0.29	0.51	0.56	0.61	0.46	0.47	0.53	0.65	0.59	0.45	0.39	0.23
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g	16	12	29	31	36	26	18	19	19	20	11	16	10
Acid Extractable Cadmium (Cd)	ug/g	0.66	1.5	16	29	21	4	0.98	1.3	3.2	0.94	0.49	0.58	0.63
Acid Extractable Calcium (Ca)	ug/g	64000	67000	63000	53000	64000	67000	72000	62000	55000	62000	58000	69000	67000
Acid Extractable Chromium (Cr)	ug/g	24	18	47	56	44	20	30	34	30	33	20	18	15
Acid Extractable Cobalt (Co)	ug/g	7.2	6	14	16	13	7.9	8.7	9	9.4	9.1	7.8	7.2	4.6
Acid Extractable Copper (Cu)	ug/g	79	38	120	170	140	46	62	98	87	110	46	38	89
Acid Extractable Iron (Fe)	ug/g	23000	21000	22000	21000	22000	18000	24000	35000	25000	25000	21000	19000	17000
Acid Extractable Lead (Pb)	ug/g	67	65	150	170	100	56	90	160	98	55	24	48	140
Acid Extractable Magnesium (Mg)	ug/g	18000	14000	14000	12000	11000	7800	18000	17000	11000	20000	11000	17000	12000
Acid Extractable Manganese (Mn)	ug/g	440	410	510	500	540	500	590	580	670	520	550	490	390
Acid Extractable Molybdenum (Mo)	ug/g	1	0.61	0.93	1.1	0.92	0.74	1.3	1.3	1.7	1.7	0.66	0.59	0.53
Acid Extractable Nickel (Ni)	ug/g	18	16	58	58	44	22	23	24	26	24	18	17	10
Acid Extractable Phosphorus (P)	ug/g	1200	880	1500	1700	1400	890	1200	1200	1100	1400	810	870	950
Acid Extractable Potassium (K)	ug/g	1500	1000	1600	1600	1700	1200	1700	1900	1600	1900	1400	1500	750
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	0.68	<0.50	<0.50	<0.50
Acid Extractable Silver (Ag)	ug/g	0.66	0.28	4.7	12	8	1.5	0.89	0.4	0.81	0.69	<0.20	<0.20	<0.20
Acid Extractable Sodium (Na)	ug/g	320	180	270	250	290	240	360	450	540	520	260	250	200
Acid Extractable Strontium (Sr)	ug/g	130	120	120	110	150	150	140	120	140	150	110	120	100
Acid Extractable Thallium (Tl)	ug/g	0.15	0.087	0.15	0.15	0.15	0.11	0.16	0.16	0.14	0.24	0.12	0.12	0.067
Acid Extractable Tin (Sn)	ug/g	6.8	5.1	10	15	13	7.3	21	45	25	4.6	2.2	2.8	5.7
Acid Extractable Uranium (U)	ug/g	0.66	0.5	0.64	0.64	0.65	0.47	0.7	0.57	0.63	0.77	0.79	0.49	0.44
Acid Extractable Vanadium (V)	ug/g	29	30	26	25	25	21	22	40	26	27	25	20	23
Acid Extractable Zinc (Zn)	ug/g	310	190	420	570	400	160	260	380	300	440	170	190	200
Acid Extractable Mercury (Hg)	ug/g	0.18	0.28	0.45	0.55	0.35	0.12	0.12	0.16	0.28	0.14	0.11	0.082	0.079
PAHs														
Acenaphthene	ug/g	<0.10	<0.050	0.14	0.51	0.2	<0.10	0.86	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050
Acenaphthylene	ug/g	<0.10	<0.050	<0.050	<0.10	<0.10	<0.10	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050
Anthracene	ug/g	<0.10	<0.050	0.12	0.31	0.19	<0.10	1.7	<0.050	<0.10	0.12	<0.050	<0.050	<0.050
Benzo(a)anthracene	ug/g	<0.10	0.2	0.39	0.53	0.48	0.16	4.9	<0.050	<0.10	0.61	0.19	0.18	0.15
Benzo(a)pyrene	ug/g	<0.10	0.19	0.37	0.46	0.45	0.19	3.8	<0.050	<0.10	0.74	0.21	0.17	0.15
Benzo(b,j)fluoranthene	ug/g	<0.10	0.34	0.63	0.74	0.71	0.22	5.3	0.077	0.13	1.2	0.36	0.28	0.25
Benzo(g,h,i)perylene	ug/g	<0.10	0.14	0.3	0.29	0.33	0.13	2.1	<0.050	<0.10	0.62	0.18	0.13	0.11
Benzo(k)fluoranthene	ug/g	<0.10	0.12	0.22	0.21	0.26	<0.10	1.6	<0.050	<0.10	0.4	0.1	0.082	0.081
Chrysene	ug/g	<0.10	0.25	0.43	0.57	0.49	0.17	4.9	0.05	<0.10	0.81	0.31	0.22	0.18
Dibenzo(a,h)anthracene	ug/g	<0.10	<0.050	0.055	<0.10	<0.10	<0.10	0.52	<0.050	<0.10	0.11	<0.050	<0.050	<0.050
Fluoranthene	ug/g	0.14	0.78	1.3	1.8	1.4	0.37	15	0.17	0.26	2.5	0.68	0.62	0.54
Fluorene	ug/g	<0.10	<0.050	0.19	<0.50	0.19	<0.10	0.79	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	<0.10	0.14	0.3	0.33	0.34	0.14	2.4	<0.050	<0.10	0.62	0.18	0.13	0.11
Methylnaphthalene, 2-(1-)	ug/g	<0.14	<0.071	0.25	0.79	0.53	<0.14	0.34	<0.071	<0.14	<0.14	<0.071	<0.071	<0.071
1-Methylnaphthalene	ug/g	<0.10	<0.050	0.19	0.61	0.39	<0.10	0.13	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050
2-Methylnaphthalene	ug/g	<0.10	<0.050	0.062	0.18	0.15	<0.10	0.21	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050
Naphthalene	ug/g	<0.10	<0.050	0.058	<0.10	<0.10	<0.10	0.77	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050
Phenanthrene	ug/g	<0.10	0.38	0.93	1.5	1.1	0.25	11	0.092	0.14	0.96	0.18	0.19	0.22
Pyrene	ug/g	0.1	0.53	0.9	1.4	0.98	0.31	11	0.12	0.2	1.9	0.52	0.46	0.37
SIZE DISTRIBUTION														
< -1 Phi (2 mm)	%													
< 0 Phi (1 mm)	%													
< +1 Phi (0.5 mm)	%													
< +2 Phi (0.25 mm)	%													
< +3 Phi (0.12 mm)	%													
< +4 Phi (0.062 mm)	%													
< +5 Phi (0.031 mm)	%													
< +6 Phi (0.016 mm)	%													
< +7 Phi (0.0078 mm)	%													
< +8 Phi (0.0039 mm)	%													
< +9 Phi (0.0020 mm)	%													
Gravel	%													
Coarse Sand	%													
Fine Sand	%													
Silt	%													
Clay	%													
Loss on Ignition	%w/w													
Wet Bulk Density	g/cm³													
Liquid Limit	%w/w													
Plastic Limit	%w/w													
Plasticity Index	%w/w													
Dissolved BOD5	mg/L	7					<20							

Table A1. Chedoke Creek Sediment Sample Analytical Results - April 2021

Parameter Name	Units	
Station		
Sample ID		CC-C26-EAST-45-60
BV Labs Sample ID		PJT419
Matrix		Solid
Sampled By		SB
Sampling Date and Time		4/21/21 9:00
PHYSICAL		
Moisture	%	41
ANIONS & NUTRIENTS		
Total Ammonia-N	ug/g	462
Nitrogen (N)	%	0.19
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	1900
Nitrite (N)	ug/g	<0.5
Nitrate (N)	ug/g	<2
Nitrate + Nitrite (N)	ug/g	<3
METALS		
Acid Extractable Aluminum (Al)	ug/g	12000
Acid Extractable Antimony (Sb)	ug/g	3.8
Acid Extractable Arsenic (As)	ug/g	8.9
Acid Extractable Barium (Ba)	ug/g	320
Acid Extractable Beryllium (Be)	ug/g	0.63
Acid Extractable Bismuth (Bi)	ug/g	1.1
Acid Extractable Boron (B)	ug/g	65
Acid Extractable Cadmium (Cd)	ug/g	26
Acid Extractable Calcium (Ca)	ug/g	58000
Acid Extractable Chromium (Cr)	ug/g	72
Acid Extractable Cobalt (Co)	ug/g	20
Acid Extractable Copper (Cu)	ug/g	150
Acid Extractable Iron (Fe)	ug/g	26000
Acid Extractable Lead (Pb)	ug/g	190
Acid Extractable Magnesium (Mg)	ug/g	15000
Acid Extractable Manganese (Mn)	ug/g	600
Acid Extractable Molybdenum (Mo)	ug/g	2.8
Acid Extractable Nickel (Ni)	ug/g	76
Acid Extractable Phosphorus (P)	ug/g	2000
Acid Extractable Potassium (K)	ug/g	1700
Acid Extractable Selenium (Se)	ug/g	0.67
Acid Extractable Silver (Ag)	ug/g	7.6
Acid Extractable Sodium (Na)	ug/g	320
Acid Extractable Strontium (Sr)	ug/g	130
Acid Extractable Thallium (Tl)	ug/g	0.17
Acid Extractable Tin (Sn)	ug/g	17
Acid Extractable Uranium (U)	ug/g	0.67
Acid Extractable Vanadium (V)	ug/g	26
Acid Extractable Zinc (Zn)	ug/g	690
Acid Extractable Mercury (Hg)	ug/g	0.57
PAHs		
Acenaphthene	ug/g	0.56
Acenaphthylene	ug/g	<0.050
Anthracene	ug/g	0.26
Benzo(a)anthracene	ug/g	0.48
Benzo(a)pyrene	ug/g	0.43
Benzo(b,j)fluoranthene	ug/g	0.7
Benzo(g,h,i)perylene	ug/g	0.31
Benzo(k)fluoranthene	ug/g	0.21
Chrysene	ug/g	0.51
Dibenzo(a,h)anthracene	ug/g	0.053
Fluoranthene	ug/g	1.6
Fluorene	ug/g	0.36
Indeno(1,2,3-cd)pyrene	ug/g	0.34
Methylnaphthalene, 2-(1-)	ug/g	0.32
1-Methylnaphthalene	ug/g	0.2
2-Methylnaphthalene	ug/g	0.12
Naphthalene	ug/g	<0.050
Phenanthrene	ug/g	1.3
Pyrene	ug/g	1.3
SIZE DISTRIBUTION		
< -1 Phi (2 mm)	%	
< 0 Phi (1 mm)	%	
< +1 Phi (0.5 mm)	%	
< +2 Phi (0.25 mm)	%	
< +3 Phi (0.12 mm)	%	
< +4 Phi (0.062 mm)	%	
< +5 Phi (0.031 mm)	%	
< +6 Phi (0.016 mm)	%	
< +7 Phi (0.0078 mm)	%	
< +8 Phi (0.0039 mm)	%	
< +9 Phi (0.0020 mm)	%	
Gravel	%	
Coarse Sand	%	
Fine Sand	%	
Silt	%	
Clay	%	
Loss on Ignition	%w/w	
Wet Bulk Density	g/cm ³	
Liquid Limit	%w/w	
Plastic Limit	%w/w	
Plasticity Index	%w/w	
Dissolved BOD5	mg/L	

Table A2. Princess Point Sediment Sample Analytical Results - April 2021

Station	PP-C01				PP-C02				PP-C03				PP-C04				PP-C05					
	Sample ID	PP-C01-15-30	PP-C01-30-45	PP-C01-45-60	PP-C02-0-15	PP-C02-15-30	PP-C02-30-45	PP-C03-0-15	PP-C03-15-30	PP-C03-30-45	PP-C03-45-60	PP-C03-60-75	PP-C03-75-90	PP-C04-0-15	PP-C04-15-30	PP-C04-30-45	PP-C04-45-60	PP-C05-0-15	PP-C05-15-30	PP-C05-30-45	PP-C05-45-60	
BV Labs Sample ID	PJT428	PJT429	PJT430	PJT431	PJT432	PJT433	PJT434	PJT435	PJT436	PJT437	PJT438	PJT439	PJT440	PJT441	PJT442	PJT443	PJT444	PJ888	PJ889	PJ890	PJ891	
Matrix	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	
Sampled By	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	TB	TB	TB	TB	
Sampling Date and Time	4/21/21 11:00	4/21/21 11:00	4/21/21 11:00	4/21/21 11:00	4/21/21 11:30	4/21/21 11:30	4/21/21 11:30	4/21/21 13:00	4/21/21 13:00	4/21/21 13:00	4/21/21 13:00	4/21/21 13:00	4/21/21 13:00	4/21/21 14:30	4/21/21 14:30	4/21/21 14:30	4/21/21 14:30	4/20/21 14:45	4/20/21 14:45	4/20/21 14:45	4/20/21 14:45	
Parameter Name	Units																					
PHYSICAL																						
Moisture	%	44	33	31	27	19	23	21	21	20	21	21	36	30	46	33	29	28	51	36	35	38
ANIONS & NUTRIENTS																						
Total Ammonia-N	ug/g	161	209	234	239	48	126	158	31	85	130	144	363	298	159	165	211	290	113	178	216	367
Nitrogen (N)	%	0.23	0.14	0.14	0.12	0.04	0.069	0.064	0.049	0.047	0.07	0.065	0.2	0.16	0.23	0.14	0.12	0.14	0.27	0.14	0.14	0.17
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	2340	1350	1360	1160	397	693	643	490	467	704	648	2050	1610	2280	1430	1220	1390	2740	1390	1390	1720
Nitrite (N)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate (N)	ug/g	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nitrate + Nitrite (N)	ug/g	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
METALS																						
Acid Extractable Aluminum (Al)	ug/g	9800	8100	7600	8500	4800	5900	7600	5400	6000	6200	4800	13000	9900	10000	8700	8400	8000	10000	8800	7900	11000
Acid Extractable Antimony (Sb)	ug/g	0.95	0.59	0.83	0.64	0.63	0.48	0.41	0.43	0.59	0.72	6	6	3.2	0.92	0.58	0.52	0.97	0.92	0.74	0.73	1.8
Acid Extractable Arsenic (As)	ug/g	4.9	4.8	4.7	4.3	2.6	3.4	4.2	2.8	3.4	3.3	4.2	8.8	6.8	4.4	5	4.3	5.1	4.3	5.1	4.9	6.4
Acid Extractable Barium (Ba)	ug/g	100	83	90	89	50	60	85	52	64	73	62	300	170	110	86	86	110	110	84	88	140
Acid Extractable Beryllium (Be)	ug/g	0.51	0.47	0.46	0.46	0.26	0.34	0.45	0.31	0.35	0.38	0.31	0.45	0.7	0.53	0.47	0.45	0.48	0.56	0.49	0.47	0.6
Acid Extractable Bismuth (Bi)	ug/g	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	3.1	1	<1.0	<1.0	1	1.5	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g	25	29	40	48	13	20	31	13	25	22	72	29	57	29	38	58	25	27	37	80	80
Acid Extractable Cadmium (Cd)	ug/g	0.95	1.2	1.4	1.5	0.6	0.98	1.1	0.53	0.88	1.3	2.1	40	37	0.86	1	1.2	2.4	0.89	1.1	1.2	3.9
Acid Extractable Calcium (Ca)	ug/g	71000	73000	63000	69000	74000	70000	68000	73000	68000	66000	70000	62000	80000	74000	73000	67000	64000	70000	71000	66000	63000
Acid Extractable Chromium (Cr)	ug/g	30	26	27	29	15	24	24	16	19	22	18	91	79	31	26	26	34	31	26	25	43
Acid Extractable Cobalt (Co)	ug/g	8.7	8.1	7.8	7.8	5.1	6.5	7.7	5.8	6.1	7.4	7.8	18	8.8	8.9	8.2	7.8	10	8.8	8	7.7	13
Acid Extractable Copper (Cu)	ug/g	80	57	61	58	61	66	75	60	67	59	64	170	170	88	54	57	79	90	54	56	100
Acid Extractable Iron (Fe)	ug/g	23000	21000	21000	22000	15000	17000	20000	17000	18000	19000	15000	26000	23000	23000	21000	20000	22000	23000	21000	20000	23000
Acid Extractable Lead (Pb)	ug/g	40	48	69	91	31	54	100	41	73	100	84	210	160	40	40	61	130	44	44	63	160
Acid Extractable Magnesium (Mg)	ug/g	21000	20000	17000	16000	14000	15000	15000	14000	15000	14000	15000	17000	18000	22000	21000	17000	17000	22000	20000	18000	17000
Acid Extractable Manganese (Mn)	ug/g	520	540	510	550	440	450	510	430	450	500	440	570	530	530	550	520	560	530	540	520	590
Acid Extractable Molybdenum (Mo)	ug/g	1.2	0.92	0.84	1	0.51	0.96	0.76	0.54	1	0.87	0.96	1.3	0.86	1.1	1.4	0.91	0.78	1.1	0.84	1.2	1.2
Acid Extractable Nickel (Ni)	ug/g	22	20	21	25	13	19	22	15	17	22	20	79	48	22	20	20	27	23	20	21	36
Acid Extractable Phosphorus (P)	ug/g	1200	1100	1200	780	890	1100	920	1100	870	2000	1600	1200	1000	1000	1200	1300	1200	1000	1200	1000	1500
Acid Extractable Potassium (K)	ug/g	1700	1400	1300	1500	1000	1000	1400	1100	1200	1200	780	2000	1700	1900	1600	1400	1300	1900	1700	1300	1700
Acid Extractable Selenium (Se)	ug/g	0.52	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	0.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.61
Acid Extractable Silver (Ag)	ug/g	0.51	0.32	0.94	0.79	0.21	0.54	0.67	<0.20	0.34	1.4	1.2	11	7.3	0.63	0.29	0.6	2.3	0.53	0.34	0.55	3.4
Acid Extractable Sodium (Na)	ug/g	440	290	270	210	260	200	270	180	190	160	290	260	470	290	270	250	270	430	300	290	410
Acid Extractable Strontium (Sr)	ug/g	180	160	130	130	120	120	120	120	110	100	130	120	180	150	130	120	170	160	140	140	130
Acid Extractable Thallium (Tl)	ug/g	0.19	0.16	0.14	0.12	0.099	0.12	0.12	0.11	0.12	0.11	0.078	0.19	0.17	0.21	0.16	0.15	0.13	0.2	0.17	0.16	0.16
Acid Extractable Tin (Sn)	ug/g	4	3	5.4	16	2.9	3.5	13	4.1	4.8	5.8	5.9	27	23	4.3	3.9	6	10	5.5	3.2	5.6	12
Acid Extractable Uranium (U)	ug/g	0.62	0.53	0.49	0.51	0.42	0.46	0.66	0.45	0.5	0.48	0.4	0.75	0.59	0.66	0.55	0.49	0.53	0.71	0.66	0.51	0.55
Acid Extractable Vanadium (V)	ug/g	23	22	22	24	18	19	20	20	20	20	15	27	23	24	21	21	24	24	23	21	24
Acid Extractable Zinc (Zn)	ug/g	370	310	280	270	180	210	260	150	210	260	200	760	590	380	290	360	380	310	280	280	470
Acid Extractable Mercury (Hg)	ug/g	0.15	0.13	0.36	0.3	0.28	0.15	0.29	0.065	0.51	0.45	0.62	0.93	0.66	0.14	0.1	0.27	0.44	0.18	0.18	0.24	0.49
PAHs																						
Acenaphthene	ug/g	<0.10	<0.050	0.074	0.073	<0.050	0.12	<0.050	0.082	<0.050	0.13	<0.050	0.36	0.27	<0.10	<0.050	0.057	0.14	0.72	0.051	0.11	0.25
Acenaphthylene	ug/g	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050
Anthracene	ug/g	<0.10	0.085	0.12	0.11	<0.050	0.22	0.077	0.11	<0.050	0.19	<0.050	0.37	0.19	0.1	0.093	0.091	0.15	0.78	0.1	0.22	0.25
Benzo(a)anthracene	ug/g	0.4	0.54	0.68	0.5	0.15	0.66	0.28	0.51	0.19	0.54	0.66	1.1	0.57	0.72	0.63	0.52	0.54	3.1	0.56	0.87	0.65
Benzo(a)pyrene	ug/g	0.48	0.61	0.76	0.46	0.15	0.62	0.27	0.46	0.18	0.45	0.14	1.1	0.59	0.85	0.71	0.57	0.53	2.8	0.61	0.83	0.61
Benzo(b)fluoranthene	ug/g	0.79	0.98	1.1	0.69	0.26	0.94	0.43	0.67	0.29	0.63	0.2	1.4	0.87	1.3	1.1	0.86	0.79	4.2	1	1.2	0.9
Benzo(g,h)perylene	ug/g	0.42	0.54	0.56	0.35	0.13	0.4	0.21	0.34	0.13	0.3	0.11	0.73	0.5	0.7	0.57	0.44	0.39	1.7	0.45	0.55	0.38
Benzo(k)fluoranthene	ug/g	0.22	0.36	0.35	0.22	0.079	0.3	0.13	0.24	0.084	0.19	0.061	0.44	0.24	0.48	0.33	0.29	0.24	1.6	0.29	0.41	0.28
Chrysene	ug/g	0.58	0.66	0.87	0.58	0.2	0.69	0.34	0.59	0.24	0.51	0.16	1	0.65	1.1	0.79	0.63	0.61	3.2	0.7	1.1	0.67
Dibenz(a,h)anthracene	ug/g	<0.10	0.077	0.089	0.057	<0.050	0.11	<0.050	0.052	<0.050	0.056	<0.050	0.14	0.091	<0.10	0.081	0.069	0.079	0.47	0.099	0.12	

Table A2. Princess Point Sediment Sample Analytical Results - April 2021

Station	PP-C06					PP-C07					PP-C08					PP-C09					PP-C11-0-15	PP-C11-15-30	
Sample ID	PP-C06-0-15	PP-C06-15-30	PP-C06-30-45	PP-C06-45-60	PP-C06-60-75	PP-C07-0-15	PP-C07-15-30	PP-C07-30-45	PP-C07-45-60	PP-C07-60-75	PP-C08-0-15	PP-C08-15-30	PP-C08-30-45	PP-C08-45-60	PP-C09-0-15	PP-C09-15-30	PP-C09-30-45	PP-C09-45-60	PP-C09-60-75	PP-C11-0-15	PP-C11-15-30		
BV Labs Sample ID	PKV679	PKV680	PKV681	PKV682	PKV683	PKV684	PKV685	PKV686	PKV687	PKV688	PKV675	PKV676	PKV677	PKV678	PJ2020	PJ2021	PJ2022	PJ2023	PJ2024	PJ2014	PJ2015		
Matrix	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid		
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB		
Sampling Date and Time	4/23/21 9:30	4/23/21 9:30	4/23/21 9:30	4/23/21 9:30	4/23/21 9:30	4/23/21 10:30	4/23/21 10:30	4/23/21 10:30	4/23/21 10:30	4/23/21 10:30	4/23/21 9:00	4/23/21 9:00	4/23/21 9:00	4/23/21 9:00	4/22/21 13:00	4/22/21 14:30	4/22/21 14:30	4/22/21 14:30	4/22/21 14:30	4/22/21 13:00	4/22/21 13:00		
Parameter Name	Units																						
PHYSICAL																							
Moisture	%	51	44	37	41	44	45	35	36	32	30	33	23	23	20	46	42	33	35	38	59	48	
ANIONS & NUTRIENTS																							
Total Ammonia-N	ug/g	46	80	166	305	281	26	82	146	157	172	41	81	96	104	<20	68	151	233	279	50	161	
Nitrogen (N)	%	0.23	0.14	0.14	0.18	0.19	0.18	0.12	0.14	0.11	0.14	0.14	0.049	0.058	0.069	0.1	0.09	0.09	0.09	0.09	0.09	0.09	
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	2260	1370	1440	1750	1940	1760	1210	1430	1090	1040	1370	491	577	693	1780	1730	1370	1550	1850	2720	1960	
Nitrite (N)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Nitrate (N)	ug/g	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Nitrate + Nitrite (N)	ug/g	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
METALS																							
Acid Extractable Aluminum (Al)	ug/g	11000	9300	9800	11000	11000	9700	8200	8900	7600	7600	7800	5800	5500	6600	10000	11000	9800	11000	12000	14000	14000	
Acid Extractable Antimony (Sb)	ug/g	0.78	0.67	1	3.6	3.3	0.75	0.6	0.64	0.65	0.57	0.64	0.36	0.37	0.84	0.78	0.67	0.64	0.77	1.8	0.79	0.7	
Acid Extractable Arsenic (As)	ug/g	4.6	4.9	5.6	9.2	7.3	4.7	4.6	4.7	4.1	3.3	4.1	3	2.9	5.3	5.8	5	5.4	7.4	5.9	6.5	6.5	
Acid Extractable Barium (Ba)	ug/g	110	84	120	240	220	90	77	90	84	78	77	60	56	71	94	110	110	120	190	120	130	
Acid Extractable Beryllium (Be)	ug/g	0.52	0.44	0.5	0.64	0.57	0.4	0.46	0.4	0.4	0.43	0.3	0.3	0.36	0.64	0.56	0.51	0.57	0.64	0.66	0.67	0.67	
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Acid Extractable Boron (B)	ug/g	16	15	32	50	48	18	20	31	35	38	20	18	22	16	21	24	42	57	18	23	23	
Acid Extractable Cadmium (Cd)	ug/g	1	1.2	3	22	18	0.8	0.95	1.2	1	0.9	0.64	0.52	0.61	1.4	1.7	1.6	1.9	6	2.1	2.7	2.7	
Acid Extractable Calcium (Ca)	ug/g	75000	75000	65000	63000	62000	75000	73000	68000	68000	72000	71000	70000	71000	78000	77000	69000	66000	65000	87000	84000	84000	
Acid Extractable Chromium (Cr)	ug/g	29	25	33	54	48	23	23	27	23	21	16	17	20	29	32	28	38	55	35	36	36	
Acid Extractable Cobalt (Co)	ug/g	9	8.4	18	17	8.5	7.7	7.8	7.2	7.2	7.2	5.7	5.7	6.8	9	9.1	8.4	10	14	10	11	11	
Acid Extractable Copper (Cu)	ug/g	77	54	72	100	100	60	51	61	58	50	53	48	49	67	77	69	82	130	92	89	89	
Acid Extractable Iron (Fe)	ug/g	23000	21000	22000	24000	19000	22000	20000	21000	18000	19000	15000	15000	18000	23000	23000	22000	24000	26000	27000	28000	28000	
Acid Extractable Lead (Pb)	ug/g	42	44	110	190	160	37	40	56	65	80	30	32	41	56	47	77	130	180	57	77	77	
Acid Extractable Magnesium (Mg)	ug/g	22000	19000	18000	17000	17000	24000	22000	20000	20000	23000	16000	16000	19000	23000	20000	18000	17000	17000	18000	17000	17000	
Acid Extractable Manganese (Mn)	ug/g	590	560	590	620	590	560	550	550	560	550	510	470	450	510	560	580	600	620	610	670	670	
Acid Extractable Molybdenum (Mo)	ug/g	1.1	1	0.81	1	0.92	1.4	0.81	0.87	0.65	0.84	0.51	0.47	0.63	1.5	1.1	0.88	0.98	1.1	1.5	1.2	1.2	
Acid Extractable Nickel (Ni)	ug/g	23	21	28	66	59	21	19	20	20	17	14	15	17	22	24	24	30	40	27	29	29	
Acid Extractable Phosphorus (P)	ug/g	1200	890	1300	1800	1700	960	920	1100	1000	960	770	780	1100	840	1000	1300	1300	1700	1100	1200	1200	
Acid Extractable Potassium (K)	ug/g	1800	1400	1500	1700	1700	1900	1400	1500	1200	1300	1500	1100	1000	1300	1700	1800	1400	1500	2000	2200	2100	
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	0.56	0.53	0.54	0.76	0.68	0.7	
Acid Extractable Silver (Ag)	ug/g	0.56	0.51	1.8	4.9	4.8	0.41	0.3	0.41	1	0.59	0.29	0.22	<0.20	1.2	0.51	0.68	0.94	1.6	5.4	0.76	1.1	
Acid Extractable Sodium (Na)	ug/g	420	280	280	300	280	210	370	280	250	370	260	160	200	310	370	230	280	310	560	440	440	
Acid Extractable Strontium (Sr)	ug/g	190	180	140	140	130	170	150	150	120	120	140	120	110	190	180	130	130	140	300	240	240	
Acid Extractable Thallium (Tl)	ug/g	0.23	0.18	0.16	0.17	0.17	0.19	0.14	0.13	0.11	0.15	0.093	0.11	0.098	0.21	0.2	0.16	0.17	0.19	0.25	0.24	0.24	
Acid Extractable Tin (Sn)	ug/g	3.8	3	7.7	10	11	3.2	3.1	5.1	5.8	5.2	3.6	3.3	7.7	8.2	3.5	4.9	5	8.1	16	4.6	5.5	
Acid Extractable Uranium (U)	ug/g	0.61	0.55	0.52	0.61	0.61	0.63	0.52	0.5	0.47	0.46	0.53	0.4	0.39	0.45	0.65	0.6	0.46	0.52	0.57	0.69	0.57	
Acid Extractable Vanadium (V)	ug/g	22	20	21	24	23	21	20	20	18	18	18	14	15	17	21	23	20	23	25	25	26	
Acid Extractable Zinc (Zn)	ug/g	390	320	370	580	510	310	260	290	220	230	260	150	170	180	380	390	330	410	600	500	480	
Acid Extractable Mercury (Hg)	ug/g	0.12	0.22	0.39	0.48	0.71	0.12	0.12	0.21	0.5	0.31	0.092	0.094	0.098	0.38	0.16	0.33	0.37	0.4	0.49	0.17	0.26	
PAHS																							
Acenaphthene	ug/g	<0.10	<0.10	0.085	0.11	0.12	<0.10	0.088	0.061	0.17	0.11	0.24	<0.050	0.084	0.12	<0.10	<0.10	0.065	0.078	0.07	<0.10	<0.10	
Acenaphthylene	ug/g	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050	<0.10	<0.10	
Anthracene	ug/g	<0.10	<0.10	0.092	0.14	0.2	<0.10	0.19	0.11	0.24	0.25	0.48	0.076	0.16	0.17	0.11	0.17	0.14	0.16	0.14	<0.10	<0.10	
Benzo(a)anthracene	ug/g	0.51	0.47	0.43	0.47	0.76	0.46	0.88	0.54	0.81	0.69	1.3	0.88	0.34	0.59	0.61	0.6	0.74	0.61	0.51	0.41	0.45	
Benzo(a)pyrene	ug/g	0.65	0.59	0.48	0.46	0.75	0.6	0.89	0.61	0.82	0.68	1.3	0.37	0.57	0.63	0.79	0.86	0.7	0.74	0.57	0.57	0.64	
Benzo(b)fluoranthene	ug/g	1	1	0.86	1	1	1.4	1	1.2	1	0.95	1.8	0.58	0.94	1	1.4	1.4	1.1	1.2	0.91	1	1.1	
Benzo(g,h)perylene	ug/g	0.62	0.47	0.36	0.37	0.55	0.49	0.65	0.43	0.5	0.49	0.96	0.31	0.38	0.42	0.83	0.81	0.66	0.69	0.56	0.67	0.71	
Benzo(k)fluoranthene	ug/g	0.34	0.29	0.42	0.24	0.38	0.31	0.42	0.32	0.43	0.34	0.63	0.19	0.33	0.31	0.45	0.5	0.4	0.37	0.31	0.35	0.38	
Chrysene	ug/g	0.67	0.63	0.52	0.51	0.75	0.61	1	0.69	0.8	0.69	1.4	0.4	0.64	0.66	0.74	0.96	0.76	0.75	0.57	0.55	0.66	
Dibenz(a,h)anthracene	ug/g	<0.10	<0.10	0.058	<0.10	0.12	<0.10	0.1	0.071	0.08													

Table A2. Princess Point Sediment Sample Analytical Results - April 2021

Station	PP-C11				PP-C12			
	Sample ID	PP-C11-30-45	PP-C11-45-60	PP-C11-60-75	PP-C11-75-90	PP-C12-0-15	PP-C12-15-30	PP-C12-30-45
BV Labs Sample ID	PJ2016	PJ2017	PJ2018	PJ2019	PJ1445	PJ1446	PJ1447	
Matrix	Solid	Solid	Solid	Solid	Solid	Solid	Solid	
Sampled By	TB	TB	TB	TB	SB	SB	SB	
Sampling Date and Time	4/22/21 13:00	4/22/21 13:00	4/22/21 13:00	4/22/21 13:00	4/21/21 14:00	4/21/21 14:00	4/21/21 14:00	
Parameter Name	Units							
PHYSICAL								
Moisture	%	43	41	40	40	32	27	31
ANIONS & NUTRIENTS								
Total Ammonia-N	ug/g	262	303	367	378	92	141	153
Nitrogen (N)	%					0.16	0.1	0.15
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	1830	2100	2580	2510	1570	1050	1500
Nitrite (N)	ug/g					<0.5	<0.5	<0.5
Nitrate (N)	ug/g					<2	<2	<2
Nitrate + Nitrite (N)	ug/g					<3	<3	<3
METALS								
Acid Extractable Aluminum (Al)	ug/g	14000	13000	15000	15000	7600	7200	7600
Acid Extractable Antimony (Sb)	ug/g	0.74	2.6	4.8	2.2	0.62	0.58	0.68
Acid Extractable Arsenic (As)	ug/g	6.8	7.8	9.7	8.8	3.2	3.7	3.8
Acid Extractable Barium (Ba)	ug/g	150	230	280	220	76	72	79
Acid Extractable Beryllium (Be)	ug/g	0.64	0.68	0.74	0.69	0.46	0.4	0.45
Acid Extractable Bismuth (Bi)	ug/g	<1.0	1.1	2.3	1.9	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g	27	36	53	49	31	42	43
Acid Extractable Cadmium (Cd)	ug/g	4.1	24	53	48	0.78	0.94	1.2
Acid Extractable Calcium (Ca)	ug/g	74000	65000	63000	71000	70000	70000	71000
Acid Extractable Chromium (Cr)	ug/g	45	77	110	150	23	22	25
Acid Extractable Cobalt (Co)	ug/g	12	18	17	17	7.5	7.3	7.3
Acid Extractable Copper (Cu)	ug/g	110	150	210	190	58	49	59
Acid Extractable Iron (Fe)	ug/g	28000	28000	30000	29000	19000	19000	19000
Acid Extractable Lead (Pb)	ug/g	130	170	210	170	48	40	48
Acid Extractable Magnesium (Mg)	ug/g	15000	14000	16000	14000	21000	21000	19000
Acid Extractable Manganese (Mn)	ug/g	720	660	630	650	480	510	490
Acid Extractable Molybdenum (Mo)	ug/g	0.93	1.1	1.3	1.2	0.83	0.69	0.87
Acid Extractable Nickel (Ni)	ug/g	35	71	70	68	18	18	19
Acid Extractable Phosphorus (P)	ug/g	1700	2200	2300	2500	900	900	1000
Acid Extractable Potassium (K)	ug/g	1900	1800	2100	1900	1600	1500	1500
Acid Extractable Selenium (Se)	ug/g	0.7	0.77	0.7	0.58	<0.50	<0.50	<0.50
Acid Extractable Silver (Ag)	ug/g	2.9	7.3	12	7.8	0.33	0.3	0.51
Acid Extractable Sodium (Na)	ug/g	340	320	340	290	240	200	240
Acid Extractable Strontium (Sr)	ug/g	180	150	130	110	140	120	140
Acid Extractable Thallium (Tl)	ug/g	0.21	0.24	0.24	0.23	0.15	0.14	0.16
Acid Extractable Tin (Sn)	ug/g	11	18	35	30	4.5	2.6	3.4
Acid Extractable Uranium (U)	ug/g	0.45	0.62	0.69	0.68	0.55	0.52	0.53
Acid Extractable Vanadium (V)	ug/g	25	28	28	26	20	19	20
Acid Extractable Zinc (Zn)	ug/g	540	660	1000	990	270	230	280
Acid Extractable Mercury (Hg)	ug/g	0.37	0.57	0.93	0.76	0.77	0.12	0.38
PAHS								
Acenaphthene	ug/g	<0.10	0.12	0.2	0.13	<0.10	<0.050	0.098
Acenaphthylene	ug/g	<0.10	<0.10	<0.050	<0.10	<0.10	<0.050	<0.050
Anthracene	ug/g	<0.10	0.25	0.32	0.15	<0.10	0.092	0.19
Benzo(a)anthracene	ug/g	0.53	0.74	0.94	0.59	0.46	0.56	0.88
Benzo(a)pyrene	ug/g	0.66	0.81	0.98	0.66	0.52	0.57	0.88
Benzo(b)fluoranthene	ug/g	1.1	1.2	1.5	1.1	0.83	0.89	1.3
Benzo(g,h)perylene	ug/g	0.66	0.67	0.93	0.7	0.44	0.45	0.63
Benzo(k)fluoranthene	ug/g	0.39	0.41	0.55	0.36	0.27	0.25	0.46
Chrysene	ug/g	0.69	0.8	1.1	0.69	0.53	0.59	0.96
Dibenzo(a,h)anthracene	ug/g	0.13	0.16	0.22	0.15	<0.10	0.09	0.1
Fluoranthene	ug/g	1.8	2.1	2.6	1.5	1.6	1.6	2.7
Fluorene	ug/g	<0.10	0.15	0.28	0.14	<0.10	<0.050	0.096
Indeno(1,2,3-cd)pyrene	ug/g	0.64	0.69	0.94	0.69	0.46	0.5	0.69
Methylnaphthalene, 2-(1-)	ug/g	<0.10	<0.10	0.23	<0.10	<0.10	<0.071	<0.071
1-Methylnaphthalene	ug/g	<0.10	<0.10	0.071	<0.10	<0.10	<0.050	<0.050
2-Methylnaphthalene	ug/g	<0.10	<0.10	0.16	0.13	<0.10	<0.050	<0.050
Naphthalene	ug/g	<0.10	<0.10	0.081	<0.10	<0.10	<0.050	<0.050
Phenanthrene	ug/g	0.59	1.1	1.9	0.84	0.67	0.54	1
Pyrene	ug/g	1.4	1.7	1.9	1.2	1.2	1.3	2.1
SIZE DISTRIBUTION								
< -1 Phi (2 mm)	%							
< 0 Phi (1 mm)	%							
< +1 Phi (0.5 mm)	%							
< +2 Phi (0.25 mm)	%							
< +3 Phi (0.12 mm)	%							
< +4 Phi (0.062 mm)	%							
< +5 Phi (0.031 mm)	%							
< +6 Phi (0.016 mm)	%							
< +7 Phi (0.0078 mm)	%							
< +8 Phi (0.0039 mm)	%							
< +9 Phi (0.0020 mm)	%							
Gravel	%							
Coarse Sand	%							
Fine Sand	%							
Silt	%							
Clay	%							
Loss on Ignition	%w/w							
Wet Bulk Density	g/cm3							
Liquid Limit	%w/w							
Plastic Limit	%w/w							
Plasticity Index	%w/w							
Dissolved BOD5	mg/L							

Table A3. Cootes Paradise Sediment Sample Analytical Results - April 2021

Station	CP-C04				CP-C05						CP-C06		CP-C07				
	Sample ID	CP-C04-30-45	CP-C04-45-60	CP-C04-60-75	CP-C04-75-90	CP-C05-0-15	CP-C05-15-30	CP-C05-30-45	CP-C05-45-60	CP-C05-60-75	CP-C05-75-90	CP-C06-0-15	CP-C06-15-30	CP-C07-0-15	CP-C07-15-30	CP-C07-30-45	CP-C07-45-60
BV Labs Sample ID	PKV719	PKV720	PKV721	PKV722	PKV689	PKV690	PKV691	PKV692	PKV693	PKV694	PKV695	PKV696	PKV712	PKV713	PKV714	PKV715	
Matrix	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	
Sampled By	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	
Sampling Date and Time	4/26/21 12:30	4/26/21 12:30	4/26/21 12:30	4/26/21 12:30	4/23/21 11:30	4/23/21 11:30	4/23/21 11:30	4/23/21 11:30	4/23/21 11:30	4/23/21 11:30	4/23/21 13:30	4/23/21 13:30	4/26/21 11:30	4/26/21 11:30	4/26/21 11:30	4/26/21 11:30	
Parameter Name	Units																
PHYSICAL																	
Moisture	%	39	34	34	35	48	41	37	40	38	39	28	45	55	44	40	37
ANIONS & NUTRIENTS																	
Total Ammonia-N	ug/g	123	169	162	208	<20	50	66	68	68	71	<20	66	24	110	173	185
Nitrogen (N)	%	0.14	0.14	0.14	0.12	0.19	0.15	0.14	0.15	0.19	0.18	0.094	0.37	0.21	0.15	0.15	0.15
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	1390	1360	1490	1220	1920	1490	1410	1540	1930	1800	944	3690	2070	1530	1450	1450
Nitrite (N)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate (N)	ug/g	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nitrate + Nitrite (N)	ug/g	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
METALS																	
Acid Extractable Aluminum (Al)	ug/g	10000	10000	10000	8600	11000	11000	11000	12000	11000	13000	5100	8200	11000	11000	12000	10000
Acid Extractable Antimony (Sb)	ug/g	0.45	0.49	0.5	0.56	0.54	0.65	2	3.1	2.3	2.1	0.25	<0.20	0.6	0.53	0.45	0.83
Acid Extractable Arsenic (As)	ug/g	5.1	5	5.5	4.6	5	5.4	7	8.5	6.9	7.3	2.7	3.1	5.1	5.6	5.7	5.7
Acid Extractable Barium (Ba)	ug/g	100	100	110	93	98	100	160	220	190	160	44	69	97	100	110	120
Acid Extractable Beryllium (Be)	ug/g	0.52	0.5	0.53	0.43	0.51	0.49	0.59	0.64	0.58	0.61	0.25	0.33	0.56	0.53	0.58	0.52
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g	20	32	35	36	13	19	28	26	32	36	<5.0	8.9	15	19	25	35
Acid Extractable Cadmium (Cd)	ug/g	1.2	1.4	1.6	1.5	1.1	1.5	5.4	18	31	35	0.42	0.15	0.98	1.3	1.5	2.3
Acid Extractable Calcium (Ca)	ug/g	75000	69000	70000	66000	81000	74000	70000	69000	73000	62000	63000	58000	82000	71000	72000	68000
Acid Extractable Chromium (Cr)	ug/g	26	27	30	25	26	28	36	48	78	110	13	12	25	26	30	32
Acid Extractable Cobalt (Co)	ug/g	8.3	8.7	9.3	8.9	8.8	9.4	17	17	17	15	5.4	17	9.2	9.1	9.9	11
Acid Extractable Copper (Cu)	ug/g	68	61	63	58	60	61	85	100	120	130	28	21	60	62	61	83
Acid Extractable Iron (Fe)	ug/g	21000	22000	23000	21000	23000	23000	23000	24000	23000	26000	14000	15000	24000	24000	25000	23000
Acid Extractable Lead (Pb)	ug/g	54	73	95	92	42	57	130	160	130	110	33	15	42	59	80	120
Acid Extractable Magnesium (Mg)	ug/g	19000	19000	17000	18000	20000	20000	17000	17000	16000	15000	8900	6500	18000	17000	16000	17000
Acid Extractable Manganese (Mn)	ug/g	610	610	640	590	670	610	640	670	670	650	400	470	660	660	750	700
Acid Extractable Molybdenum (Mo)	ug/g	1	0.77	0.69	0.66	1.1	0.99	0.92	0.85	0.75	0.97	<0.50	<0.50	1.4	0.99	0.63	0.86
Acid Extractable Nickel (Ni)	ug/g	22	24	28	25	22	24	34	58	59	53	11	12	22	24	28	30
Acid Extractable Phosphorus (P)	ug/g	1100	1300	1100	1100	960	1100	1400	1600	2000	1900	800	810	920	1100	1100	1400
Acid Extractable Potassium (K)	ug/g	1600	1700	1600	1300	1800	1700	1700	1800	1600	1900	840	1100	1800	1600	1800	1600
Acid Extractable Selenium (Se)	ug/g	<0.50	0.51	<0.50	<0.50	<0.50	<0.50	0.62	0.63	<0.50	0.52	<0.50	<0.50	<0.50	0.53	0.55	0.54
Acid Extractable Silver (Ag)	ug/g	0.49	1.1	0.91	1.2	0.42	0.73	2.8	3.8	5.4	3.8	<0.20	<0.20	0.48	0.71	0.83	2.3
Acid Extractable Sodium (Na)	ug/g	300	270	250	240	320	300	290	260	260	330	210	220	350	270	220	230
Acid Extractable Strontium (Sr)	ug/g	160	130	140	120	200	170	140	130	110	94	130	120	240	160	160	130
Acid Extractable Thallium (Tl)	ug/g	0.16	0.16	0.15	0.13	0.2	0.18	0.17	0.17	0.19	0.22	0.15	0.094	0.22	0.19	0.17	0.17
Acid Extractable Tin (Sn)	ug/g	4.9	5	6	6.1	3.6	4.1	8.9	11	18	20	1.8	1.8	2.8	3.6	5.1	13
Acid Extractable Uranium (U)	ug/g	0.49	0.48	0.43	0.42	0.53	0.54	0.54	0.56	0.52	0.59	0.34	0.46	0.62	0.52	0.45	0.5
Acid Extractable Vanadium (V)	ug/g	21	22	22	19	22	23	23	25	24	26	16	18	22	23	24	22
Acid Extractable Zinc (Zn)	ug/g	310	290	310	280	330	320	450	520	600	810	160	70	330	310	310	370
Acid Extractable Mercury (Hg)	ug/g	0.21	0.62	0.3	0.35	0.16	0.15	0.38	0.37	0.68	0.56	<0.050	<0.050	0.19	0.32	0.22	0.37
PAHs																	
Acenaphthene	ug/g	<0.10	0.077	0.061	0.025	<0.10	<0.10	0.063	<0.10	0.1	0.16	<0.050	<0.10	<0.10	<0.010	<0.050	<0.050
Acenaphthylene	ug/g	<0.10	<0.050	<0.050	0.008	<0.10	<0.10	<0.050	<0.10	<0.050	<0.10	<0.050	<0.10	<0.10	<0.010	<0.050	<0.050
Anthracene	ug/g	0.12	0.15	<0.10	0.054	<0.10	<0.10	0.078	0.11	0.17	0.12	<0.050	<0.10	<0.10	0.019	<0.050	<0.050
Benzo(a)anthracene	ug/g	0.57	0.67	0.44	0.19	0.39	0.42	0.39	0.4	0.66	0.44	0.14	<0.10	0.34	0.092	0.16	0.11
Benzo(a)pyrene	ug/g	0.69	0.74	0.51	0.21	0.51	0.5	0.41	0.4	0.67	0.47	0.2	<0.10	0.44	0.11	0.19	0.12
Benzo(b,j)fluoranthene	ug/g	1.2	1.1	0.79	0.32	0.79	0.77	0.62	0.61	0.95	0.82	0.32	<0.10	0.7	0.19	0.31	0.19
Benzo(g,h,i)perylene	ug/g	0.62	0.6	0.43	0.19	0.46	0.42	0.34	0.32	0.51	0.36	0.18	<0.10	0.42	0.1	0.17	0.1
Benzo(k)fluoranthene	ug/g	0.4	0.39	0.26	0.11	0.28	0.27	0.22	0.2	0.34	0.24	0.11	<0.10	0.24	0.058	0.11	0.059
Chrysene	ug/g	0.75	0.75	0.53	0.22	0.47	0.5	0.44	0.43	0.68	0.46	0.21	<0.10	0.39	0.12	0.2	0.13
Dibenzo(a,h)anthracene	ug/g	0.11	0.12	0.078	0.042	<0.10	<0.10	0.06	<0.10	0.12	<0.10	<0.050	<0.10	<0.10	0.021	<0.050	<0.050
Fluoranthene	ug/g	1.9	2.1	1.4	0.6	1.3	1.3	1.3	1.2	1.6	1.1	0.55	<0.10	1.1	0.3	0.58	0.4
Fluorene	ug/g	<0.10	0.074	0.053	0.029	<0.10	<0.10	<0.050	<0.10	<0.090	0.11	<0.050	<0.10	<0.10	<0.010	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	0.61	0.66	0.46	0.19	0.48	0.45	0.35	0.33	0.53	0.37	0.18	<0.10	0.42	0.1	0.16	0.09
Methylnaphthalene, 2-(1-)	ug/g	<0.14	<0.071	<0.071	0.011	<0.14	<0.14	<0.071	<0.14	0.081	<0.14	<0.071	<0.14	<0.14	<0.014	<0.071	<0.071
1-Methylnaphthalene	ug/g	<0.10	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	<0.10	<0.050	<0.10	<0.050	<0.10	<0.10	<0.010	<0.050	<0.050
2-Methylnaphthalene	ug/g	<0.10	<0.050	<0.050	0.011	<0.10	<0.10	<0.050	<0.10	0.081	<0.10	<0.050	<0.10	<0.10	<0.010	<0.050	<0.050
Naphthalene	ug/g	<0.10	<0.050	<0.050	0.0094	<0.10	<0.10	<0.050	<0.10	0.056	<0.10	<0.050	<0.10	<0.10	<0.010	<0.050	<0.050
Phenanthrene	ug/g	0.62	0.93	0.62	0.27	0.31	0.37	0.58	0.67	0.9	0.58	0.22	<0.10	0.28	0.089	0.21	0.26
Pyrene	ug/g	1.4	1.6	1.1	0.48	1	1	1	0.99	1.3	0.98	0.41	<0.10	0.86	0.23	0.45	0.31
SIZE DISTRIBUTION																	
< -1 Phi (2 mm)	%					100	100	100	100	100	100						
< 0 Phi (1 mm)	%					100	100	100	100	100	100						
< +1 Phi (0.5 mm)	%					100	100	100	100	99	99						
< +2 Phi (0.25 mm)	%					99	99	99	99	99	99						
< +3 Phi (0.12 mm)	%																

Table A3. Cootes Paradise Sediment Sample Analytical Results - April 2021

	Station	
	Sample ID	CP-REF-2-60-75
	BV Labs Sample ID	PKV711
	Matrix	Solid
	Sampled By	TB
	Sampling Date and Time	4/26/21 11:30
Parameter Name	Units	
PHYSICAL		
Moisture	%	44
ANIONS & NUTRIENTS		
Total Ammonia-N	ug/g	210
Nitrogen (N)	%	0.3
Calculated Total Kjeldahl Nitrogen (TKN)	ug/g	2960
Nitrite (N)	ug/g	<0.5
Nitrate (N)	ug/g	<2
Nitrate + Nitrite (N)	ug/g	<3
METALS		
Acid Extractable Aluminum (Al)	ug/g	25000
Acid Extractable Antimony (Sb)	ug/g	<0.20
Acid Extractable Arsenic (As)	ug/g	4.6
Acid Extractable Barium (Ba)	ug/g	190
Acid Extractable Beryllium (Be)	ug/g	1.1
Acid Extractable Bismuth (Bi)	ug/g	<1.0
Acid Extractable Boron (B)	ug/g	7.4
Acid Extractable Cadmium (Cd)	ug/g	0.19
Acid Extractable Calcium (Ca)	ug/g	22000
Acid Extractable Chromium (Cr)	ug/g	32
Acid Extractable Cobalt (Co)	ug/g	13
Acid Extractable Copper (Cu)	ug/g	31
Acid Extractable Iron (Fe)	ug/g	36000
Acid Extractable Lead (Pb)	ug/g	15
Acid Extractable Magnesium (Mg)	ug/g	9000
Acid Extractable Manganese (Mn)	ug/g	480
Acid Extractable Molybdenum (Mo)	ug/g	0.77
Acid Extractable Nickel (Ni)	ug/g	34
Acid Extractable Phosphorus (P)	ug/g	800
Acid Extractable Potassium (K)	ug/g	2900
Acid Extractable Selenium (Se)	ug/g	<0.50
Acid Extractable Silver (Ag)	ug/g	<0.20
Acid Extractable Sodium (Na)	ug/g	210
Acid Extractable Strontium (Sr)	ug/g	67
Acid Extractable Thallium (Tl)	ug/g	0.2
Acid Extractable Tin (Sn)	ug/g	<1.0
Acid Extractable Uranium (U)	ug/g	0.88
Acid Extractable Vanadium (V)	ug/g	39
Acid Extractable Zinc (Zn)	ug/g	98
Acid Extractable Mercury (Hg)	ug/g	<0.050
PAHs		
Acenaphthene	ug/g	<0.10
Acenaphthylene	ug/g	<0.10
Anthracene	ug/g	<0.10
Benzo(a)anthracene	ug/g	<0.10
Benzo(a)pyrene	ug/g	<0.10
Benzo(b,j)fluoranthene	ug/g	<0.10
Benzo(g,h,i)perylene	ug/g	<0.10
Benzo(k)fluoranthene	ug/g	<0.10
Chrysene	ug/g	<0.10
Dibenzo(a,h)anthracene	ug/g	<0.10
Fluoranthene	ug/g	<0.10
Fluorene	ug/g	<0.10
Indeno(1,2,3-cd)pyrene	ug/g	<0.10
Methylnaphthalene, 2-(1-)	ug/g	<0.14
1-Methylnaphthalene	ug/g	<0.10
2-Methylnaphthalene	ug/g	<0.10
Naphthalene	ug/g	<0.10
Phenanthrene	ug/g	<0.10
Pyrene	ug/g	<0.10
SIZE DISTRIBUTION		
< -1 Phi (2 mm)	%	
< 0 Phi (1 mm)	%	
< +1 Phi (0.5 mm)	%	
< +2 Phi (0.25 mm)	%	
< +3 Phi (0.12 mm)	%	
< +4 Phi (0.062 mm)	%	
< +5 Phi (0.031 mm)	%	
< +6 Phi (0.016 mm)	%	
< +7 Phi (0.0078 mm)	%	
< +8 Phi (0.0039 mm)	%	
< +9 Phi (0.0020 mm)	%	
Gravel	%	
Coarse Sand	%	
Fine Sand	%	
Silt	%	
Clay	%	
Loss on Ignition	%w/w	
Wet Bulk Density	g/cm3	
Liquid Limit	%w/w	
Plastic Limit	%w/w	
Plasticity Index	%w/w	
Dissolved BOD5	mg/L	

Appendix B

Sediment Analysis Results Tables – August 2021

Table B1. Chedoke Creek Sediment Sample Analytical Results - August 2021

	Sample ID	CC-C13-75-90	CC-C13-90-105	CC-C19-75-90	CC-C19-90-105	CC-C20-105-120	CC-C20-120-135	CC-C23-105-120	CC-C23-120-135	CC-C26-105-120	CC-C26-120-135	CC-C17-75-90
	Laboratory ID	QHV434	QHV435	QHV436	QHV437	QHV438	QHV439	QHV440	QHV441	QHV442	QHV443	QHV444
	Sampling Date	8/6/2021	8/6/2021	8/6/2021	8/6/2021	8/5/2021	8/5/2021	8/5/2021	8/5/2021	8/5/2021	8/5/2021	8/5/2021
Parameter	UNITS											
Total Ammonia-N	ug/g	140	135	61	47	38	46	171	135	195	220	<20
Moisture	%	48	47	24	21	31	32	50	41	20	21	17
Calculated Total Kjeldahl Nitrogen	ug/g	4300	3220	682	540	1030	835	2620	2140	598	608	184
Metals												
Acid Extractable Aluminum (Al)	ug/g	14000	16000	8300	9200	8500	8100	9300	8800	7100	7300	5900
Acid Extractable Antimony (Sb)	ug/g	2.9	0.99	1.3	1.3	2.1	1.1	0.73	1.1	1.1	1.2	<0.20
Acid Extractable Arsenic (As)	ug/g	6.2	6.7	4.9	5.2	5.0	4.3	4.6	4.4	4.1	4.3	2.5
Acid Extractable Barium (Ba)	ug/g	160	160	130	130	120	100	120	120	86	97	47
Acid Extractable Beryllium (Be)	ug/g	0.64	0.73	0.45	0.48	0.43	0.41	0.49	0.46	0.38	0.38	0.27
Acid Extractable Bismuth (Bi)	ug/g	2.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g	17	13	18	17	15	11	14	14	29	31	5.1
Acid Extractable Cadmium (Cd)	ug/g	5.5	0.51	11	11	9.5	7.8	3.3	3.0	2.7	3.8	1.3
Acid Extractable Calcium (Ca)	ug/g	37000	47000	64000	66000	55000	60000	65000	62000	65000	63000	62000
Acid Extractable Chromium (Cr)	ug/g	38	29	29	33	29	27	24	25	24	27	11
Acid Extractable Cobalt (Co)	ug/g	10	11	10	11	11	8.3	9.6	9.8	8.4	9.1	5.2
Acid Extractable Copper (Cu)	ug/g	77	65	83	97	79	69	67	86	66	71	31
Acid Extractable Iron (Fe)	ug/g	28000	33000	21000	21000	20000	19000	20000	20000	19000	19000	15000
Acid Extractable Lead (Pb)	ug/g	170	54	77	76	92	91	66	120	110	110	24
Acid Extractable Magnesium (Mg)	ug/g	13000	13000	15000	13000	15000	11000	13000	14000	14000	15000	8700
Acid Extractable Manganese (Mn)	ug/g	460	760	590	650	600	460	470	470	490	480	470
Acid Extractable Molybdenum (Mo)	ug/g	9.4	1.3	0.84	0.96	1.0	0.87	0.73	0.76	0.74	1.0	<0.50
Acid Extractable Nickel (Ni)	ug/g	90	29	32	31	31	25	31	35	24	30	12
Acid Extractable Phosphorus (P)	ug/g	1200	1200	1100	1100	1100	1000	1000	990	970	980	760
Acid Extractable Potassium (K)	ug/g	2000	2200	1600	1600	1300	1300	1600	1600	1400	1400	960
Acid Extractable Selenium (Se)	ug/g	0.63	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Acid Extractable Silver (Ag)	ug/g	0.93	0.79	3.0	6.5	2.8	3.1	1.7	1.1	1.7	1.5	0.25
Acid Extractable Sodium (Na)	ug/g	360	340	270	250	160	170	230	210	230	240	140
Acid Extractable Strontium (Sr)	ug/g	79	94	110	110	93	110	140	130	110	110	110
Acid Extractable Thallium (Tl)	ug/g	0.19	0.21	0.12	0.11	0.11	0.11	0.11	0.11	0.099	0.10	<0.050
Acid Extractable Tin (Sn)	ug/g	33	19	13	12	16	21	7.1	11	9.3	12	2.4
Acid Extractable Uranium (U)	ug/g	0.83	0.71	0.55	0.63	0.54	0.63	0.57	0.58	0.55	0.48	0.44
Acid Extractable Vanadium (V)	ug/g	28	31	22	23	21	23	21	19	20	19	15
Acid Extractable Zinc (Zn)	ug/g	510	290	280	260	260	240	220	230	230	240	70
Acid Extractable Mercury (Hg)	ug/g	0.25	0.075	0.22	4.6	0.29	0.17	1.0	0.19	2.0	0.31	<0.050
PAHs												
Methylnaphthalene, 2-(1-) (calc)	ug/g	<0.14	<0.14	0.25	0.25	0.26	0.23	<0.14	<0.14	<0.071	0.34	<0.0071
Acenaphthene	ug/g	<0.10	<0.10	0.10	0.10	0.16	0.075	<0.10	<0.10	0.12	0.69	0.0069
Acenaphthylene	ug/g	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.0050
Anthracene	ug/g	<0.10	<0.10	0.12	0.13	0.23	0.11	0.11	0.21	0.22	1.2	0.019
Benzo(a)anthracene	ug/g	0.21	0.19	0.31	0.32	0.53	0.27	0.25	0.42	0.58	1.9	0.059
Benzo(a)pyrene	ug/g	0.23	0.22	0.31	0.37	0.53	0.27	0.29	0.44	0.55	1.7	0.071
Benzo(b,j)fluoranthene	ug/g	0.40	0.38	0.47	0.55	0.78	0.45	0.37	0.59	0.80	2.4	0.14
Benzo(g,h,i)perylene	ug/g	0.23	0.20	0.30	0.32	0.37	0.23	0.22	0.43	0.38	1.0	0.077
Benzo(k)fluoranthene	ug/g	0.13	0.13	0.16	0.20	0.26	0.16	0.13	0.21	0.29	0.92	0.050
Chrysene	ug/g	0.29	0.16	0.33	0.36	0.53	0.29	0.26	0.50	0.58	1.7	0.063
Dibenzo(a,h)anthracene	ug/g	<0.10	<0.10	0.071	0.082	0.097	0.051	<0.10	<0.10	0.097	0.29	0.013
Fluoranthene	ug/g	0.73	0.64	0.85	0.89	1.5	0.79	0.97	1.4	1.7	6.0	0.26
Fluorene	ug/g	<0.10	<0.10	0.12	0.12	0.19	0.094	<0.10	0.13	0.15	0.89	0.0075
Indeno(1,2,3-cd)pyrene	ug/g	0.22	0.20	0.29	0.33	0.38	0.23	0.19	0.42	0.40	1.0	0.062
1-Methylnaphthalene	ug/g	<0.10	<0.10	0.13	0.12	0.13	0.14	<0.10	<0.10	<0.050	0.12	<0.0050
2-Methylnaphthalene	ug/g	<0.10	<0.10	0.12	0.13	0.13	0.088	<0.10	<0.10	<0.050	0.21	<0.0050
Naphthalene	ug/g	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	0.37	<0.0050
Phenanthrene	ug/g	0.26	0.29	0.62	0.55	1.0	0.46	0.39	0.74	1.0	5.6	0.069
Pyrene	ug/g	0.46	0.44	0.69	0.63	1.2	0.74	0.65	1.1	1.6	3.8	0.19

Table B2. Princess Point Sediment Sample Analytical Results - August 2021

	Sample ID	PP-C20-0-15	PP-C20-15-30	PP-C20-30-45	PP-C20-45-60	PP-C20A-60-75	PP-C21-0-15	PP-C21-15-30	PP-C21-30-45	PP-C21A-45-60
	Laboratory ID	QKS945	QKS946	QKS947	QKS948	QKS949	QKS950	QKS951	QKS952	QKS953
	Sampling Date	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021
Parameter	UNITS									
Total Ammonia-N	ug/g	96	197	287	374	237	50	87	70	59
Moisture	%	57	43	40	37	48	42	43	45	57
Calculated Total Kjeldahl Nitrogen	ug/g	2380	2080	2250	2450	2220	1960	3800	2870	4840
Physical Testing										
Wet Bulk Density	g/cm ³	1.5	1.7	1.6	1.7	1.5	1.6	1.6	1.6	1.5
Loss on Ignition	%w/w	6.7	4.4	6.2	5.6	6.0	6.3	11.3	7.9	11.3
Metals										
Acid Extractable Aluminum (Al)	ug/g	13000	15000	15000	15000	14000	10000	13000	16000	15000
Acid Extractable Antimony (Sb)	ug/g	0.71	0.86	1.9	3.0	1.8	3.3	7.5	5.8	2.4
Acid Extractable Arsenic (As)	ug/g	6.2	7.5	8.0	9.4	7.7	6.3	12	8.8	7.0
Acid Extractable Barium (Ba)	ug/g	120	160	230	250	180	160	280	240	220
Acid Extractable Beryllium (Be)	ug/g	0.65	0.73	0.76	0.73	0.68	0.56	0.70	0.77	0.71
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	1.1	2.4	1.4	1.9	5.0	4.3	1.9
Acid Extractable Boron (B)	ug/g	20	28	37	50	35	67	230	35	37
Acid Extractable Cadmium (Cd)	ug/g	3.4	8.4	26	54	23	22	50	4.0	10
Acid Extractable Calcium (Ca)	ug/g	89000	80000	69000	62000	73000	57000	42000	50000	67000
Acid Extractable Chromium (Cr)	ug/g	39	55	91	190	94	92	200	38	58
Acid Extractable Cobalt (Co)	ug/g	11	13	18	17	14	13	18	13	12
Acid Extractable Copper (Cu)	ug/g	100	120	180	260	170	230	510	130	140
Acid Extractable Iron (Fe)	ug/g	27000	29000	29000	29000	27000	23000	26000	28000	27000
Acid Extractable Lead (Pb)	ug/g	68	120	190	200	140	150	300	170	110
Acid Extractable Magnesium (Mg)	ug/g	17000	16000	14000	16000	15000	16000	14000	12000	12000
Acid Extractable Manganese (Mn)	ug/g	600	660	650	620	600	520	510	530	590
Acid Extractable Molybdenum (Mo)	ug/g	1.5	1.1	1.0	1.8	1.5	1.2	1.5	1.0	1.4
Acid Extractable Nickel (Ni)	ug/g	29	40	71	76	51	48	74	32	36
Acid Extractable Phosphorus (P)	ug/g	1100	1600	2200	2300	1700	1900	2700	1400	1300
Acid Extractable Potassium (K)	ug/g	2100	2200	2100	2100	2000	1600	1900	2100	1900
Acid Extractable Selenium (Se)	ug/g	0.69	0.78	0.89	0.74	0.73	0.66	1.1	1.0	0.71
Acid Extractable Silver (Ag)	ug/g	1.1	2.6	7.4	8.2	4.1	3.8	8.7	2.3	2.1
Acid Extractable Sodium (Na)	ug/g	450	370	330	280	360	360	710	260	310
Acid Extractable Strontium (Sr)	ug/g	310	220	160	100	190	130	79	100	150
Acid Extractable Thallium (Tl)	ug/g	0.25	0.24	0.24	0.23	0.24	0.21	0.24	0.25	0.21
Acid Extractable Tin (Sn)	ug/g	6.0	10	20	38	23	38	89	18	22
Acid Extractable Uranium (U)	ug/g	0.72	0.61	0.59	0.73	0.69	0.64	1.1	0.73	0.74
Acid Extractable Vanadium (V)	ug/g	26	28	29	28	26	22	27	30	28
Acid Extractable Zinc (Zn)	ug/g	540	600	820	1200	790	900	2200	1000	720
Acid Extractable Mercury (Hg)	ug/g	0.23	0.40	0.60	1.0	0.56	0.82	2.2	1.8	0.79
PAHs										
Methylnaphthalene, 2-(1-) (calc)	ug/g	<0.21	<0.14	<0.14	0.26	<0.14	<0.14	0.54	<0.14	<0.21
Acenaphthene	ug/g	<0.15	<0.10	<0.10	0.39	0.11	0.18	0.73	0.18	<0.15
Acenaphthylene	ug/g	<0.15	<0.10	<0.10	0.053	<0.10	<0.10	<0.10	0.14	<0.15
Anthracene	ug/g	<0.15	<0.10	<0.10	0.36	0.13	0.23	0.52	0.33	0.16
Benzo(a)anthracene	ug/g	0.37	0.36	0.36	0.93	0.50	0.80	1.1	1.2	0.56
Benzo(a)pyrene	ug/g	0.49	0.44	0.40	0.88	0.57	0.87	1.1	1.2	0.59
Benzo(b,j)fluoranthene	ug/g	0.92	0.81	0.69	1.4	0.97	1.3	1.7	1.8	0.96
Benzo(g,h,i)perylene	ug/g	0.53	0.44	0.37	0.70	0.53	0.71	0.87	0.89	0.48
Benzo(k)fluoranthene	ug/g	0.26	0.24	0.21	0.42	0.29	0.38	0.49	0.53	0.23
Chrysene	ug/g	0.50	0.50	0.46	1.0	0.61	0.86	1.3	1.4	0.68
Dibenzo(a,h)anthracene	ug/g	<0.15	<0.10	<0.10	0.16	0.11	0.14	0.19	0.20	<0.15
Fluoranthene	ug/g	1.2	1.2	1.1	2.6	1.4	2.1	3.1	2.9	1.6
Fluorene	ug/g	<0.15	<0.10	<0.10	0.33	0.10	0.15	0.54	0.16	<0.15
Indeno(1,2,3-cd)pyrene	ug/g	0.54	0.46	0.40	0.77	0.56	0.77	0.93	0.96	0.52
1-Methylnaphthalene	ug/g	<0.15	<0.10	<0.10	0.11	<0.10	<0.10	0.20	<0.10	<0.15
2-Methylnaphthalene	ug/g	<0.15	<0.10	<0.10	0.15	<0.10	0.10	0.34	<0.10	<0.15
Naphthalene	ug/g	<0.15	<0.10	<0.10	0.072	<0.10	<0.10	0.15	<0.10	<0.15
Phenanthrene	ug/g	0.25	0.29	0.37	1.5	0.49	0.95	2.2	1.1	0.84
Pyrene	ug/g	0.96	0.96	0.92	2.2	1.2	1.8	3.1	2.6	1.4

Table B3. Cootes Paradise Sediment Sample Analytical Results - August 2021

Sample ID	CP-C09-0-15	CP-C09-15-30	CP-C09-30-45	CP-C09-45-60	CP-C09A-60-75	CP-C10-0-15	CP-C10-15-30	CP-C10-30-45	CP-C10-45-60	
Laboratory ID	QKT062	QKT063	QKT064	QKT065	QKT066	QKT067	QKT068	QKT069	QKT070	
Sampling Date	8/19/2021	8/19/2021	8/19/2021	8/19/2021	8/19/2021	8/19/2021	8/19/2021	8/19/2021	8/19/2021	
Parameter	UNITS									
Total Ammonia-N	ug/g	61	184	336	213	267	<20	106	150	84
Moisture	%	58	54	43	53	51	63	55	51	54
Nitrogen (N)	%	0.24	0.20	0.20	0.21	0.21	0.32	0.24	0.22	0.23
Calculated Total Kjeldahl Nitrogen	ug/g	2410	2020	1980	2150	2120	3160	2390	2240	2330
Nitrite (N)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate (N)	ug/g	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nitrate + Nitrite (N)	ug/g	<3	<3	<3	<3	<3	<3	<3	<3	<3
Wet Bulk Density	g/cm3	1.4	1.5	1.7	1.6	1.5	1.4	1.6	1.6	1.5
Loss on Ignition	%w/w	5.4	5.8	6.0	6.6	6.2	7.4	6.2	5.9	5.7
Metals										
Acid Extractable Aluminum (Al)	ug/g	12000	12000	13000	12000	12000	11000	14000	12000	12000
Acid Extractable Antimony (Sb)	ug/g	0.53	0.37	0.49	0.48	0.50	0.41	0.40	0.49	0.49
Acid Extractable Arsenic (As)	ug/g	5.0	5.8	6.2	5.9	5.8	4.6	5.8	5.9	5.4
Acid Extractable Barium (Ba)	ug/g	97	97	110	100	100	94	100	100	110
Acid Extractable Beryllium (Be)	ug/g	0.61	0.60	0.64	0.62	0.62	0.58	0.63	0.62	0.62
Acid Extractable Bismuth (Bi)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Boron (B)	ug/g	13	15	27	17	21	9.5	13	12	9.7
Acid Extractable Cadmium (Cd)	ug/g	1.0	1.2	1.8	1.2	1.4	0.77	0.93	1.2	1.1
Acid Extractable Calcium (Ca)	ug/g	80000	72000	68000	72000	70000	81000	77000	69000	71000
Acid Extractable Chromium (Cr)	ug/g	26	28	30	28	28	24	26	26	25
Acid Extractable Cobalt (Co)	ug/g	9.8	10	10	9.9	9.7	9.2	10	9.7	9.8
Acid Extractable Copper (Cu)	ug/g	59	57	65	58	60	53	52	52	52
Acid Extractable Iron (Fe)	ug/g	26000	26000	26000	26000	25000	25000	27000	26000	24000
Acid Extractable Lead (Pb)	ug/g	44	54	90	55	68	40	42	57	49
Acid Extractable Magnesium (Mg)	ug/g	14000	14000	13000	14000	13000	13000	14000	12000	12000
Acid Extractable Manganese (Mn)	ug/g	730	690	760	690	690	760	760	720	650
Acid Extractable Molybdenum (Mo)	ug/g	1.3	0.93	0.74	1.1	0.90	0.92	1.0	0.73	0.72
Acid Extractable Nickel (Ni)	ug/g	24	24	27	25	25	22	25	25	24
Acid Extractable Phosphorus (P)	ug/g	890	920	1100	940	970	910	920	970	850
Acid Extractable Potassium (K)	ug/g	1800	1800	1900	2000	1800	1800	2000	1800	1700
Acid Extractable Selenium (Se)	ug/g	0.55	0.59	0.74	0.54	0.62	<0.50	0.59	0.67	0.53
Acid Extractable Silver (Ag)	ug/g	0.35	0.43	1.3	0.43	0.72	0.29	0.31	0.38	0.42
Acid Extractable Sodium (Na)	ug/g	250	250	220	240	240	260	250	190	180
Acid Extractable Strontium (Sr)	ug/g	280	210	160	220	180	290	260	180	200
Acid Extractable Thallium (Tl)	ug/g	0.23	0.24	0.23	0.23	0.22	0.23	0.23	0.24	0.21
Acid Extractable Tin (Sn)	ug/g	2.8	3.4	7.1	3.4	5.1	2.5	2.5	3.5	3.0
Acid Extractable Uranium (U)	ug/g	0.66	0.62	0.51	0.64	0.66	0.59	0.56	0.58	0.60
Acid Extractable Vanadium (V)	ug/g	24	24	25	26	24	22	27	26	25
Acid Extractable Zinc (Zn)	ug/g	350	340	360	340	340	320	320	310	310
Acid Extractable Mercury (Hg)	ug/g	0.084	0.15	0.26	0.16	0.22	0.091	0.12	0.14	0.11
PAHs										
Methylnaphthalene, 2-(1-) (calc)	ug/g	<0.22	<0.14	<0.14	<0.14	<0.14	<0.21	<0.14	<0.14	<0.14
Acenaphthene	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Acenaphthylene	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Anthracene	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Benzo(a)anthracene	ug/g	0.29	0.31	0.25	0.30	0.37	0.18	0.17	0.27	0.22
Benzo(a)pyrene	ug/g	0.39	0.41	0.29	0.40	0.43	0.23	0.20	0.31	0.28
Benzo(b/f)fluoranthene	ug/g	0.67	0.65	0.46	0.65	0.67	0.37	0.33	0.50	0.46
Benzo(g,h,i)perylene	ug/g	0.43	0.36	0.25	0.35	0.36	0.21	0.20	0.26	0.26
Benzo(k)fluoranthene	ug/g	0.20	0.22	0.16	0.21	0.22	<0.15	0.12	0.17	0.15
Chrysene	ug/g	0.33	0.39	0.30	0.38	0.43	0.21	0.18	0.30	0.27
Dibenzo(a,h)anthracene	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Fluoranthene	ug/g	0.93	0.95	0.75	0.90	1.1	0.53	0.47	0.78	0.63
Fluorene	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	ug/g	0.41	0.37	0.26	0.36	0.36	0.21	0.20	0.28	0.26
1-Methylnaphthalene	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
2-Methylnaphthalene	ug/g	<0.20 (1)	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Naphthalene	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	<0.10
Phenanthrene	ug/g	0.22	0.27	0.32	0.24	0.44	<0.15	0.13	0.34	0.19
Pyrene	ug/g	0.75	0.77	0.60	0.73	0.89	0.42	0.38	0.61	0.52

TECH MEMO

10.08.2021

MECP Request for Additional information –
Comparison of Existing Sediment
Surface and Target Surface Contaminant
Concentrations

Technical Memorandum

To: Tim Crowley
Public Works, City of Hamilton

From: Lance Lombard; Suzy Baird; Michael Coveney, PhD
Wood Environment & Infrastructure Solutions (Wood)

Date: October 8, 2021

Ref: WW20101062 City of Hamilton – Chedoke Creek Remediation Project

Re: MECP Request for Additional information – Comparison of Existing Sediment Surface and Target Surface Contaminant Concentrations

COMPARISON OF EXISTING SEDIMENT SURFACE AND TARGET SURFACE CONTAMINANT CONCENTRATIONS

The attached tables have been prepared in response to the MECP's request to provide a side-by-side comparison of contaminants within the current sediment surface and contaminants that may be exposed by dredging to the recommended elevation targets. As discussed in the September 17, 2021 Supplemental Technical Memorandum titled *Comparison of Sediment Contaminants in Surficial and Deep Layers in Chedoke Creek and Princess Point Sediment Cores and Recommended Dredge Target Modifications*, comparisons were made using data collected from transects CC-C13, CC-C17, CC-C19, CC-C20, CC-C23, and CC-C26 within Zones 2 and 3.

Table 1 provides a comparison of all available nutrient, metal, and PAH analyte data collected at each of the above transects for the existing surface interval (0 – 15 cm) and the respective proposed dredge target interval. Table 2a provides the Several Effect Level (SEL) hazard quotients (HQs) for metals in the existing and proposed surface intervals. Table 2b provides the Probable Effect Level (PEL) HQs for metals in the existing and proposed surface intervals. Similarly, Tables 3a and 3b provide the SEL and PEL HQs for PAHs for both the existing and proposed surface intervals.

Table 1. Analytical concentrations in existing and proposed surficial intervals at select locations in Chedoke Creek.

Location Interval	CC-C13		CC-C17		CC-C19		CC-C20		CC-C23		CC-C26	
	Existing (0-15 cm)	Proposed (90-105 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (105-120)	Existing (0-15 cm)	Proposed (120-135)	Existing (0-15 cm)	Proposed (120-135 cm)
Nutrients (ug/g)												
Total Ammonia-N	<20	135	46	<20	67	61	150	38	61	135	35	220
Total Kjeldahl Nitrogen [a]	302	3220	594	184	1290	682	1390	1030	1710	2140	479	608
Phosphorus [b]	1100	1200	890	760	1200	1100	1500	1100	780	990	950	980
Acid Extractable Metals (ug/g)												
Aluminum	8600	16000	8400	5900	9000	8300	14000	8500	8200	8800	5300	7300
Antimony	0.45	0.99	0.78	<0.20	4.7	1.3	2	2.1	0.45	1.1	0.41	1.2
Arsenic	4.5	6.7	3.9	2.5	5.4	4.9	7.6	5	3.8	4.4	3.1	4.3
Barium	110	160	100	47	170	130	250	120	84	120	68	97
Beryllium	0.48	0.73	0.46	0.27	0.46	0.45	0.65	0.43	0.4	0.46	0.31	0.38
Bismuth	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
Boron	22	13	18	5.1	21	18	25	15	14	14	15	31
Cadmium	0.58	0.51	1.1	1.3	15	11	30	9.5	0.39	3	0.56	3.8
Calcium	67000	47000	68000	62000	64000	64000	64000	55000	71000	62000	73000	63000
Chromium	25	29	24	11	39	29	61	29	18	25	18	27
Cobalt	8.4	11	7.8	5.2	11	10	16	11	7.2	9.8	5.5	9.1
Copper	52	65	74	31	93	83	130	79	47	86	90	71
Iron	25000	33000	22000	15000	22000	21000	28000	20000	21000	20000	18000	19000
Lead	37	54	27	24	120	77	140	92	52	120	70	110
Magnesium	23000	13000	23000	8700	20000	15000	15000	15000	18000	14000	16000	15000
Manganese	580	760	510	470	510	590	660	600	450	470	430	480
Molybdenum	0.81	1.3	0.85	<0.50	1	0.84	1.2	1	0.71	0.76	0.62	1
Nickel	21	29	20	12	38	32	58	31	19	35	12	30
Potassium	1900	2200	1700	960	1700	1600	2200	1300	1500	1600	1200	1400
Selenium	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	<0.20	0.79	0.41	0.25	3.1	3	6	2.8	1.1	1.1	<0.20	1.5
Sodium	260	340	260	140	350	270	330	160	390	210	220	240
Strontium	100	94	110	110	110	110	120	93	120	130	120	110
Thallium	0.11	0.21	0.14	<0.050	0.13	0.12	0.17	0.11	0.12	0.11	0.095	0.1
Tin	4.1	19	4.8	2.4	17	13	23	16	3.4	11	6.7	12
Uranium	0.58	0.71	0.62	0.44	0.58	0.55	0.69	0.54	0.54	0.58	0.54	0.48
Vanadium	23	31	20	15	23	22	29	21	20	19	23	19
Zinc	220	290	230	70	390	280	440	260	180	230	200	240
Mercury	0.092	0.075	0.093	<0.050	0.29	0.22	0.45	0.29	1.2	0.19	0.12	0.31
PAHs (ug/g)												
Acenaphthene	<0.050	<0.10	0.081	0.0069	0.26	0.1	0.53	0.16	<0.10	<0.10	<0.050	0.69
Acenaphthylene	<0.050	<0.10	<0.050	<0.0050	<0.050	<0.050	<0.20	<0.050	<0.10	<0.10	<0.050	<0.050
Anthracene	<0.050	<0.10	0.37	0.019	0.31	0.12	0.43	0.23	<0.10	0.21	<0.050	1.2
Benzo(a)anthracene	0.061	0.19	1.8	0.059	0.6	0.31	0.92	0.53	0.16	0.42	0.15	1.9
Benzo(a)pyrene	0.056	0.22	1.1	0.071	0.5	0.31	0.84	0.53	0.16	0.44	0.16	1.7
Benzo(b,j)fluoranthene	0.085	0.38	1.8	0.14	0.79	0.47	1.4	0.78	0.28	0.59	0.26	2.4
Benzo(g,h,i)perylene	<0.050	0.2	0.51	0.077	0.34	0.3	0.64	0.37	0.12	0.43	0.14	1
Benzo(k)fluoranthene	<0.050	0.13	0.64	0.05	0.22	0.16	0.49	0.26	<0.10	0.21	0.092	0.92
Chrysene	0.084	0.16	1.5	0.063	0.66	0.33	0.95	0.53	0.17	0.5	0.2	1.7
Dibenzo(a,h)anthracene	<0.050	<0.10	0.15	0.013	0.069	0.071	0.14	0.097	<0.10	<0.10	<0.050	0.29
Fluoranthene	0.28	0.64	4.5	0.26	2.2	0.85	2.9	1.5	0.63	1.4	0.57	6
Fluorene	<0.050	<0.10	0.066	0.0075	0.37	0.12	0.6	0.19	<0.10	0.13	<0.050	0.89
Indeno(1,2,3-cd)pyrene	<0.050	0.2	0.56	0.062	0.38	0.29	0.65	0.38	0.11	0.42	0.15	1
Methylnaphthalene, 2-(1-) [c]	<0.071	<0.14	<0.071	<0.0071	1	0.25	2.1	0.26	<0.14	<0.071	<0.071	0.34
1-Methylnaphthalene	<0.050	<0.10	<0.050	<0.0050	0.42	0.13	0.94	0.13	<0.10	<0.10	<0.050	0.12
2-Methylnaphthalene	<0.050	<0.10	<0.050	<0.0050	0.61	0.12	1.2	0.13	<0.10	<0.10	<0.050	0.21
Naphthalene	<0.050	<0.10	<0.050	<0.0050	<0.050	<0.050	<0.20	<0.050	<0.10	<0.10	<0.050	0.37
Phenanthrene	0.14	0.29	1.5	0.069	1.7	0.62	2.9	1	0.22	0.74	0.21	5.6
Pyrene	0.21	0.44	3.2	0.19	1.6	0.69	2	1.2	0.44	1.1	0.42	3.8

[a] Total Kjeldahl Nitrogen (TKN) result based on calculation.

[b] Acid extractable phosphorus.

[c] Methylnaphthalene, 2-(1-) result based on calculation.

"<" indicates that parameter not detected.

Table 2a. Severe Effect Level (SEL) hazard quotients (HQs) for metals in existing and proposed surficial intervals at select locations in Chedoke Creek.

HQ (SEL)												
Location	CC-C13		CC-C17		CC-C19		CC-C20		CC-C23		CC-C26	
Interval	Existing (0-15 cm)	Proposed (90-105 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (105-120 cm)	Existing (0-15 cm)	Proposed (120-135 cm)	Existing (0-15 cm)	Proposed (120-135 cm)
Arsenic	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1
Cadmium	0.1	0.1	0.1	0.1	1.5	1.1	3.0	1.0	0.0	0.3	0.1	0.4
Chromium	0.2	0.3	0.2	0.1	0.4	0.3	0.6	0.3	0.2	0.2	0.2	0.2
Copper	0.5	0.6	0.7	0.3	0.8	0.8	1.2	0.7	0.4	0.8	0.8	0.6
Lead	0.1	0.2	0.1	0.1	0.5	0.3	0.6	0.4	0.2	0.5	0.3	0.4
Mercury	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.6	0.1	0.1	0.2
Nickel	1.2	1.7	1.2	0.7	2.2	1.9	3.4	1.8	1.1	2.1	0.7	1.8
Zinc	0.3	0.4	0.3	0.1	0.5	0.3	0.5	0.3	0.2	0.3	0.2	0.3

Table 2b. Probable Effect Level (PEL) hazard quotients (HQs) for metals in existing and proposed surficial intervals at select locations in Chedoke Creek.

HQ (PEL)												
Location	CC-C13		CC-C17		CC-C19		CC-C20		CC-C23		CC-C26	
Interval (cm)	Existing (0-15 cm)	Proposed (90-105 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (105-120 cm)	Existing (0-15 cm)	Proposed (120-135 cm)	Existing (0-15 cm)	Proposed (120-135 cm)
Arsenic	0.3	0.4	0.2	0.1	0.3	0.3	0.4	0.3	0.2	0.3	0.2	0.3
Cadmium	0.2	0.1	0.3	0.4	4.3	3.1	8.6	2.7	0.1	0.9	0.2	1.1
Chromium	0.3	0.3	0.3	0.1	0.4	0.3	0.7	0.3	0.2	0.3	0.2	0.3
Copper	0.3	0.3	0.4	0.2	0.5	0.4	0.7	0.4	0.2	0.4	0.5	0.4
Lead	0.4	0.6	0.3	0.3	1.3	0.8	1.5	1.0	0.6	1.3	0.8	1.2
Mercury	0.2	0.2	0.2	0.1	0.6	0.5	0.9	0.6	2.5	0.4	0.2	0.6
Nickel	NO PEL AVAILABLE											
Zinc	0.7	0.9	0.7	0.2	1.2	0.9	1.4	0.8	0.6	0.7	0.6	0.8

Notes:

Cell shading: light green=HQs<0.5, darker green=HQs between 0.5 and 1 (0.5≤HQ≤1.0), orange=HQs greater than 1.0.

Method detection limit used for undetected concentrations (indicated with "<" in Table 1).

Criteria Sources: Provincial Sediment Quality Guidelines (PSQG) Severe Effect Levels (SELs) or the Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (CSQG)

Probable Effect Levels (PELs).

Table 3a. Severe Effect Level (SEL) hazard quotients (HQs) for PAHs in existing and proposed surficial intervals at select locations in Chedoke Creek.

HQ (SEL)												
Location	CC-C13		CC-C17		CC-C19		CC-C20		CC-C23		CC-C26	
Interval (cm)	Existing (0-15 cm)	Proposed (90-105 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (105-120 cm)	Existing (0-15 cm)	Proposed (120-135 cm)	Existing (0-15 cm)	Proposed (120-135 cm)
Acenaphthene	NO SEL AVAILABLE											
Acenaphthylene	NO SEL AVAILABLE											
Anthracene	1.35E-04	2.70E-04	1.00E-03	5.14E-05	8.38E-04	3.24E-04	1.16E-03	6.22E-04	2.70E-04	5.68E-04	1.35E-04	3.24E-03
Benzo(a)anthracene	4.12E-05	1.28E-04	1.22E-03	3.99E-05	4.05E-04	2.09E-04	6.22E-04	3.58E-04	1.08E-04	2.84E-04	1.01E-04	1.28E-03
Benzo(a)pyrene	3.89E-05	1.53E-04	7.64E-04	4.93E-05	3.47E-04	2.15E-04	5.83E-04	3.68E-04	1.11E-04	3.06E-04	1.11E-04	1.18E-03
Benzo(ghi)perylene	1.56E-04	6.25E-04	1.59E-03	2.41E-04	1.06E-03	9.38E-04	2.00E-03	1.16E-03	3.75E-04	1.34E-03	4.38E-04	3.13E-03
Benzo(k)fluoranthene	3.73E-05	9.70E-05	4.78E-04	3.73E-05	1.64E-04	1.19E-04	3.66E-04	1.94E-04	7.46E-05	1.57E-04	6.87E-05	6.87E-04
Chrysene	1.83E-04	3.48E-04	3.26E-03	1.37E-04	1.43E-03	7.17E-04	2.07E-03	1.15E-03	3.70E-04	1.09E-03	4.35E-04	3.70E-03
Dibenzo(a,h)anthracene	3.85E-04	7.69E-04	1.15E-03	1.00E-04	5.31E-04	5.46E-04	1.08E-03	7.46E-04	7.69E-04	7.69E-04	3.85E-04	2.23E-03
Fluoranthene	2.75E-04	6.27E-04	4.41E-03	2.55E-04	2.16E-03	8.33E-04	2.84E-03	1.47E-03	6.18E-04	1.37E-03	5.59E-04	5.88E-03
Fluorene	3.13E-04	6.25E-04	4.13E-04	4.69E-05	2.31E-03	7.50E-04	3.75E-03	1.19E-03	6.25E-04	8.13E-04	3.13E-04	5.56E-03
Indeno(1,2,3-cd)pyrene	1.56E-04	6.25E-04	1.75E-03	1.94E-04	1.19E-03	9.06E-04	2.03E-03	1.19E-03	3.44E-04	1.31E-03	4.69E-04	3.13E-03
Naphthalene	NO SEL AVAILABLE											
Phenanthrene	1.47E-04	3.05E-04	1.58E-03	7.26E-05	1.79E-03	6.53E-04	3.05E-03	1.05E-03	2.32E-04	7.79E-04	2.21E-04	5.89E-03
Pyrene	2.47E-04	5.18E-04	3.76E-03	2.24E-04	1.88E-03	8.12E-04	2.35E-03	1.41E-03	5.18E-04	1.29E-03	4.94E-04	4.47E-03

Table 3b. Probable Effect Level (PEL) hazard quotients (HQs) for PAHs in existing and proposed surficial intervals at select locations in Chedoke Creek.

HQ (PEL)												
Location	CC-C13		CC-C17		CC-C19		CC-C20		CC-C23		CC-C26	
Interval (cm)	Existing (0-15 cm)	Proposed (90-105 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (75-90 cm)	Existing (0-15 cm)	Proposed (105-120 cm)	Existing (0-15 cm)	Proposed (120-135 cm)	Existing (0-15 cm)	Proposed (120-135 cm)
Acenaphthene	5.62E-04	1.12E-03	9.11E-04	7.76E-05	2.92E-03	1.12E-03	5.96E-03	1.80E-03	1.12E-03	1.12E-03	5.62E-04	7.76E-03
Acenaphthylene	3.91E-04	7.81E-04	3.91E-04	3.91E-05	3.91E-04	3.91E-04	1.56E-03	3.91E-04	7.81E-04	7.81E-04	3.91E-04	3.91E-04
Anthracene	2.04E-04	4.08E-04	1.51E-03	7.76E-05	1.27E-03	4.90E-04	1.76E-03	9.39E-04	4.08E-04	8.57E-04	2.04E-04	4.90E-03
Benzo(a)anthracene	1.58E-04	4.94E-04	4.68E-03	1.53E-04	1.56E-03	8.05E-04	2.39E-03	1.38E-03	4.16E-04	1.09E-03	3.90E-04	4.94E-03
Benzo(a)pyrene	7.16E-05	2.81E-04	1.41E-03	9.08E-05	6.39E-04	3.96E-04	1.07E-03	6.78E-04	2.05E-04	5.63E-04	2.05E-04	2.17E-03
Benzo(ghi)perylene	NO PEL AVAILABLE											
Benzo(k)fluoranthene	NO PEL AVAILABLE											
Chrysene	9.74E-05	1.86E-04	1.74E-03	7.31E-05	7.66E-04	3.83E-04	1.10E-03	6.15E-04	1.97E-04	5.80E-04	2.32E-04	1.97E-03
Dibenzo(a,h)anthracene	3.70E-04	7.41E-04	1.11E-03	9.63E-05	5.11E-04	5.26E-04	1.04E-03	7.19E-04	7.41E-04	7.41E-04	3.70E-04	2.15E-03
Fluoranthene	1.19E-04	2.72E-04	1.91E-03	1.10E-04	9.34E-04	3.61E-04	1.23E-03	6.37E-04	2.68E-04	5.94E-04	2.42E-04	2.55E-03
Fluorene	3.47E-04	6.94E-04	4.58E-04	5.21E-05	2.57E-03	8.33E-04	4.17E-03	1.32E-03	6.94E-04	9.03E-04	3.47E-04	6.18E-03
Indeno(1,2,3-cd)pyrene	NO PEL AVAILABLE											
Naphthalene	1.28E-04	2.56E-04	1.28E-04	1.28E-05	1.28E-04	1.28E-04	5.12E-04	1.28E-04	2.56E-04	2.56E-04	1.28E-04	9.46E-04
Phenanthrene	2.72E-04	5.63E-04	2.91E-03	1.34E-04	3.30E-03	1.20E-03	5.63E-03	1.94E-03	4.27E-04	1.44E-03	4.08E-04	1.09E-02
Pyrene	2.40E-04	5.03E-04	3.66E-03	2.17E-04	1.83E-03	7.89E-04	2.29E-03	1.37E-03	5.03E-04	1.26E-03	4.80E-04	4.34E-03

Notes:
 Cell shading: light green=HQs<0.5, darker green=HQs between 0.5 and 1 (0.5≤HQ≤1.0), orange=HQs greater than 1.0.
 Method detection limit used for undetected concentrations (indicated with "<" in Table 1).
 Criteria Sources: Provincial Sediment Quality Guidelines (PSQG) Severe Effect Levels (SELs) or the Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (CSQG) Probable Effect Levels (PELs).

APPENDIX

D: TENDER DRAWINGS



CHEDOKE CREEK REMEDIATION DREDGING PROJECT

CITY OF HAMILTON, ONTARIO CANADA

CONTRACT: C13-18-22

FILE No.:	CONTRACT No. DRAWING No.:	SHEET No. G-001
DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED		

LOCATED IN:
 LATITUDE: 43.268438°, LONGITUDE: -79.893131°
 HAMILTON, ONTARIO



VICINITY MAP

LEGEND

	PROJECT AREA
	DMMA AREAS

Sheet List Table	
Sheet Number	Sheet Title
G-001	COVER
G-002	NOTES
C-101	EXISTING PLAN VIEW
C-102	REMEDIATION DREDGING LIMITS PLAN
C-103	SOUTH CHEDOKE CREEK PLAN VIEW
C-104	NORTH CHEDOKE CREEK PLAN VIEW
C-105	DREDGE MATERIAL MANAGEMENT AREA PLAN OVERVIEW
C-106	HAULING ROUTE PLAN
C-201	PROPOSED MATERIAL REMOVAL PLAN
C-301	CROSS-SECTIONS FOR ZONES 2 & 3 (1 OF 2)
C-302	CROSS-SECTIONS FOR ZONES 2 & 3 (2 OF 2)
C-501	DMMA DETAIL AT KAY DRAGE PARK
C-502	DMMA AREA TOPOGRAPHY DETAIL
C-503	HYDRAULIC DREDGE OPERATION TYPICAL DETAILS
C-504	EROSION CONTROL DETAILS
C-505	TEMPORARY RETURN WATER CONNECTION DETAILS

AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke_Creek\2021\Dec_2021\20101062_Chedoke_Cover.dwg Mar 23/22 6:02pm martin.wes

No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: March 23, 2022
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22	REFERENCE MATERIAL: Surveyed by : Sewer Plans : Water Plans : Survey Plan :	
2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22		
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22		

SCALES

AS SHOWN



Project Manager (Design)
 R. SCHECKENBERGER / L. LUMBARD
 Name
 Manager of Design
 B. BISHOP / L. TORRES
 Name



CHEDOKE CREEK REMEDIATION DREDGING PROJECT

COVER
CITY OF HAMILTON

SUBMITTED FOR TENDER

FILE No.:	CONTRACT No. DRAWING No.:	SHEET No. G-002
DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED		

GENERAL NOTES:

- PRIOR TO COMMENCEMENT OF ALL PHASES OF WORK, ALL EROSION AND SEDIMENT CONTROLS (ESC) SHALL BE IN PLACE TO THE SATISFACTION OF THE PROJECT ENGINEER (SEE GENERAL EROSION AND SEDIMENT CONTROL NOTES).
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REGULATIONS AND PERMITTING PROVISIONS OF THE CITY OF HAMILTON, CONSERVATION AUTHORITY, MNRF, DFO, MTO AND MECP. ALL PERMITS ARE TO BE POSTED AND A COPY OF THE APPROVED DRAWINGS AVAILABLE AT THE CONSTRUCTION SITE.
- ALL MATERIALS AND EQUIPMENT USED FOR THE PURPOSE OF SITE PREPARATION AND PROJECT COMPLETION SHALL BE OPERATED AND STORED IN A MANNER THAT PREVENTS ANY DELETERIOUS SUBSTANCE (e.g. PETROLEUM PRODUCTS, DEBRIS) FROM ENTERING THE CREEK.
- VEHICLE AND EQUIPMENT REFUELING, PARKING AND MAINTENANCE SHALL BE CONDUCTED AT LEAST 30m AWAY FROM THE WATERCOURSE, DRAINS, AND WATERBODIES.
- ANY DISTURBANCE TO EXISTING VEGETATION BEYOND THE LIMITS OF CONSTRUCTION AND ACCESS SHOWN AS PART OF THE CONSTRUCTION OF TEMPORARY WORKS IS TO BE RESTORED, AT THE CONTRACTOR'S EXPENSE, AND AT THE DIRECTION OF THE CITY OF HAMILTON AND/OR PROJECT ENGINEER.
- UNDER NO CIRCUMSTANCES SHALL ANY DREDGING, EXCAVATION, OR GRADING TAKE PLACE OUTSIDE OF THE PROJECT LIMITS SHOWN ON THE DRAWINGS.
- A PERMIT-TO-TAKE-WATER FROM THE MINISTRY OF THE ENVIRONMENT, CONSERVATION, AND PARKS (MECP) SHALL BE OBTAINED BY THE CITY OF HAMILTON FOR THE TAKING OF WATER OVER 50,000 L/DAY FROM ANY GIVEN SOURCE, WHETHER TEMPORARY OR PERMANENT FOR ANY PURPOSE INCLUDING BUT NOT LIMITED TO: DIVERSION, POTABLE WATER SUPPLY, CLEANING, DEWATERING DURING CONSTRUCTION, OPERATION AND MAINTENANCE.
- RIPARIAN (STREAM SIDE) VEGETATION SHOULD BE AVOIDED WHERE POSSIBLE.
- NO DEWATERING EFFLUENT SHALL BE SENT DIRECTLY TO ANY WATERCOURSE, WETLAND OR FOREST, OR ALLOWED TO DRAIN ONTO DISTURBED SOILS WITHIN THE WORK AREA. EFFLUENT TREATMENT AND WATER QUALITY CONTROL MEASURES IMPLEMENTED BY THE CONTRACTOR SHALL BE MONITORED FOR EFFECTIVENESS AND MAINTAINED OR REVISED TO MEET THE OBJECTIVE OF PREVENTING THE RELEASE OF SEDIMENT LADEN WATER.
- WATER FLOW SHOULD BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION TO ALLOW FOR FISH PASSAGE UNLESS OTHERWISE SPECIFIED IN AN APPROVED CONSTRUCTION PLAN OR EROSION AND SEDIMENT CONTROL PLAN.
- THE CITY MUST NOTIFY THE MINISTRY OF THE ENVIRONMENT, CONSERVATION, AND PARKS (MECP) AND THE ROYAL BOTANICAL GARDENS (RBG) AT LEAST SEVEN (7) DAYS PRIOR TO COMMENCING CONSTRUCTION.
- IN-WATER WORKS SHOULD ONLY COMMENCE WHEN ALL MATERIALS REQUIRED FOR THE IN-WATER CONSTRUCTION ARE PRESENT AND READY FOR USE AND ALL PERMITS IN HAND.
- IN-WATER WORKS SHOULD BE STAGED AND PROCEED IN A CONTINUOUS FASHION SO AS TO MINIMIZE THE DURATION OF SUCH WORK.
- ALL WASTE MATERIAL GENERATED FROM THE CONSTRUCTION WORKS SHALL BE DISPOSED IN ACCORDANCE WITH REGULATORY REQUIREMENTS.
- TEMPORARY WORKSPACES SHALL BE ACCESSED ONLY THROUGH THE APPROVED/DESIGNATED ACCESS ROUTE.
- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ADEQUATE MEASURES ARE IN PLACE TO PROTECT DOWN-GRADIENT AREAS REGARDLESS OF WHETHER OR NOT THESE MEASURES ARE SHOWN ON THIS DRAWING.
- THE CONTRACTOR SHALL CONTINUALLY MONITOR THE WEATHER SEVERAL DAYS IN ADVANCE TO ENSURE THAT THE WORKS ARE CONDUCTED DURING FAVORABLE WEATHER CONDITIONS. SHOULD AN UNEXPECTED STORM ARISE, THE OWNER/CONTRACTOR SHALL CEASE DREDGING OPERATIONS AND IMPLEMENT A CONTINGENCY PLAN AS DEVELOPED BY THE CONTRACTOR PRIOR TO CONSTRUCTION, INCLUDING REMOVING ALL ITEMS FROM CHEDOKE CREEK THAT WOULD HAVE THE CAPACITY TO CAUSE AN OBSTRUCTION TO FLOW OR A SPILL (I.E. FUEL TANKS, UNFIXED EQUIPMENT ETC.).
- UPON PROJECT COMPLETION, PRIOR TO REMOVAL OF ESC MEASURES, ALL ACCUMULATED SEDIMENT SHALL BE REMOVED ACCORDING TO REGULATORY REQUIREMENTS
- THE CONTRACTOR SHALL PREPARE A SPILL RESPONSE PLAN AS PART OF THE ENVIRONMENTAL PROTECTION PLAN THAT IS IN ACCORDANCE WITH PROVINCIAL / FEDERAL AND MUNICIPAL REGULATIONS PRIOR TO COMMENCEMENT OF WORKS AND SHALL KEEP THIS PLAN ON SITE AT ALL TIMES DURING PROJECT WORKS.
- ALL DEWATERING SHALL BE CONDUCTED USING GEOTEXTILE CONTAINERS AND CONTAINED WITHIN DMMA AREAS UNTIL CONDITIONS ARE SUFFICIENT FOR DISCHARGE TO THE SANITARY SYSTEM. DISCHARGE FROM DMMA IS RESTRICTED TO THE SANITARY COLLECTION SYSTEM AS AUTHORIZED BY THE CITY OF HAMILTON WASTEWATER DIVISION. NO OTHER DISCHARGE FROM DMMA IS PERMITTED.
- CLEARING AND GRUBBING IS NOT ANTICIPATED ON THIS CONTRACT, HOWEVER SHOULD THE CITY DETERMINE THAT CLEARING IS REQUIRED, IT WILL ONLY BE COMPLETED IN AREAS WHERE IMMEDIATE WORK WILL TAKE PLACE. AREAS WILL BE TEMPORARILY OR PERMANENTLY STABILIZED AS THE WORK PROGRESSES.
- ALL CLEARING SHALL COMPLY WITH THE MIGRATORY BIRD CONVENTION ACT, SUCH THAT ALL CLEARING ACTIVITIES ARE OUTSIDE OF THE SEASONAL BREEDING WINDOW FROM APRIL 1 TO AUGUST 31. IF CLEARING OF VEGETATION IS REQUIRED DURING THIS TIMEFRAME THE CONTRACTOR SHALL OBTAIN A QUALIFIED AVIAN BIOLOGIST TO CLEAR THE AREA OF NESTS IN CONNECTION WITH CLEARING AND GRUBBING ACTIVITIES. IF NESTING ACTIVITY IS OBSERVED, THE CONTRACTOR MUST CEASE WORK IN THIS AREA AND IMMEDIATELY NOTIFY THE CONTRACT ADMINISTRATOR.
- TO PROTECT LOCAL FISH POPULATIONS DURING THEIR SPAWNING, NURSERY AND MIGRATORY PERIODS, IN-WATER/NEAR-WATER ACTIVITIES MAY ONLY OCCUR DURING THE FOLLOWING TIME PERIOD: JULY 16 TO APRIL 30 OF THE FOLLOWING YEAR, UNLESS OTHERWISE APPROVED.
- THE FEEDING, HARASSMENT, OR TAKING OF WILDLIFE IS STRICTLY PROHIBITED.
- ALL CONSTRUCTION EQUIPMENT AND VEHICLES SHALL GIVE A RIGHT-OF-WAY TO PEDESTRIANS, CYCLIST, CITY BUSES, AND WILDLIFE, ALLOWING SAFE DISTANCE FOR PASSAGE PRIOR TO CONSTRUCTION EQUIPMENT/VEHICLES COMMENCING CONSTRUCTION ACTIVITIES.
- IN THE EVENT WILDLIFE IS INJURED DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY CEASE WORK ACTIVITIES AND NOTIFY THE CITY PROVIDING DETAILS OF THE INCIDENT.
- ALL DISTURBED AREAS WILL BE RESTORED TO ORIGINAL CONDITIONS, OR TO AN IMPROVED CONDITION, AT THE DISCRETION OF THE CITY OF HAMILTON AND THE PARKS DEPARTMENT. AFTER WHICH ALL EXISTING ESC MEASURES WILL BE REMOVED FOLLOWING CONFIRMATION BY THE CONTRACT ADMINISTRATOR.
- ALL DISTURBED VEGETATED AREAS WILL BE STABILIZED AND RESTORED WITH NATIVE/NON-INVASIVE SPECIES UPON COMPLETION OF THE WORK.
- ALL STOCKPILED MATERIAL MUST BE STABILIZED AND PROPERLY CONTAINED WITH ESC MEASURES. ALL STOCKPILED MATERIALS MUST BE PLACED A MINIMUM 30 METERS AWAY FROM ALL FOREST EDGES, WETLANDS FEATURES, AND WATERCOURSES / DRAINS AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
- ALL INDUSTRIAL EQUIPMENT ENTERING THE CONSTRUCTION SITE SHALL BE CLEAN, DEGREASED, IN GOOD WORKING ORDER AND FREE OF LEAKS TO MINIMIZE THE POTENTIAL FOR DELETERIOUS SUBSTANCES (I.E. FUEL, OILS, LUBRICANTS ETC.) FROM ENTERING WETLAND FEATURES, AND WATERCOURSES / DRAINS.
- ALL OILS, LUBRICANTS, FUELS AND CHEMICAL PRODUCTS SHALL BE STORED IN A SECURE COVERED LOCATION WITH AN EMERGENCY SPILL KIT ON SITE.
- ANY SPILLS (INCLUSIVE OF SEDIMENT SPILLS) SHALL BE REPORTED TO THE MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS SPILLS ACTION CENTRE AND TO THE CITY'S 24-HOUR SPILL HOTLINE (1-905-540-5188).
- THE CONTRACTOR MUST TAKE THE NECESSARY MEASURES TO PREVENT DUST RESULTING FROM CONSTRUCTION ACTIVITIES. DUST CONTROL MEASURES SHALL BE CARRIED OUT IN ALL LOCATIONS ON SITE AND ON ADJACENT ROADS.
- ALL ROADS MUST BE CLEANED OF DEBRIS AT A MINIMUM OF ONCE PER WEEK, OR AS DIRECTED BY THE CONTRACT ADMINISTRATOR. IT WILL NOT BE CONSIDERED ACCEPTABLE TO HAVE MUD OR DEBRIS ON THE ROADS.
- AN AFTER-HOURS CONTACT NUMBER IS TO BE VISIBLY POSTED ON-SITE FOR EMERGENCIES. ALL THE PLANS SHOULD HAVE NAME AND CONTACT INFO OF THE PERSON RESPONSIBLE FOR ESC MEASURES.
- THE CITY OF HAMILTON NOISE CONTROL BYLAW 11-285 SHOULD BE FOLLOWED. NO CLEARLY AUDIBLE CONSTRUCTION NOISE IS ALLOWED FROM 7:00 PM TO 7:00 AM, UNLESS AN EXEMPTION IS OBTAINED FROM THE CITY. GENERATORS AND PUMPS ARE TO BE SILENCED TO THE EXTENT POSSIBLE.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- THE EROSION AND SEDIMENT CONTROL (ESC) STRATEGIES OUTLINED IN THIS CONTRACT ARE NOT TO BE CONSIDERED STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO MINIMIZE SEDIMENT LADEN RUNOFF FROM LEAVING THE WORK AREAS. IF THE PRESCRIBED MEASURES IN THIS CONTRACT ARE NOT EFFECTIVE IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, INCLUDING SEDIMENT, THEN ALTERNATIVE MEASURES MUST BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS. ADDITIONAL ESC MEASURES SHOULD BE KEPT ON SITE AND USED AS NECESSARY.
- ESC MEASURES SHOULD BE IMPLEMENTED PRIOR TO CONSTRUCTION ACTIVITIES AND MAINTAINED AND OR SUPPLEMENTED FOR THE DURATION OF CONSTRUCTION TO EFFECTIVELY CONTROL SITE EROSION AND SEDIMENTATION.
- THE ENTIRE CONSTRUCTION SITE SHALL BE MONITORED FOR SEDIMENT AND EROSION CONTROL FOR THE DURATION OF THE CONTRACT. DEFICIENCIES TO BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER.
- THE CONTRACTOR MUST ABIDE BY THE REGULATIONS SET OUT IN THE ONTARIO GOVERNMENT PUBLICATION "GUIDELINES ON EROSION AND SEDIMENTATION CONTROLS FOR URBAN CONSTRUCTION SITE", AND "EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN CONSTRUCTION" PREPARED BY THE GREATER GOLDEN HORSESHOE CONSERVATION AUTHORITIES (DECEMBER 2006).
- ESC MEASURES SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS OR AS OUTLINED IN THE TYPICAL DETAILS PROVIDED WITHIN THIS DRAWING PACKAGE.
- RUNOFF FROM WORK AREAS WILL NOT BE PERMITTED TO DISCHARGE DIRECTLY INTO ACTIVE WATERCOURSES.
- ALL ACCUMULATED SEDIMENT MUST BE REMOVED FROM ALL SEDIMENT CONTROLS, AND DISPOSED OF IN AN APPROVED OFF-SITE LOCATION.
- UNDER NO CIRCUMSTANCES SHALL RUNOFF FROM UNVEGETATED SOIL OR EXPOSED SEDIMENTS BE DISCHARGED OFF-SITE OR DIRECTLY INTO ACTIVE OR TEMPORARILY INACTIVE WATERCOURSES.
- ALL DISTURBED AREAS SHALL BE REVEGETATED AS SOON AS WEATHER PERMITS, FOLLOWING COMPLETION OF CONSTRUCTION.
- EFFECTIVE ESC WILL BE ACHIEVED THROUGHOUT THE PROJECT WITH CAREFUL PLANNING AND DESIGN, CONSTRUCTION SUPERVISION, MONITORING OF THE SITE, AND MAINTENANCE OF CONTROL WORKS THROUGHOUT THEIR OPERATIONAL LIFE. ESC BEST MANAGEMENT PRACTICES INCLUDE:
 - DISTURBED AREAS SHOULD BE MINIMIZED TO THE EXTENT POSSIBLE, AND TEMPORARILY OR PERMANENTLY STABILIZED OR RESTORED AS THE WORK PROGRESSES.
 - THE PROJECT SHOULD BE STAGED TO MINIMIZE THE AREA AND DURATION OF EXPOSED SOIL CONDITIONS DURING CONSTRUCTION;
 - THE TIME INTERVAL BETWEEN COMMENCEMENT AND COMPLETION OF ANY WORK THAT DISTURBS EARTH SURFACES SHALL BE A MAXIMUM OF 45 CALENDAR DAYS UNLESS SPECIFIED ELSEWHERE.
 - PERIMETER SEDIMENTATION CONTROL MEASURES, SUCH AS SILT FENCE AND DIVERSION SWALES, SHOULD BE INSTALLED AROUND THE CONSTRUCTION AREA TO LIMIT MOVEMENT OF SEDIMENTS OUT OF THE CONSTRUCTION AREA.
 - VEGETATIVE COVER SHOULD BE REPLACED AS SOON AS POSSIBLE FOLLOWING CONSTRUCTION;
 - RUNOFF SHOULD BE DIRECTED AWAY FROM EXPOSED SOIL SURFACES WHERE POSSIBLE;
 - CONTROL STRUCTURES SHOULD BE MONITORED AND MAINTAINED THROUGH THEIR OPERATIONAL LIFE;
 - SEDIMENT LADEN DRAINAGE SHOULD BE INTERCEPTED AS CLOSE TO THE SOURCE AS POSSIBLE; AND,
 - STORAGE, STOCKPILING AND STAGING AREAS SHOULD BE DELINEATED PRIOR TO CONSTRUCTION AND ENFORCED THROUGHOUT THE CONTRACT.

EROSION AND SEDIMENT CONTROL MONITORING AND MAINTENANCE PROGRAM

MONITORING OF THE CONTROL MEASURES DURING CONSTRUCTION SHOULD BE COMPLETED ON A WEEKLY BASIS AND FOLLOWING ANY RUNOFF EVENT WHICH GENERATES GREATER THAN 20mm OF RUNOFF. THE FOLLOWING SHOULD BE COMPLETED AS PART OF THE SEDIMENT AND EROSION CONTROL MONITORING AND MAINTENANCE PROGRAM:

- DATA SHEETS WILL BE COMPLETED BY THE CONTRACTOR WITH OVERSIGHT FROM THE SITE OBSERVER DURING EACH INSPECTION. DATA SHEETS SHOULD INCLUDE: DATE, INSPECTOR, WEATHER (BOTH CURRENT AND PREVIOUS 24 HOURS) AND CONDITION OF EROSION AND SEDIMENT CONTROLS.
- THE MONITORING AND MAINTENANCE OF THE MEASURES WILL BE COMPLETED FOR THE DURATION OF THE CONSTRUCTION ACTIVITIES AND BEYOND, TO A POINT WHERE THE SITE IS DEEMED STABLE AND PERMANENT EROSION CONTROLS HAVE BEEN ESTABLISHED.
- FAILED ESC MEASURES SHOULD BE REPAIRED IN A TIMELY MANNER (WITHIN 48 HOURS).
- THE MAINTENANCE PROGRAM WILL INVOLVE THE REMOVAL OF ACCUMULATED SEDIMENT FROM SEDIMENT CONTROL MEASURES INCLUDING SILT FENCING, COIR LOGS, OR ANY FILTER CLOTHS.
- THE REMOVAL OF THESE SEDIMENTS SHOULD BE COMPLETED IN A MANNER WHICH SHOULD MINIMIZE MOVEMENT OF SEDIMENTS.
- ANY SATURATED OR CLOGGED MATERIALS (I.E. FILTER BAGS, FILTER CLOTH, STRAW BALES, COIR LOGS, AND ROCK CHECK DAMS) SHOULD BE REPLACED WHEN THEY ARE DEEMED INEFFECTIVE.
- SEDIMENT BUILD UP BEHIND OR WITHIN ESC MEASURES MUST BE REMOVED, IN COMPLIANCE WITH REGULATORY REQUIREMENTS, ONCE IT HAS REACHED HALF OF THE HEIGHT OR VOLUME OF THE ESC MEASURE.
- ANY AMOUNT OF ACCUMULATED SEDIMENT SHOULD BE REMOVED PRIOR TO THE REMOVAL OF THE CONTROL MEASURES.
- NON-BIODEGRADABLE SEDIMENT CONTROL MEASURES SHOULD BE REMOVED FROM THE WORK SITE FOLLOWING THE COMPLETION OF CONSTRUCTION AND STABILIZATION OF EXPOSED SOILS.

TURBIDITY MONITORING AND CONTROLS:

- A TURBIDITY MONITORING PROGRAM, IN COMPLIANCE WITH GOVERNING REGULATORY AGENCIES, WILL BE DEVELOPED BY THE CONTRACTOR, INCLUDING FREQUENCY AND DEPTH OF MONITORING TO ENSURE TURBIDITY IS MEASURED WITHIN AND OUTSIDE OF THE ISOLATED WORK AREAS DURING DREDGING ACTIVITIES.
- A DIFFERENCE IN TURBIDITY SHOULD NOT CHANGE THE NATURAL (PRE-DREDGING) SECCHI DISC READING BY MORE THAN 10% AS PER THE PROVINCIAL WATER QUALITY OBJECTIVES.
- SUSPENDED SEDIMENTS SHOULD HAVE A MAXIMUM INCREASE OF 25 MG/L FROM BACKGROUND FOR ANY SHORT-TERM EXPOSURE (E.G., 24 HOUR PERIOD) AND A MAXIMUM AVERAGE INCREASE OF 5 MG/L FROM BACKGROUND FOR LONGER TERM EXPOSURES (E.G., INPUTS LASTING BETWEEN 24 HOURS AND 30 DAYS) AS PER THE CANADIAN ENVIRONMENTAL QUALITY GUIDELINES FOR THE PROTECTION OF FRESHWATER AQUATIC LIFE.

DREDGING NOTES:

- THE PURPOSE OF THIS PROJECT IS TO DREDGE SEDIMENTS WITHIN THE DESIGNATED DREDGE TEMPLATE, TO PRESCRIBED ELEVATIONS IN CHEDOKE CREEK, LOCATED IN THE CITY OF HAMILTON, PROVINCE OF ONTARIO.
- ALL DREDGING ACTIVITY SHALL MAINTAIN A 10-METER BUFFER FROM BRIDGES LOCATED ALONG THE CREEK.
- DREDGING SHALL BE CONDUCTED IN DESIGNATED AREAS ONLY, AND IN ACCORDANCE WITH REGULATORY AUTHORIZATIONS, PLANS, AND SPECIFICATIONS.
- TOPOGRAPHIC ELEVATION DATA INCLUDED REPRESENTS SITE CONDITIONS AT THE TIME OF DATA COLLECTION. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING SITE CONDITIONS PRIOR TO INITIATING CONSTRUCTION.
- THE CONTRACTOR SHALL USE HYDRAULIC DREDGE METHODS TO REMOVE SEDIMENTS FROM THE CREEK-BOTTOM.
- THE CONTRACTOR SHALL USE TEMPORARY DREDGE PIPELINES TO CONVEY DREDGED SEDIMENTS TO DESIGNATED MATERIAL MANAGEMENT AREAS. THESE PIPELINES SHALL BE MONITORED FOR LEAKS AND INCLUDED AS PART OF THE SPILL RESPONSE PLAN.
- THE CONTRACTOR SHALL MAINTAIN A MINIMUM 3m BUFFER FROM ALL STRUCTURES INCLUDING, BUT NOT LIMITED TO, GABION WALLS, SEAWALLS, EARTH RETAINING STRUCTURES, AND ALL PERMANENT EROSION CONTROL STRUCTURES LOCATED WITHIN OR SURROUNDING THE PROJECT AREA.
- THE CONTRACTOR SHALL USE APPROVED DEWATERING METHODS SUCH AS GEOTEXTILE TUBES, TO SEPARATE WATER FROM DREDGED SEDIMENTS. ALL ADDITIVES, INCLUDING POLYMERS AND FLOCCULANTS MUST BE APPROVED BY GOVERNING REGULATORY AGENCIES AND THE PROJECT ENGINEER PRIOR TO USE.
- RETURN WATER IS TO BE SENT TO THE SANITARY COLLECTION SYSTEM USING TEMPORARY PIPELINE TO CONVEY TO MANHOLE.

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No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: March 23, 2022
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2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22	Surveyed by :	
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22	Sewer Plans :	
				Water Plans :	
				Survey Plan :	

SCALES	AS SHOWN				Project Manager (Design)
					R. SCHECKENBERGER / L. LUMBARD
					Name
					Manager of Design
					B. BISHOP / L. TORRES
					Name



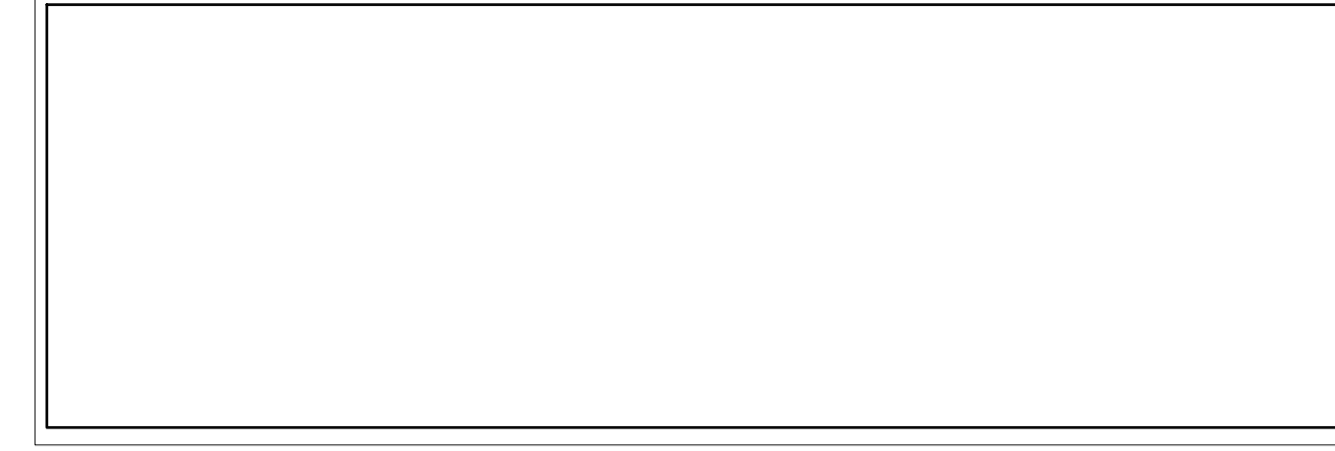
CHEDOKE CREEK REMEDIATION DREDGING PROJECT

NOTES

CITY OF HAMILTON

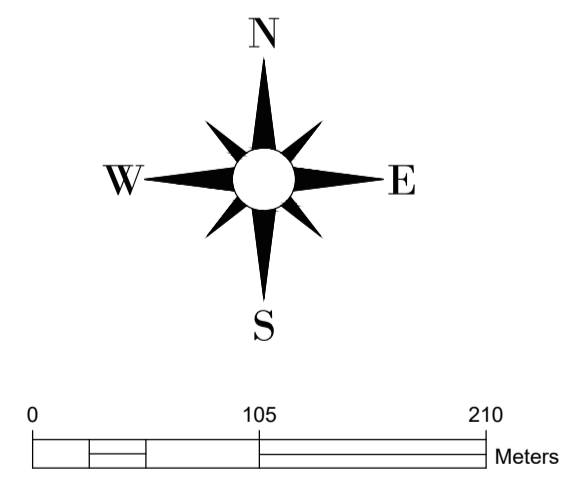
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LEGEND

- REMEDIATION DREDGING LIMITS (19 HECTARE)
- CONTOURS



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 SOURCE: MSH AERIAL IMAGES PROVIDED BY CITY OF HAMILTON

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2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22

DRAWN BY: M. VIVES	DATE: March 23, 2022
REFERENCE MATERIAL:	
Surveyed by:	
Sewer Plans:	
Water Plans:	
Survey Plan:	

SCALES

AS SHOWN



Project Manager (Design)
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Manager of Design
B. BISHOP / L. TORRES
Name

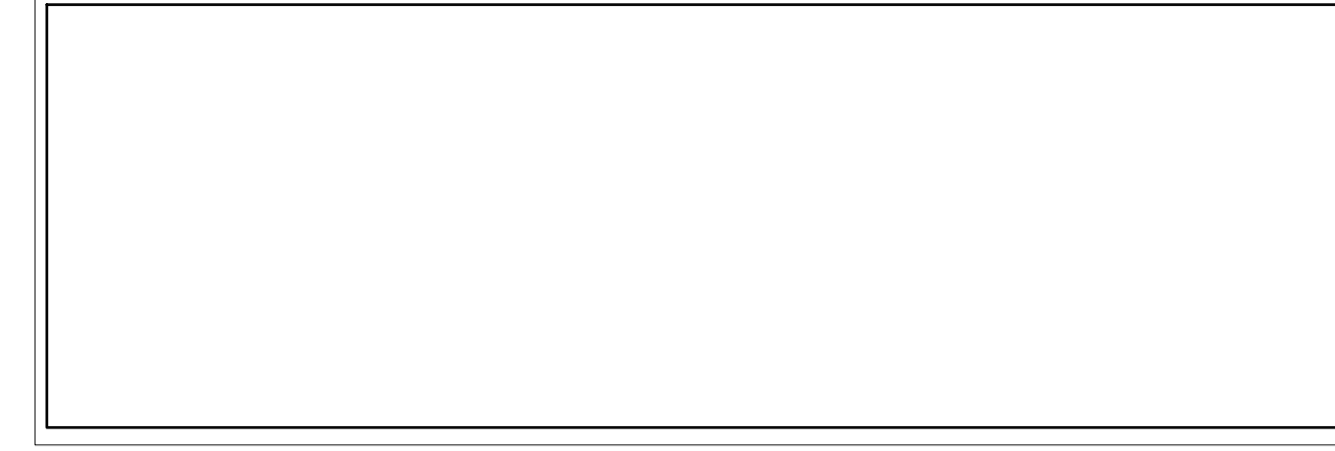


CHEDOKE CREEK REMEDIATION DREDGING PROJECT





EXISTING PLAN VIEW
CITY OF HAMILTON

SUBMITTED FOR TENDER

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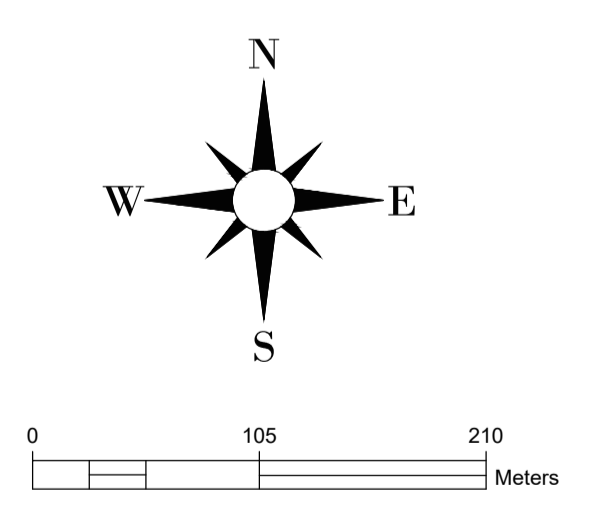


LEGEND

-  PROJECT DREDGE AREA (19 HECTARE)
-  ZONE 2
-  ZONE 3
-  CONTOURS

DREDGE MATERIAL ESTIMATE BY PHYSICAL CHARACTERIZATION		
	Coarse Sediments (Sands, Gravels)	Fine Sediments (Silts, Clays)
Zone 2 Volume (m ³)	2,850	2,225
Zone 3 Volume (m ³)	3,410	2,815
Total Volume (m ³)	6,260	5,040
Total %	55%	45%

Note: Values represent estimates. Volumes to be confirmed in the field.



AutoCAD drawing: F:\PROJECTS\CSD\2011062_Chedoke Creek\2021\Dec_2021\2011062_Chedoke_PRO_Dredging.dwg Mar 23/22 6:05pm martin.vives
 SOURCE: MSH AERIAL IMAGES PROVIDED BY CITY OF HAMILTON

No.	REVISIONS	INITIAL	DATE
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2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22

DRAWN BY: M. VIVES DATE: March 3, 2022
 REFERENCE MATERIAL:
 Surveyed by:
 Sewer Plans:
 Water Plans:
 Survey Plan:

SCALES

 AS SHOWN



Project Manager (Design)
 R. SCHECKENBERGER / L. LUMBARD
 Name
 Manager of Design
 B. BISHOP / L. TORRES
 Name

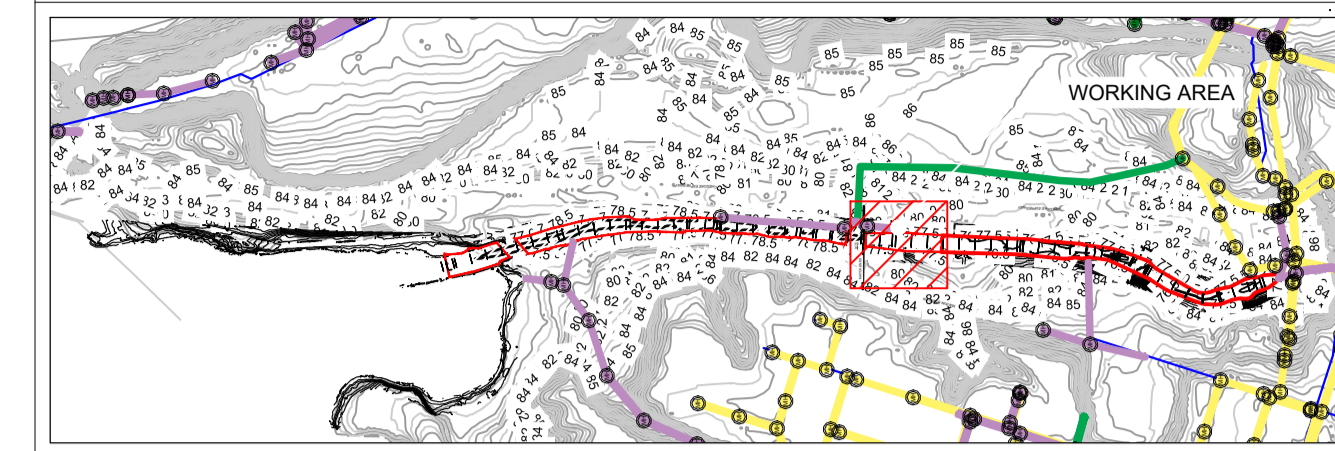


CHEDOKE CREEK REMEDIATION DREDGING PROJECT

REMEDATION DREDGING LIMITS PLAN
 CITY OF HAMILTON

SUBMITTED FOR TENDER

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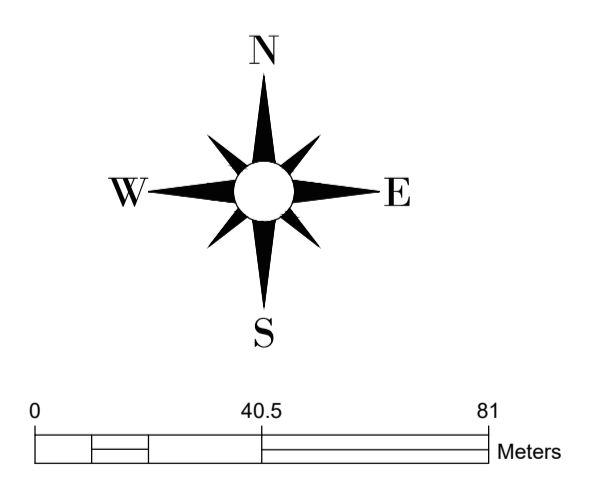


LEGEND

- X TOP OF SEDIMENT ELEVATION
- ① TRANSECT IDENTIFICATION
- TRANSECT LOCATION
- EXISTING WATER MAIN
- EXISTING SANITARY SEWER
- EXISTING COMBINED SANITARY/STORM SEWER
- EXISTING SANITARY FORCEMAIN
- ⊙ EXISTING STORM SEWER
- ⊙ MANHOLE
- REMEDIATION DREDGING LIMITS

NOTES:

1. VERTICAL DATA ARE SHOWN IN METERS, REFERENCING CGVD28:78.
2. HORIZONTAL DATA ARE SHOWN IN METERS, REFERENCING NAD83 UTM, ZONE 17.
3. TEMPORARY BENCH MARK:
TOP NORTH EAST CORNER OF CONCRETE BOX CULVERT AT GLEN ROAD
ELEV. 78.132m
NORTHING - 4790581.1691
EASTING - 589763.3709
4. NOTE: SURVEYED W/L WAS 74.69m (CGVD28:78) ON MAY 14, 2021 LAKE ONTARIO RECORDED LEVEL ON MAY 14, 2021 WAS 74.73m (IGLD1985) REFERENCE: NOAA GREAT LAKES ENVIRONMENTAL RESEARCH LABORATORY <https://www.glerl.noaa.gov/data/wlevels/#observations>) THEREFORE THERE WAS A 4-cm DIFFERENCE BETWEEN THE 2 DATUMS ON MAY 14, 2021.
5. ELEVATIONS DEPICTED REPRESENT CONDITIONS ENCOUNTERED AT THE TIME OF DATA COLLECTION, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS PRIOR TO BIDDING.



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2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22		
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SCALES
AS SHOWN

wood.
Hamilton

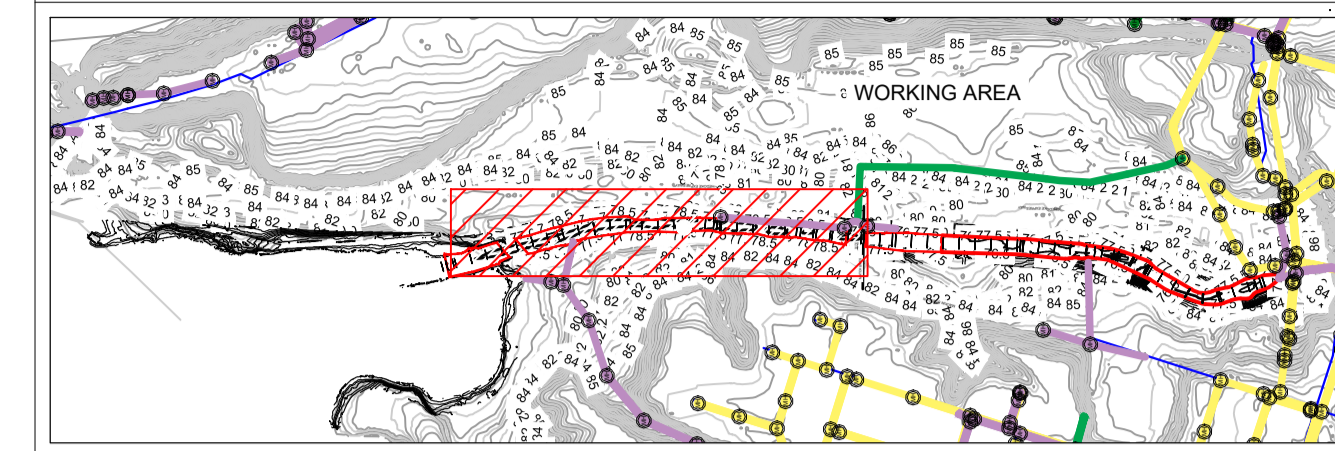
WOOD PROJECT #:
WW20101062

Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name

City of HAMILTON
Public Works Department

CHEDOKE CREEK REMEDIATION DREDGING PROJECT
SOUTH CHEDOKE CREEK PLAN VIEW
CITY OF HAMILTON

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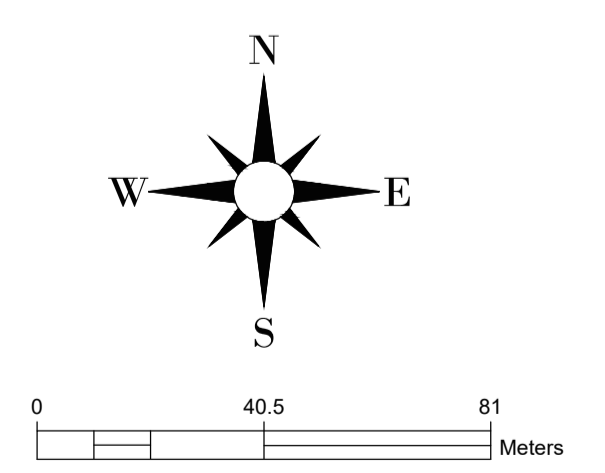


LEGEND

- X TOP OF SEDIMENT ELEVATION
- ① TRANSECT IDENTIFICATION
- TRANSECT LOCATION
- WATER MAIN
- EXISTING SANITARY SEWER
- EXISTING COMBINED SANITARY/STORM SEWER
- EXISTING SANITARY FORCEMAIN
- EXISTING STORM SEWER
- ⊕ MANHOLE
- REMEDIATION DREDGING LIMITS

NOTES:

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SCALES

AS SHOWN



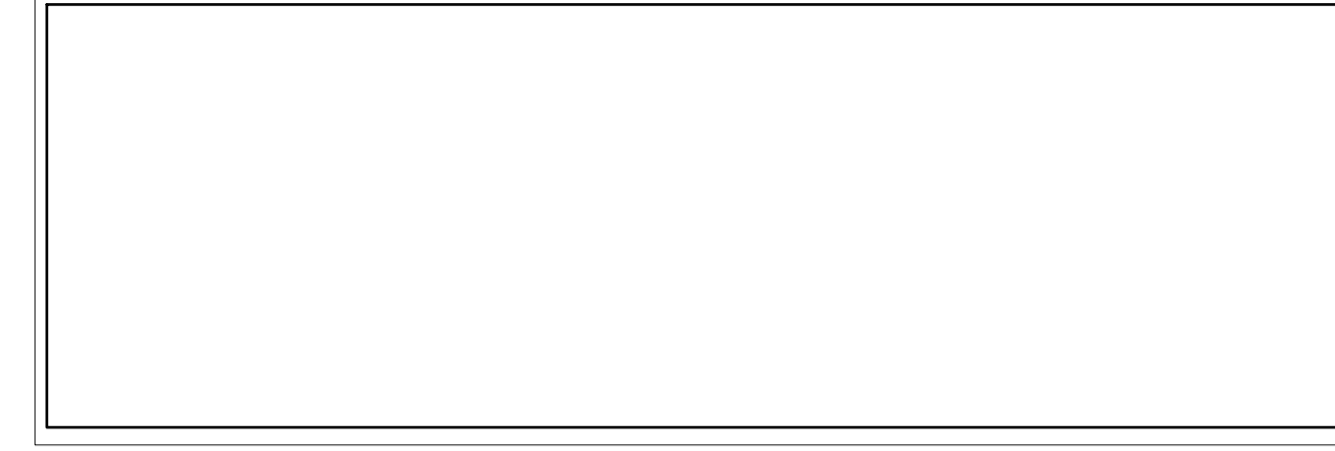
Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name



CHEDOKE CREEK REMEDIATION DREDGING PROJECT
NORTH CHEDOKE CREEK PLAN VIEW
CITY OF HAMILTON

SUBMITTED FOR TENDER

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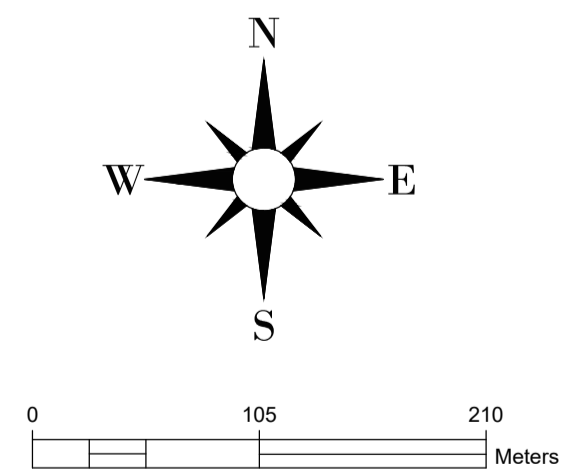


LEGEND

- REMEDIATION DREDGING LIMITS
- PROPOSED LOCATIONS OF DMMA
- TRUCKING ROUTES
- TEMPORARY DREDGE MATERIAL PIPELINE
- TEMPORARY RETURN WATER PIPELINE
- TEMPORARY FENCE

NOTES:

1. LOCATIONS OF EXISTING SANITARY AND STORMWATER LINES WERE PROVIDED BY THE CITY OF HAMILTON.



① KAY DRAGE PARK DMMA PLAN

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No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: March 23, 2022
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SCALES

AS SHOWN



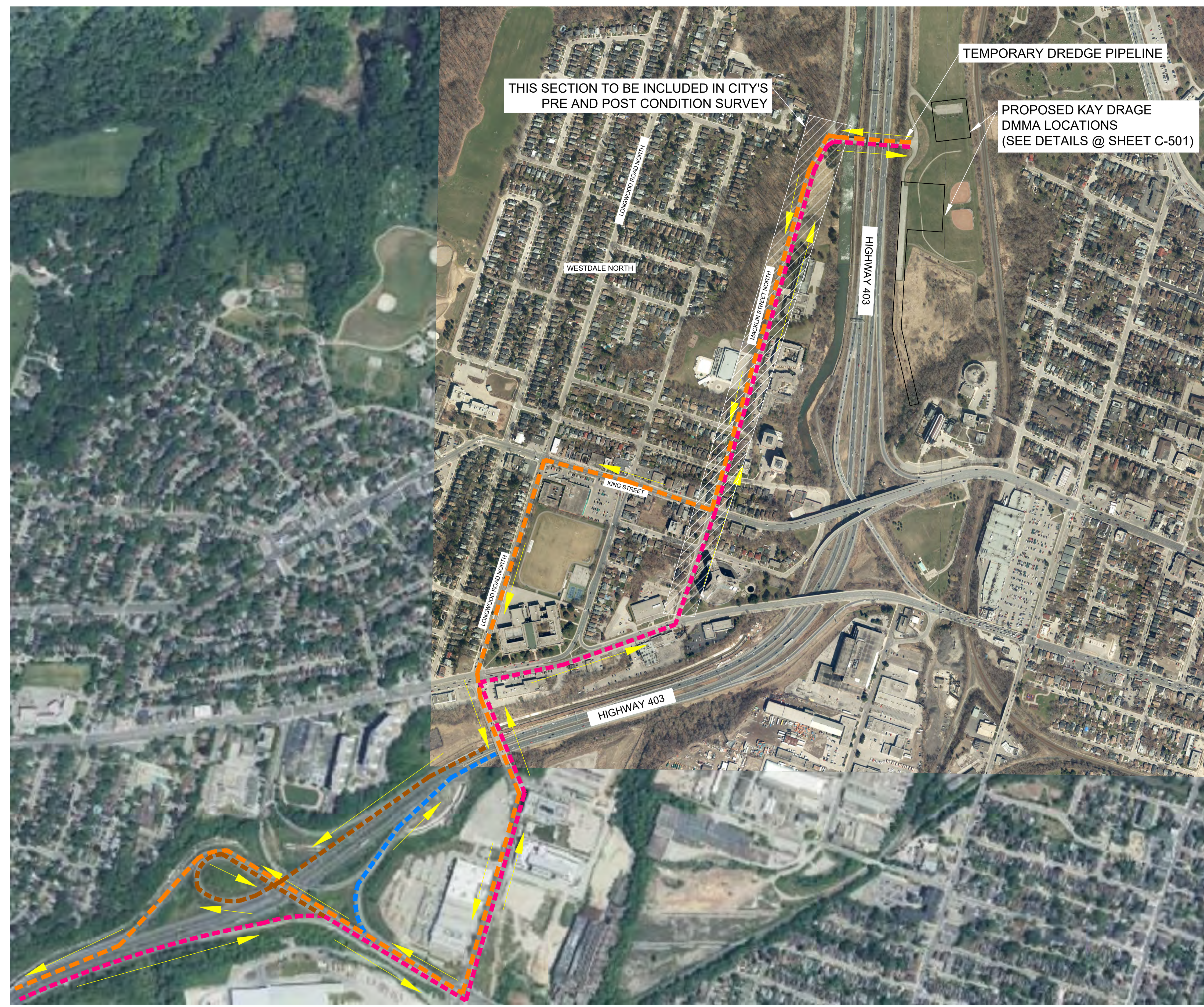
Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
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Manager of Design
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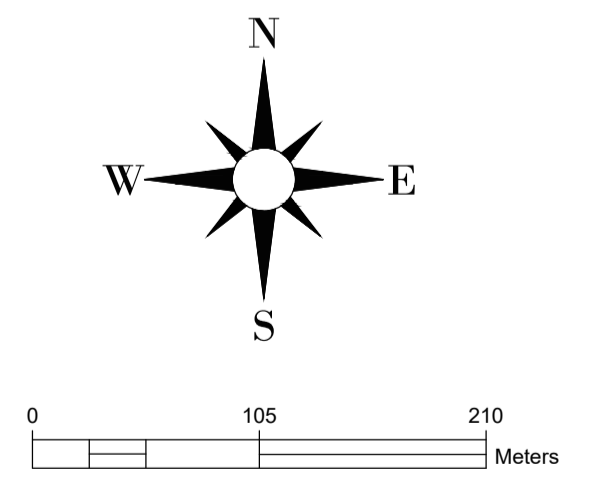
CHEDOKE CREEK REMEDIATION DREDGING PROJECT
DREDGE MATERIAL MANAGEMENT AREA
PLAN OVERVIEW
CITY OF HAMILTON

SUBMITTED FOR TENDER

DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED



- LEGEND**
- PROPOSED LOCATIONS OF DMMA
 - TRUCKING ROUTES DIRECTION
 - HAULING ROUTE TO WEST HWY 403
 - HAULING ROUTE TO EAST HWY 403
 - TRUCKS ROUTE TO SITE FROM WESTBOUND HWD 403
 - TRUCKS ROUTE TO SITE FROM EASTBOUND HWD 403
 - CITY'S PRE AND POST CONDITION SURVEY



1 HAULING ROUTE PLAN

AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke Creek\2021\Dec_2021\20101062_Chedoke_H_Route.dwg Mar 23/22 6:10pm martin.wives

No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: March 18, 2022
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22	REFERENCE MATERIAL: Surveyed by: Sewer Plans: Water Plans: Survey Plan:	
2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22		
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22		

SCALES
AS SHOWN



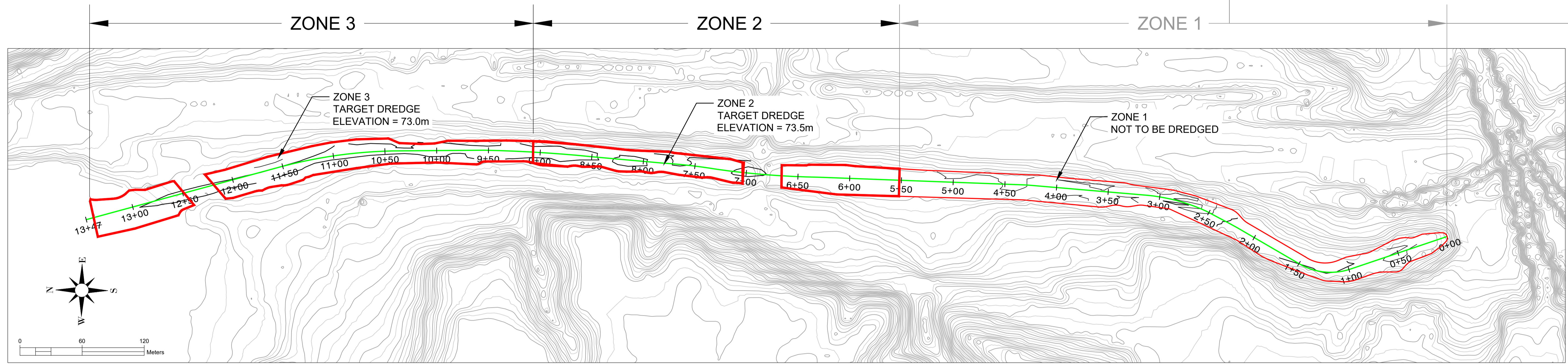
Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name



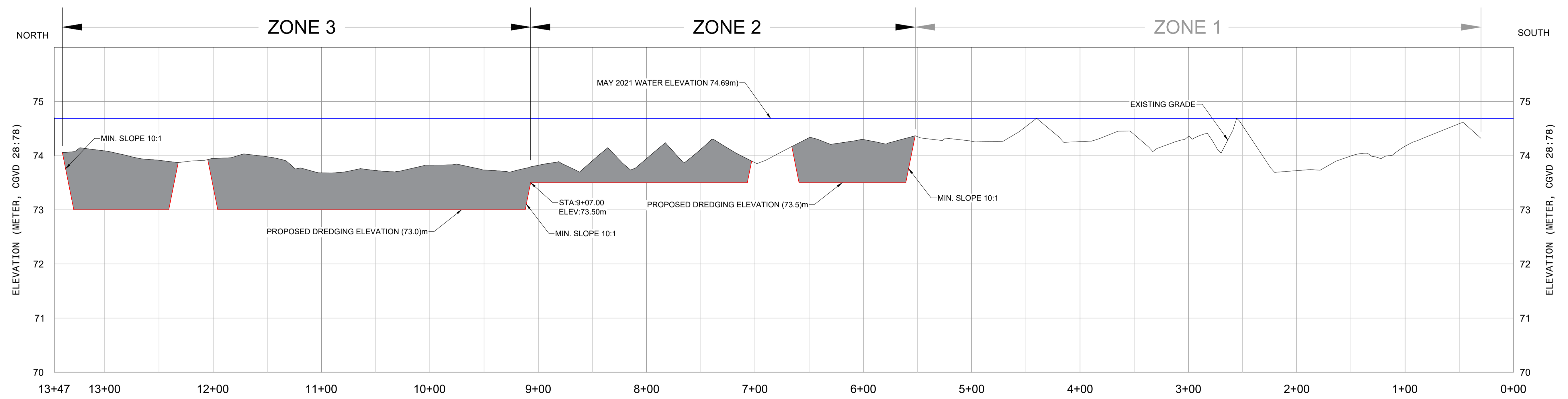
CHEDOKE CREEK REMEDIATION DREDGING PROJECT
HAULING ROUTE PLAN
CITY OF HAMILTON

SUBMITTED FOR TENDER

DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED



① CHEDOKE CREEK PLAN VIEW
SCALE: 1m = 60m



② CHEDOKE CREEK PROFILE VIEW

LEGEND

- MAY 2021 WATER ELEVATION 74.69m (CGVD28:78)
- EXISTING GRADE
- PROPOSED DREDGE ELEVATION
- PROPOSED DREDGE MATERIAL TO BE REMOVED

AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke_Creek\2021\Dec_2021\20101062_Chedoke_Creek_Profile.dwg Mar 23/22 6:10pm matt.vives

No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: January 18, 2022
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22	REFERENCE MATERIAL: Surveyed by: Sewer Plans: Water Plans: Survey Plan:	
2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22		
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22		

SCALES
AS SHOWN



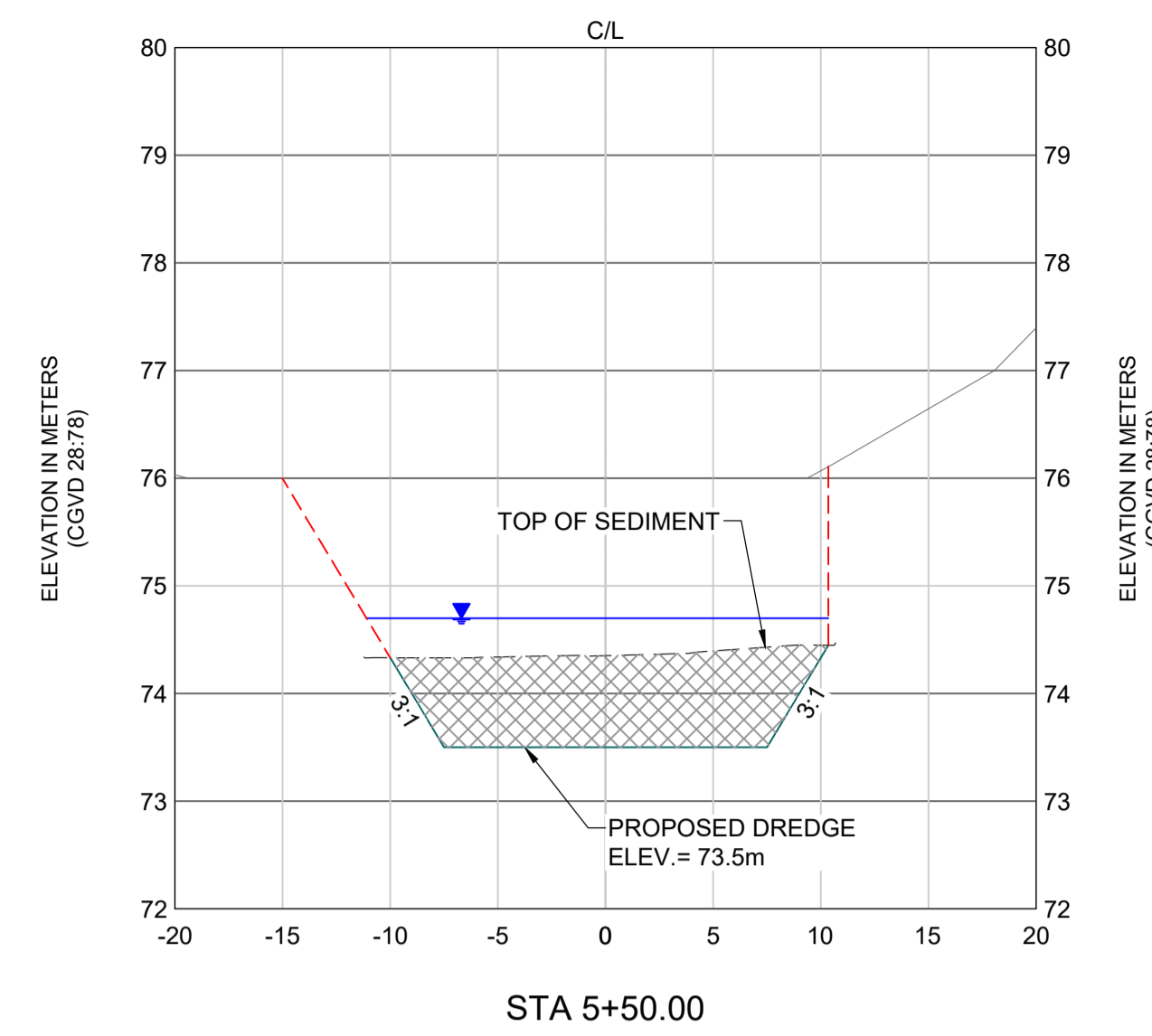
Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name



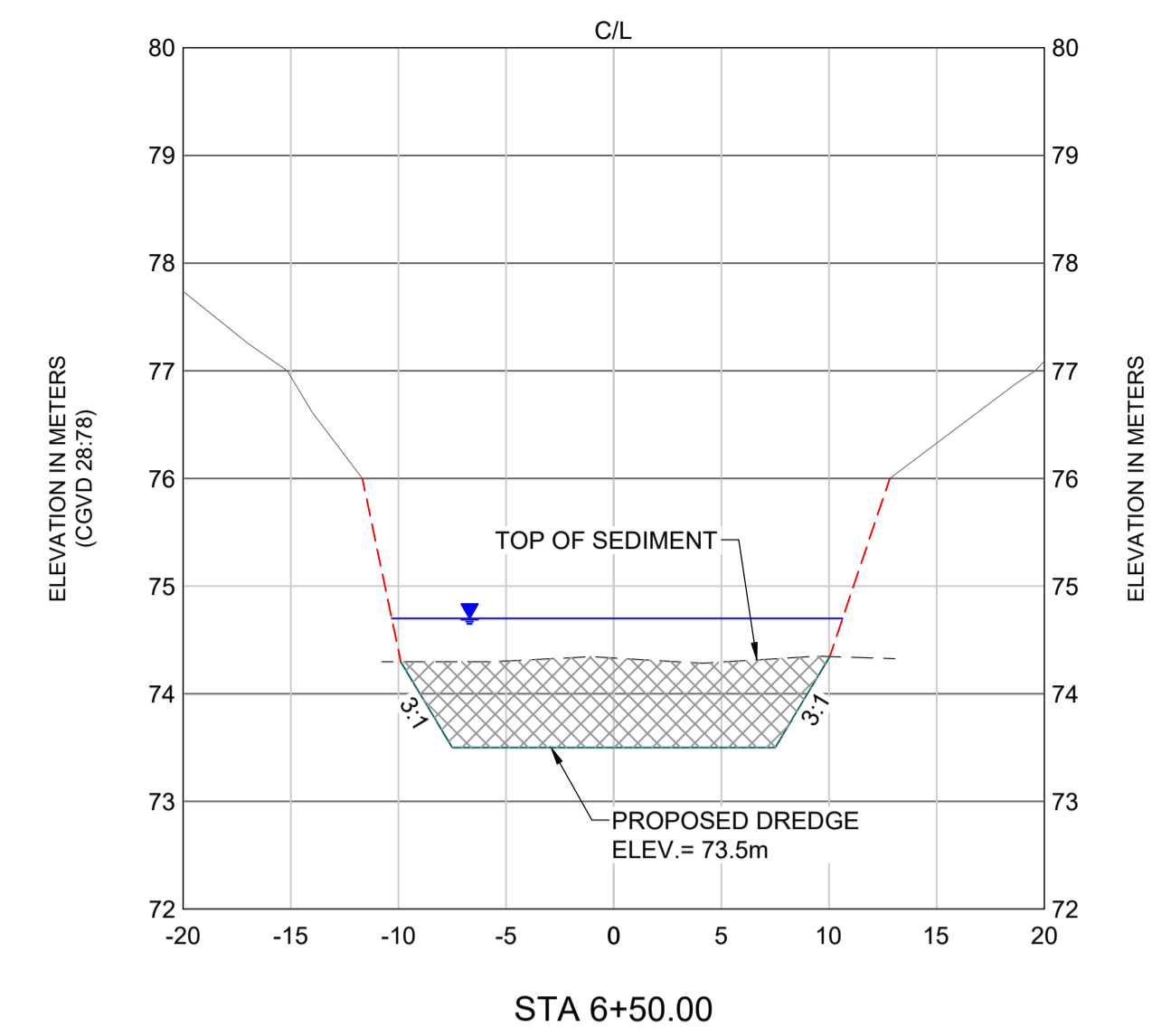
CHEDOKE CREEK REMEDIATION DREDGING PROJECT
PROPOSED MATERIAL REMOVAL PLAN
CITY OF HAMILTON

SUBMITTED FOR TENDER

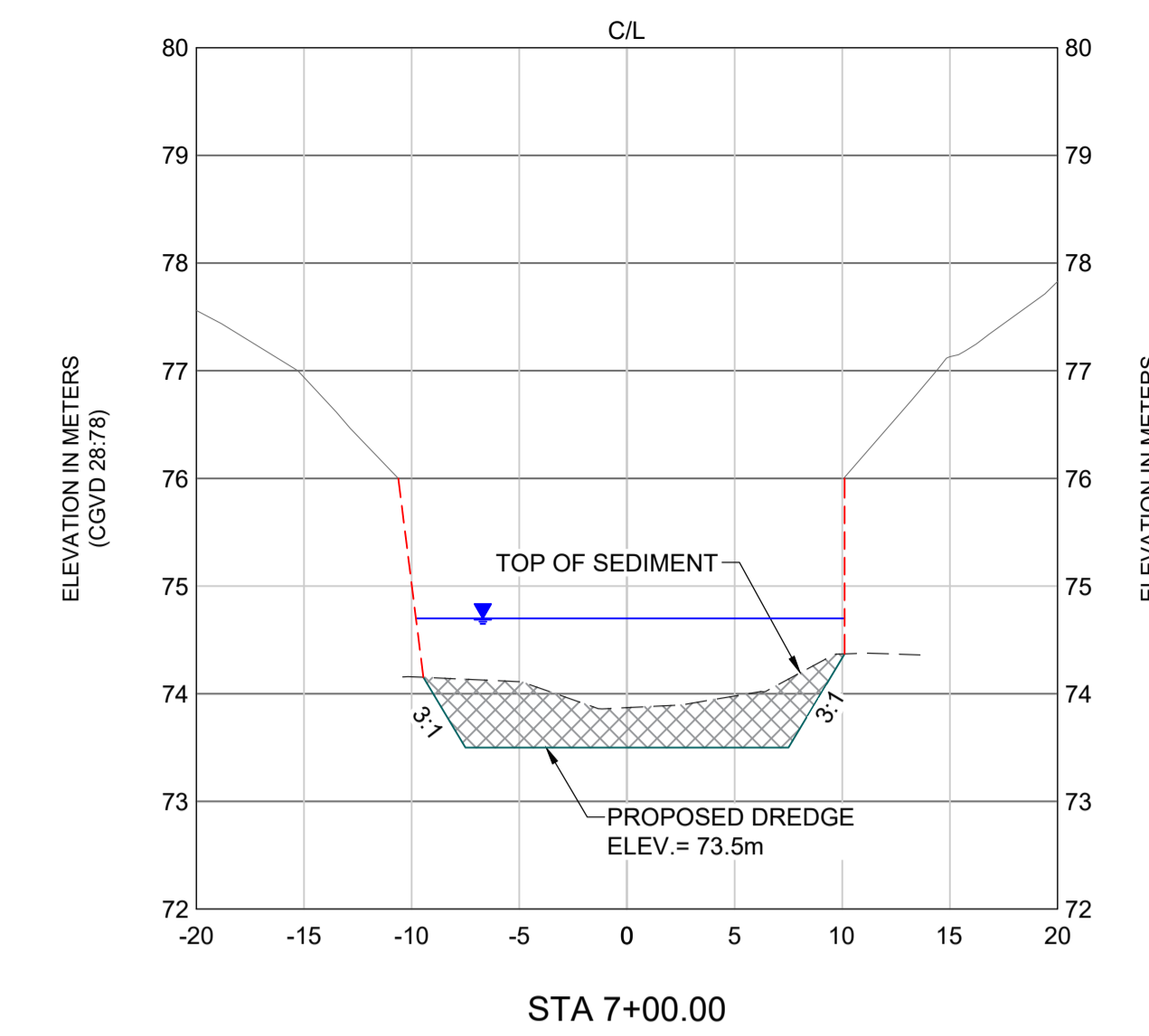
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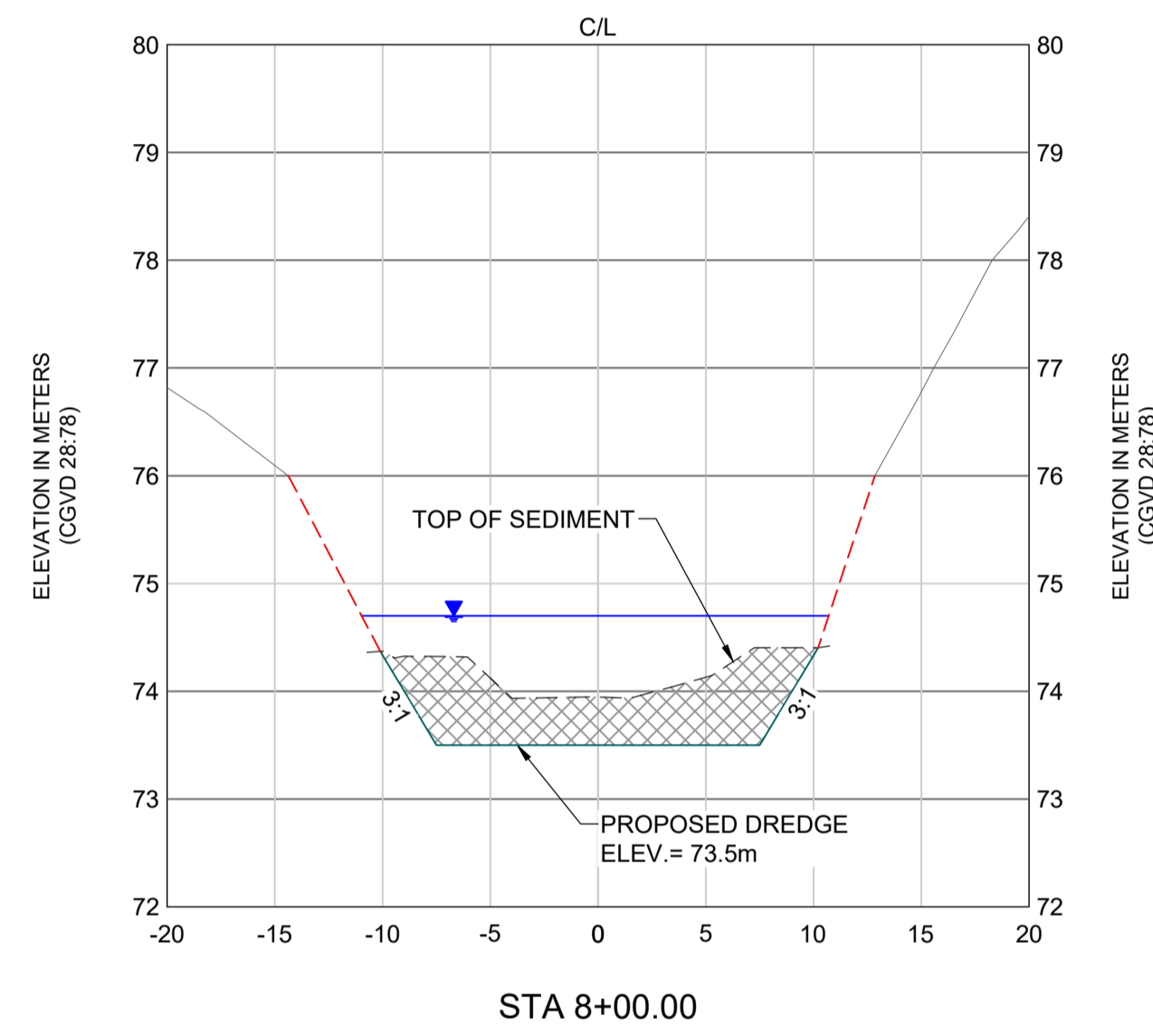
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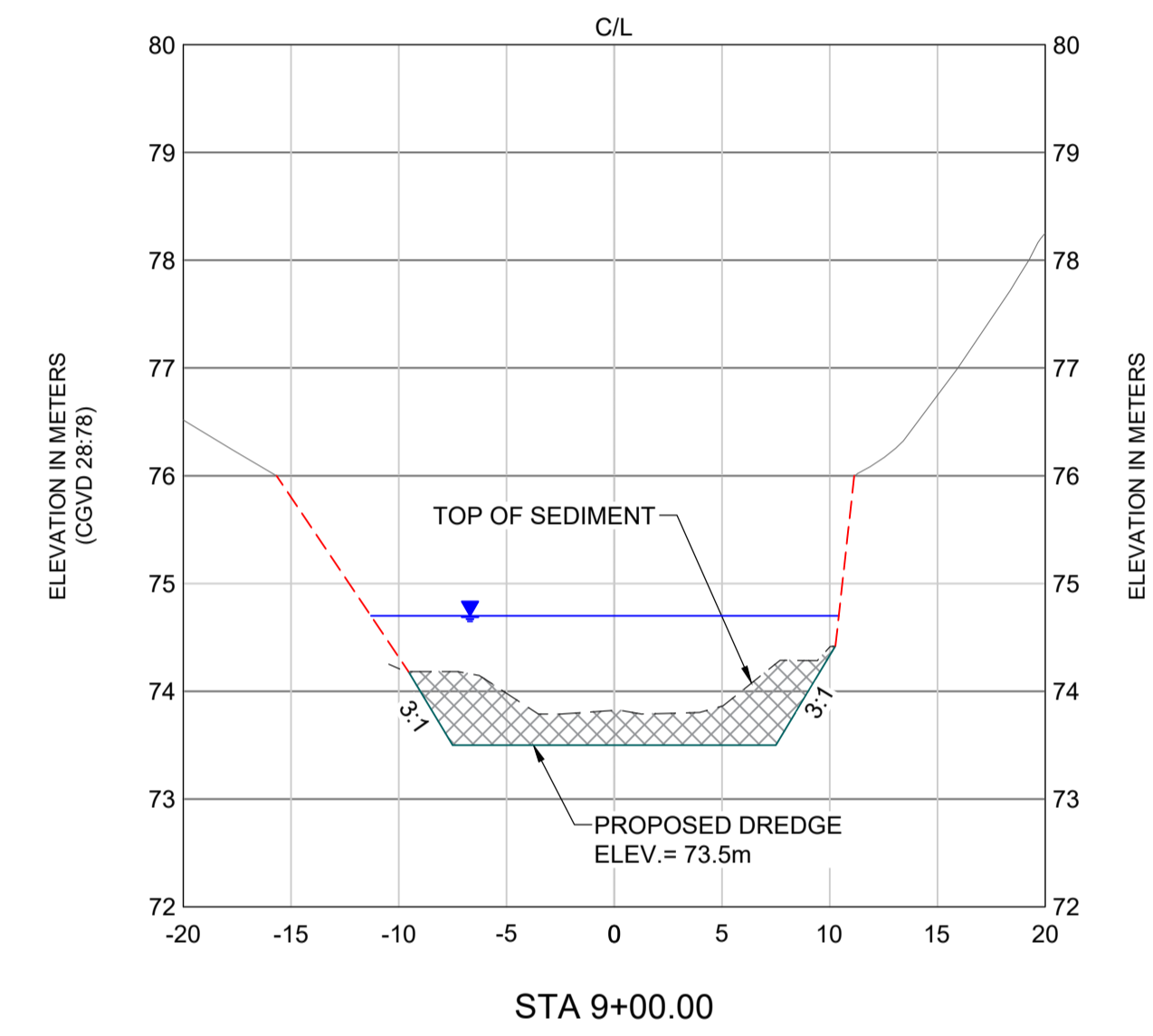
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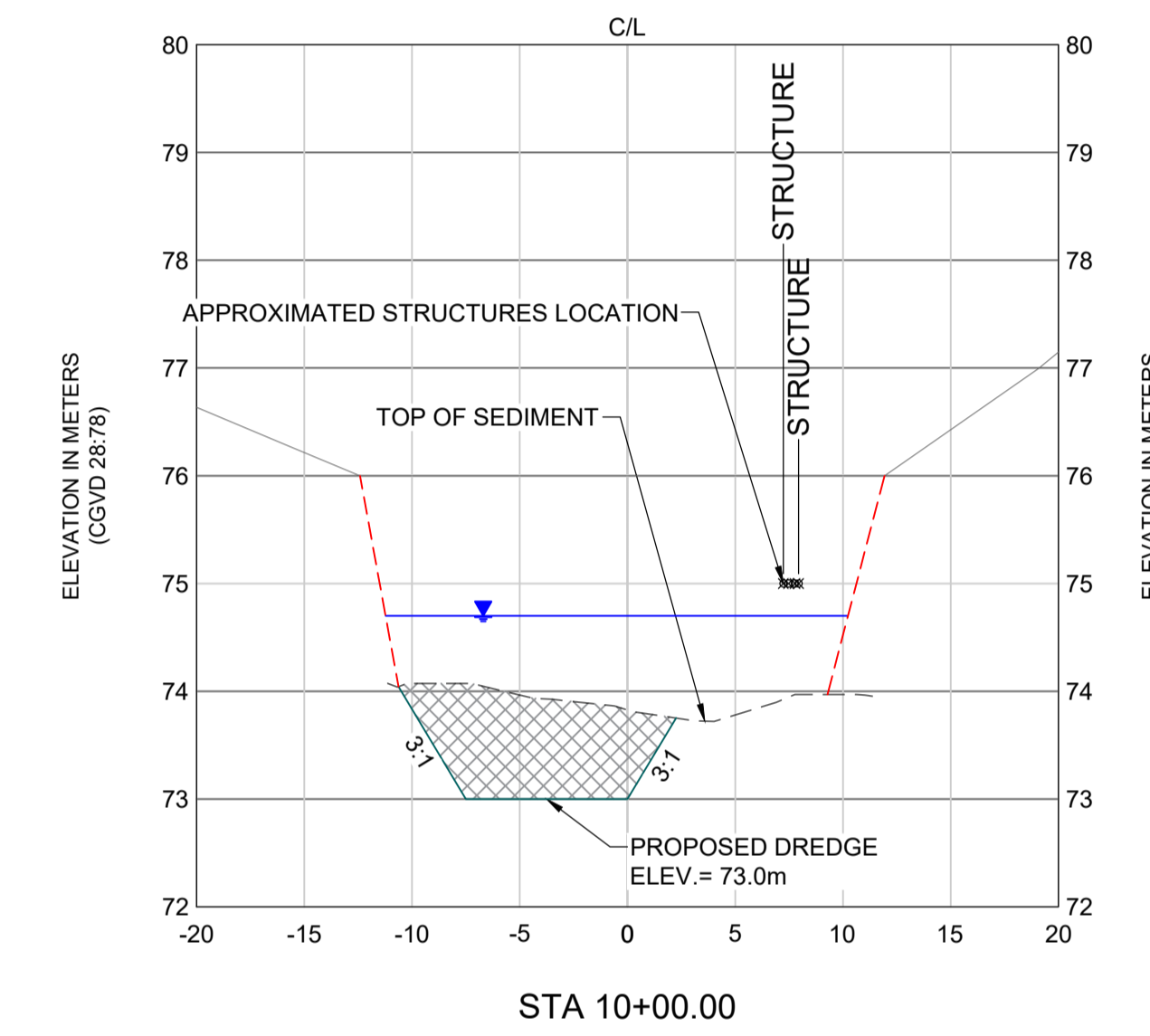
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STA 8+00.00



STA 9+00.00



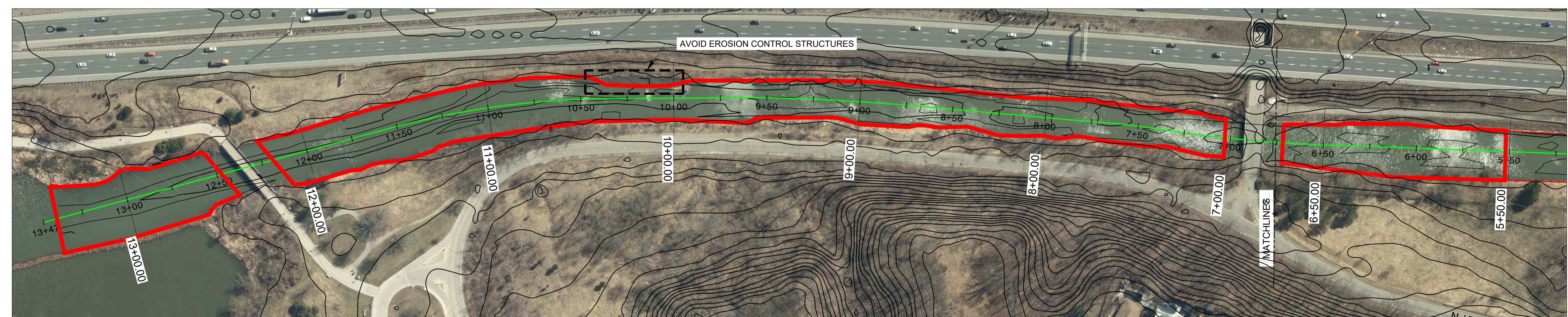
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LEGEND

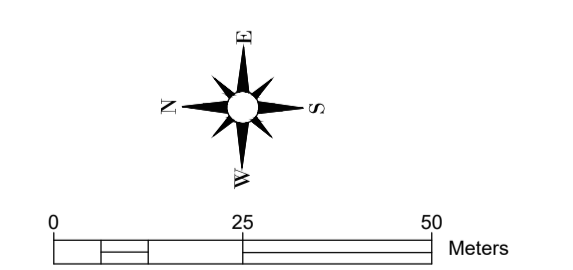
- MAY 2021 WATER ELEVATION (74.69m CGVD28:78)
- TOP OF SEDIMENT
- PROPOSED DREDGE ELEVATION
- CITY OF HAMILTON DTM DATA 2017
- SLOPE VARIES
- PROPOSED SEDIMENT FOR REMOVAL

NOTES:

1. VERTICAL DATA ARE SHOWN IN METERS, REFERENCING CGVD28:78.
2. HORIZONTAL DATA ARE SHOWN IN METERS, REFERENCING NAD83 UTM, ZONE 17.
3. TEMPORARY BENCH MARK:
TOP NORTH EAST CORNER OF CONCRETE BOX CULVERT AT GLEN ROAD
ELEV. 78.132m
NORTHING - 4790581.1691
EASTING - 589763.3709
4. NOTE: SURVEYED W/L WAS 74.69m (CGVD28:78) ON MAY 14, 2021 LAKE ONTARIO RECORDED LEVEL ON MAY 14, 2021 WAS 74.73m (IGLD1985) REFERENCE: NOAA GREAT LAKES ENVIRONMENTAL RESEARCH LABORATORY <https://www.glerl.noaa.gov/data/wlevels/#observations>) THEREFORE THERE WAS A 4-cm DIFFERENCE BETWEEN THE 2 DATUMS ON MAY 14, 2021.
5. ELEVATIONS DEPICTED REPRESENT CONDITIONS ENCOUNTERED AT THE TIME OF DATA COLLECTION, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS PRIOR TO BIDDING.



(A) NORTH SIDE CHEDOKE CREEK STATION IDENTIFICATION LOCATIONS
SCALE: 1m = 25m



AutoCAD drawing: F:\PROJECTS\C301\2011062_Chedoke Creek\2021\Dec_2021\2011062_Chedoke_X_Section.dwg Mar 23/22 6:10pm martin.wvns

No.	REVISIONS	INITIAL	DATE
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22
2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22

DRAWN BY: M. VIVES DATE: March 23, 2022
 REFERENCED MATERIAL:
 Surveyed by:
 Sewer Plans:
 Water Plans:
 Survey Plan:

SCALES
 AS SHOWN



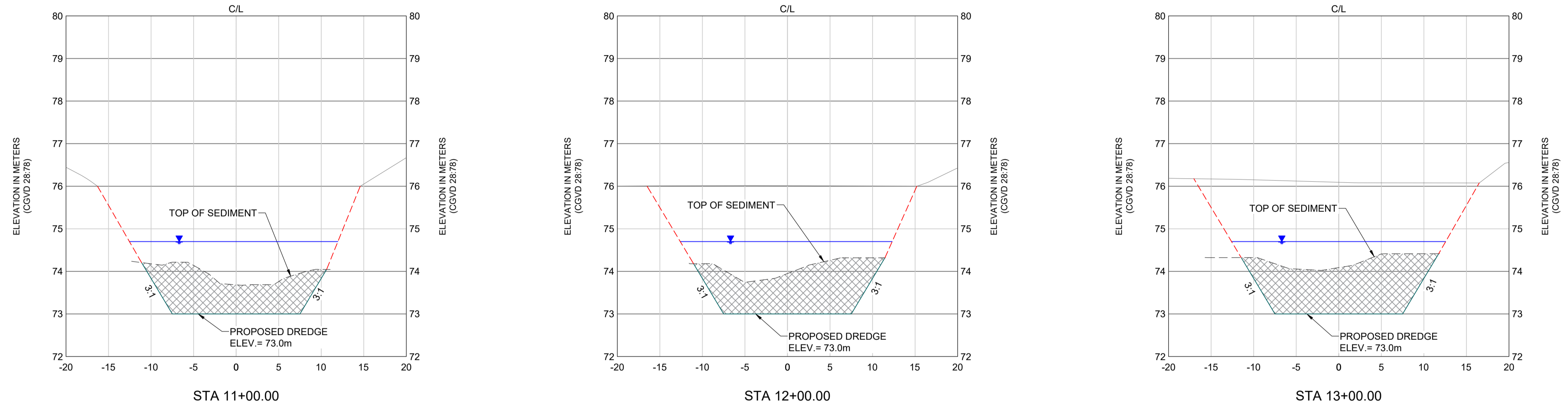
Project Manager (Design)
 R. SCHECKENBERGER / L. LUMBARD
 Name
 Manager of Design
 B. BISHOP / L. TORRES
 Name



CHEDOKE CREEK REMEDIATION DREDGING PROJECT
CROSS-SECTIONS FOR ZONES 2 & 3 (1 OF 2)
 CITY OF HAMILTON

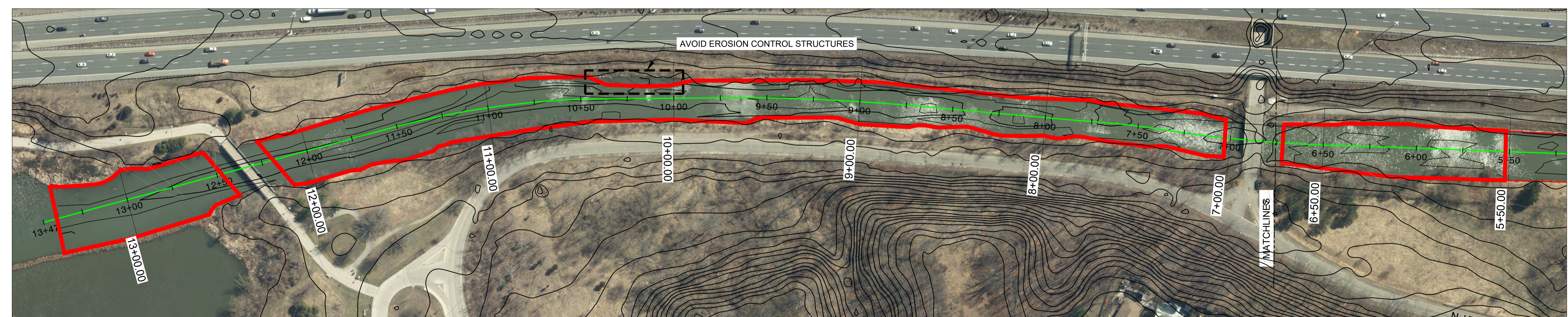
SUBMITTED FOR TENDER

DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED

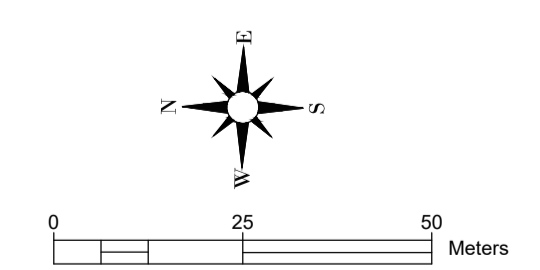


- LEGEND**
- MAY 2021 WATER ELEVATION (74.69m CGVD28:78)
 - TOP OF SEDIMENT
 - PROPOSED DREDGE ELEVATION
 - CITY OF HAMILTON DTM DATA 2017
 - SLOPE VARIES
 - PROPOSED SEDIMENT FOR REMOVAL

- NOTES:**
1. VERTICAL DATA ARE SHOWN IN METERS, REFERENCING CGVD28:78.
 2. HORIZONTAL DATA ARE SHOWN IN METERS, REFERENCING NAD83 UTM, ZONE 17.
 3. TEMPORARY BENCH MARK:
TOP NORTH EAST CORNER OF CONCRETE BOX CULVERT AT GLEN ROAD
ELEV. 78.132m
NORTHING - 4790581.1691
EASTING - 589763.3709
 4. NOTE: SURVEYED W/L WAS 74.69m (CGVD28:78) ON MAY 14, 2021 LAKE ONTARIO RECORDED LEVEL ON MAY 14, 2021 WAS 74.73m (IGLD1985) REFERENCE: NOAA GREAT LAKES ENVIRONMENTAL RESEARCH LABORATORY <https://www.glerl.noaa.gov/data/wlevels/#observations>) THEREFORE THERE WAS A 4-cm DIFFERENCE BETWEEN THE 2 DATUMS ON MAY 14, 2021.
 5. ELEVATIONS DEPICTED REPRESENT CONDITIONS ENCOUNTERED AT THE TIME OF DATA COLLECTION, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS PRIOR TO BIDDING.



(A) NORTH SIDE CHEDOKE CREEK STATION IDENTIFICATION LOCATIONS
SCALE: 1m = 25m



AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke Creek\2021\Dec_2021\20101062_Chedoke_X_Sediments.dwg Mar 23/22 6:10pm martin.wives

No.	REVISIONS	INITIAL	DATE
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22
2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22

DRAWN BY: M. VIVES DATE: March 23, 2022
REFERENCE MATERIAL:
Surveyed by:
Water Plans:
Survey Plan:

SCALES
AS SHOWN



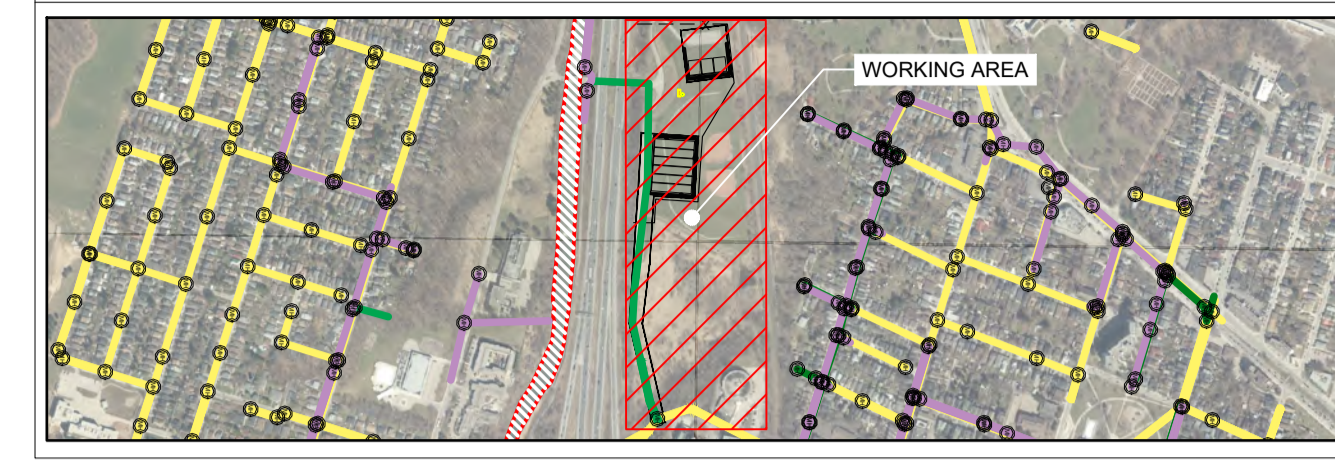
Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name



CHEDOKE CREEK REMEDIATION DREDGING PROJECT
CROSS-SECTIONS FOR ZONES 2 & 3 (2 OF 2)
CITY OF HAMILTON

SUBMITTED FOR TENDER

DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED

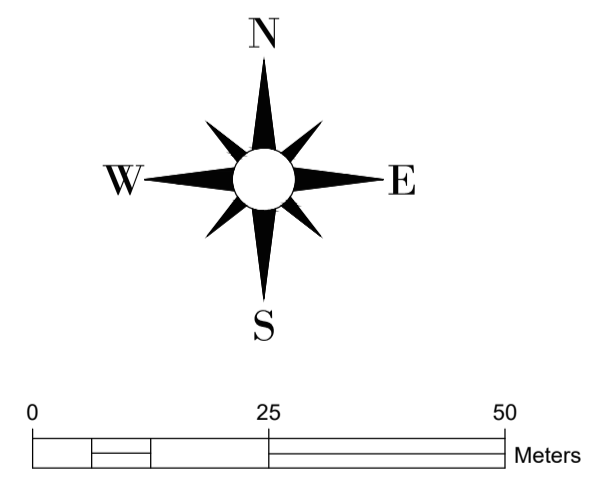
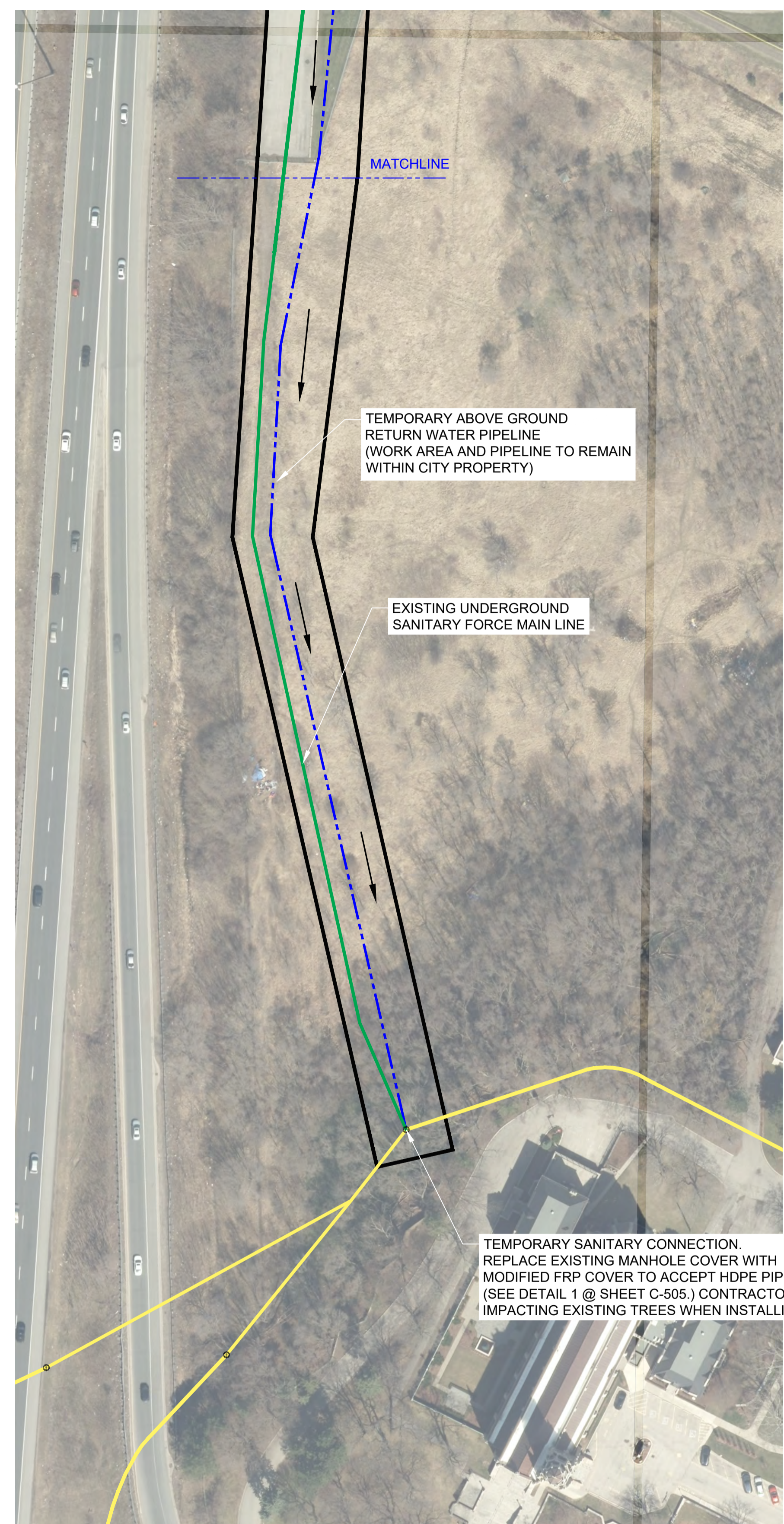
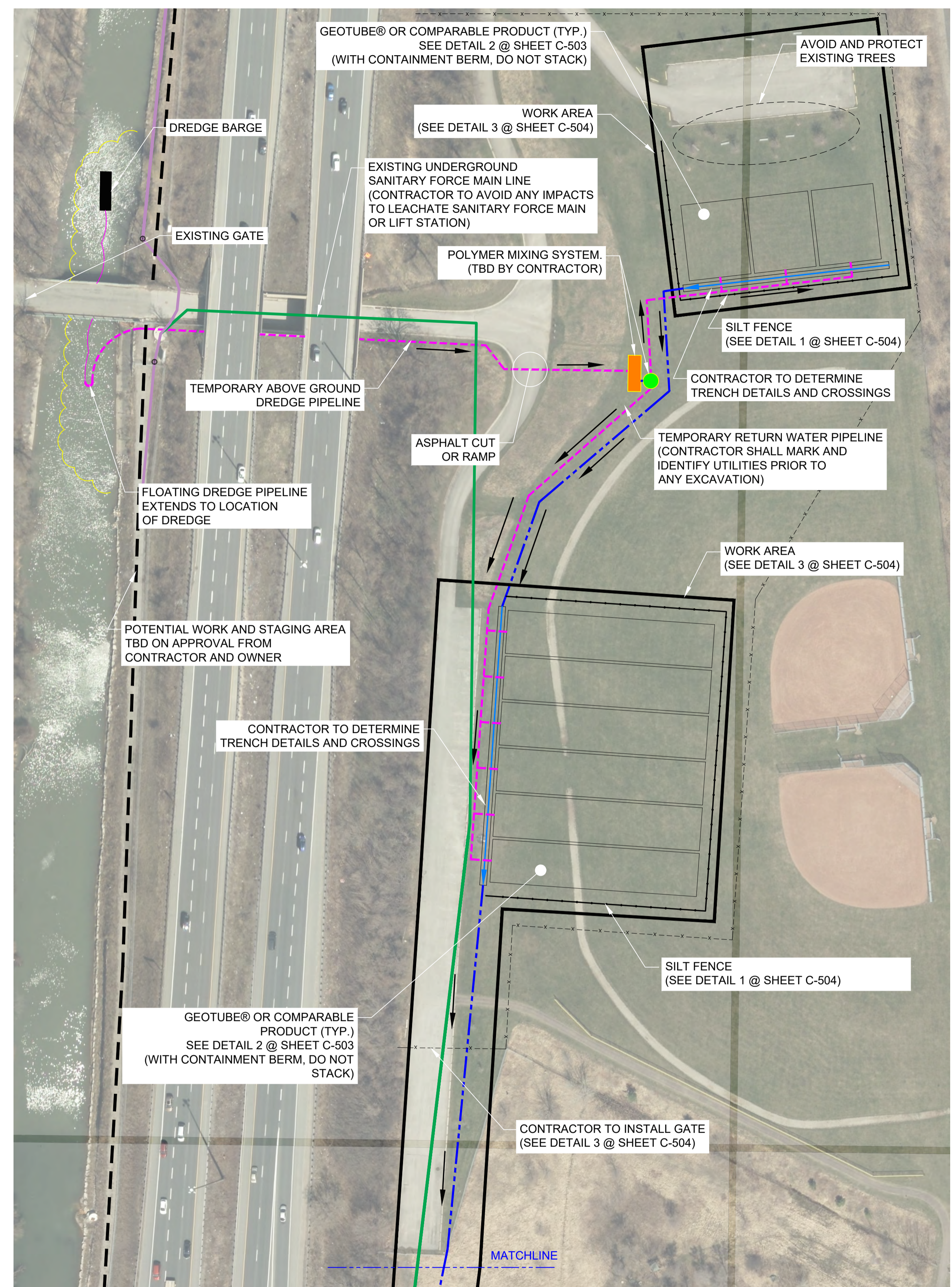


LEGEND

- DREDGE MATERIAL MANAGEMENT AREA
- WATER FLOW
- TEMPORARY DREDGE MATERIAL PIPELINE
- TEMPORARY RETURN WATER PIPELINE
- EXISTING WATER MAIN
- EXISTING COMBINED SANITARY/STORM SEWER
- EXISTING SANITARY FORCEMAIN
- EXISTING STORM SEWER
- TURBIDITY BARRIER
- SILT FENCE
- SERVICE ROAD
- TEMPORARY FENCE

NOTES:

1. LOCATIONS OF EXISTING SANITARY AND STORMWATER LINES WERE PROVIDED BY THE CITY OF HAMILTON.
2. THE CONTRACTOR SHALL MARK AND IDENTIFY THE UTILITIES PRIOR TO DIGGING AND MUST MAINTAIN REQUIRED SETBACKS.
3. DREDGED MATERIAL MANAGEMENT AREA (DMMA) IS TO BE FULLY DEFINED IN THE FIELD PRIOR TO CONSTRUCTION. EXISTING GRADES SHALL BE MAINTAINED IN MOST DESIGNATED AREAS. ANY GRADE CHANGES OR BERMS MUST BE CONSTRUCTED USING IMPORTED MATERIAL.
4. MAXIMUM TRENCH EXCAVATION DEPTH IS 0.5m.



1 GEOTUBE® DEWATERING SYSTEM AT KAY DRAGE PARK

AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke_Creek\2021\Dec_2021\20101062_Chedoke_DMMA_Marklin.dwg Mar 23 2022 6:10pm mrviv@vives

No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: March 23, 2022
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22	REFERENCE MATERIAL: Surveyed by: Sewer Plans: Water Plans: Survey Plan:	
2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22		
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22		

SCALES

AS SHOWN



Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name

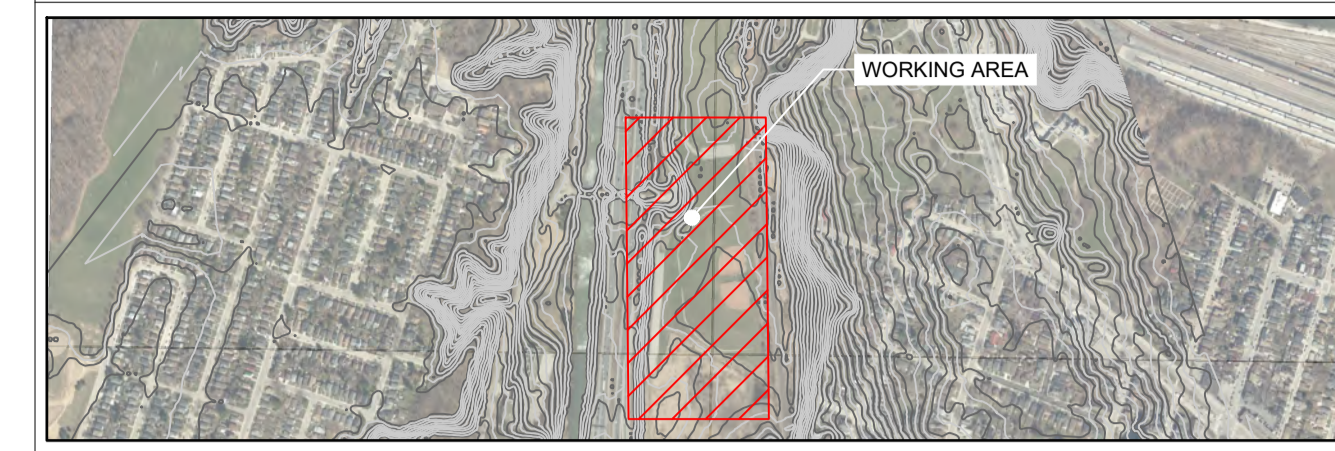


CHEDOKE CREEK REMEDIATION DREDGING PROJECT

DMMA DETAIL AT KAY DRAGE PARK
CITY OF HAMILTON

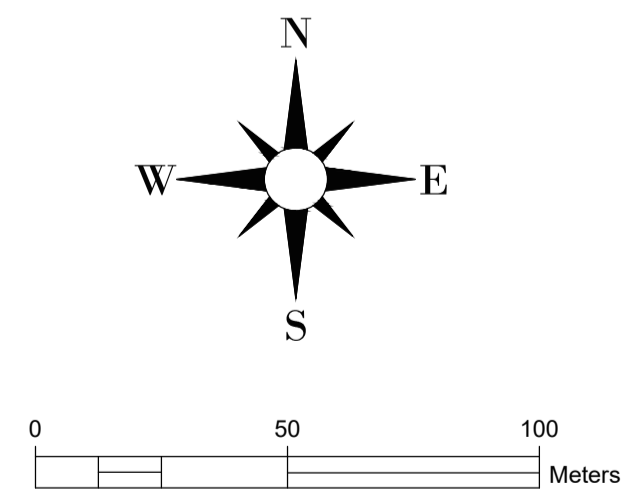
SUBMITTED FOR TENDER

DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED



LEGEND

- DREDGE MATERIAL MANAGEMENT AREA
- CONTOURS



SUBMITTED FOR TENDER

AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke Creek\2021\Dec_2021\20101062_Chedoke_DMMA_Topo.dwg Mar 23 2022 8:11pm maffh.viv

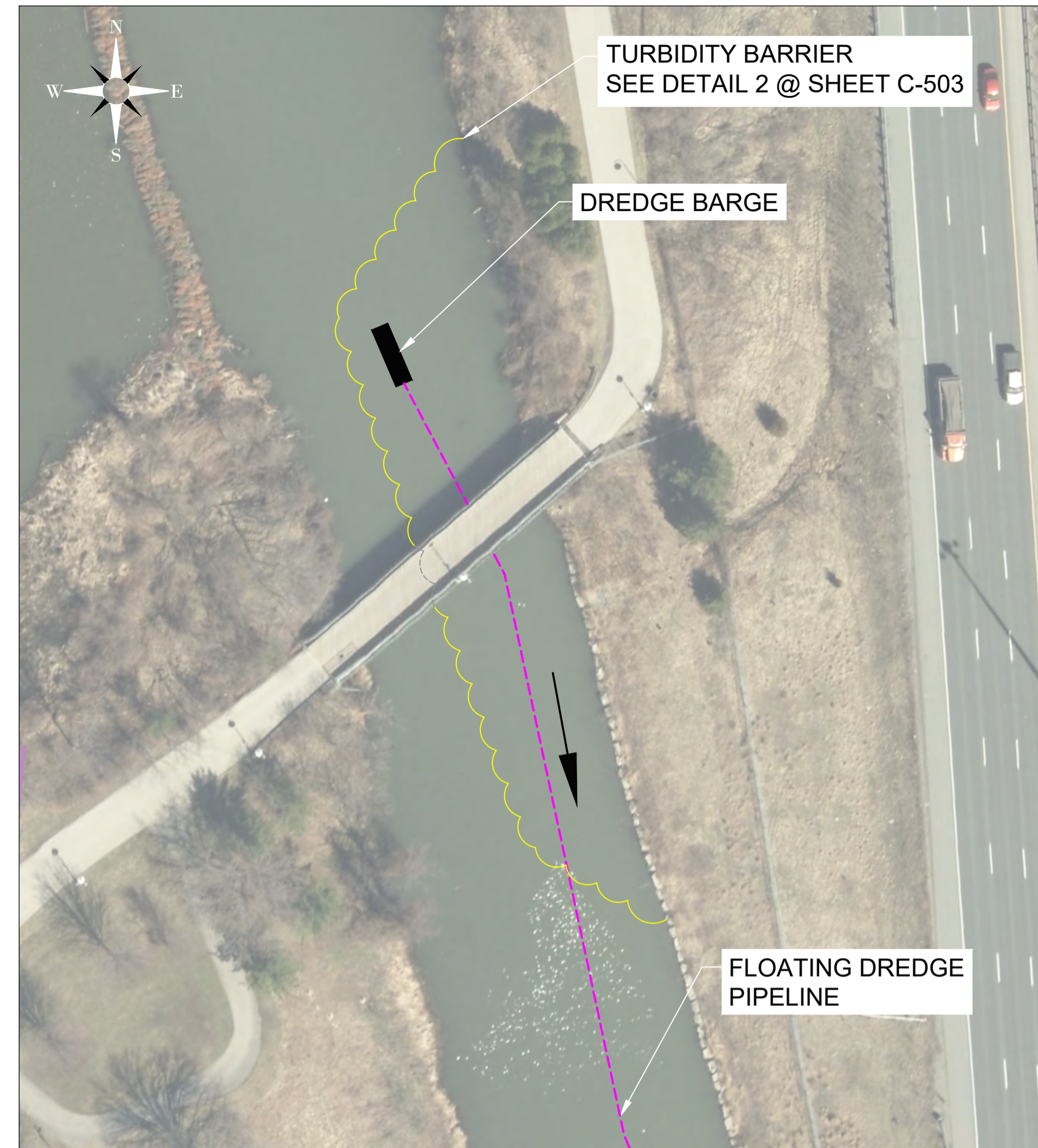
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2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22		
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22		

<p>SCALES</p> <p>AS SHOWN</p>		<p>WOOD PROJECT #: WW20101062</p>		<p>Project Manager (Design) R. SCHECKENBERGER / L. LUMBARD Name Manager of Design B. BISHOP / L. TORRES Name</p>
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City of
HAMILTON
 Public Works Department

CHEDOKE CREEK REMEDIATION DREDGING PROJECT
DMMA AREA TOPOGRAPHY DETAIL
 CITY OF HAMILTON

DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED



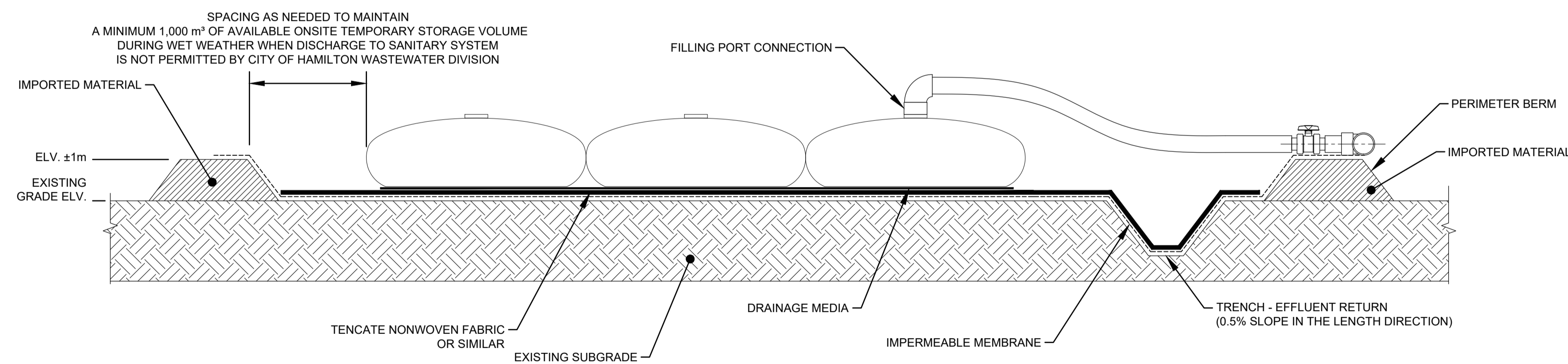
LEGEND

- ← WATER FLOW
- TEMPORARY DREDGE MATERIAL PIPELINE
- TURBIDITY BARRIER

NOTES:

1. DREDGE EQUIPMENT SHOWN IS A SMALL-SCALE SEDIMENT REMOVAL SYSTEM.
2. ALL DREDGING ACTIVITIES SHALL CONFORM TO ENVIRONMENTAL AUTHORIZATIONS.

1 TYPICAL DREDGE AND TURBIDITY BARRIER DETAIL
NOT TO SCALE



2 TYPICAL GEOTUBE® DEWATERING CELL CROSS SECTION DETAIL
NOT TO SCALE

AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke_Creek\2021\Dec_2021\20101062_Chedoke_D\DMA_Marklin.dwg Mar 23 2022 6:11pm mrviv:vives

No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: March 23, 2022
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22	REFERENCE MATERIAL: Surveyed by : Sewer Plans : Water Plans : Survey Plan :	
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3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22		

SCALES

AS SHOWN



wood.



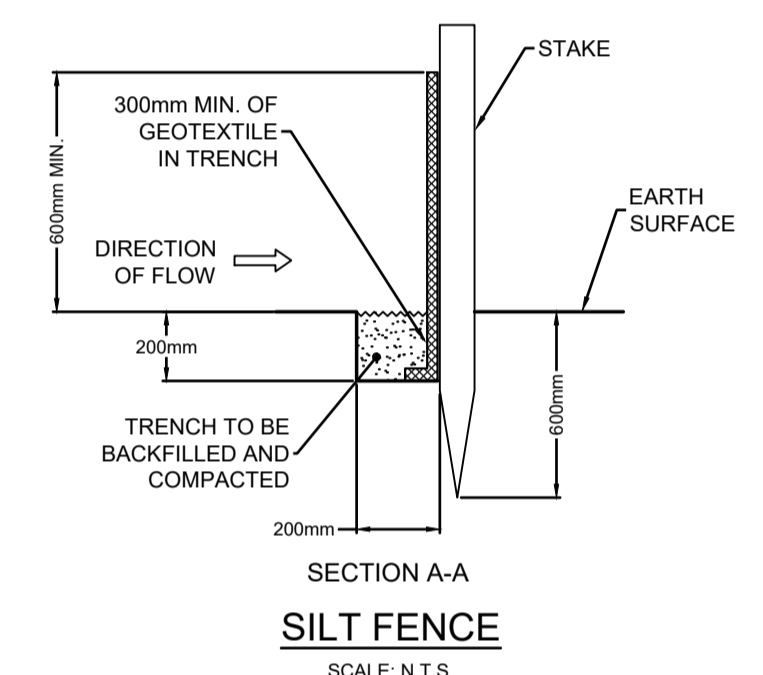
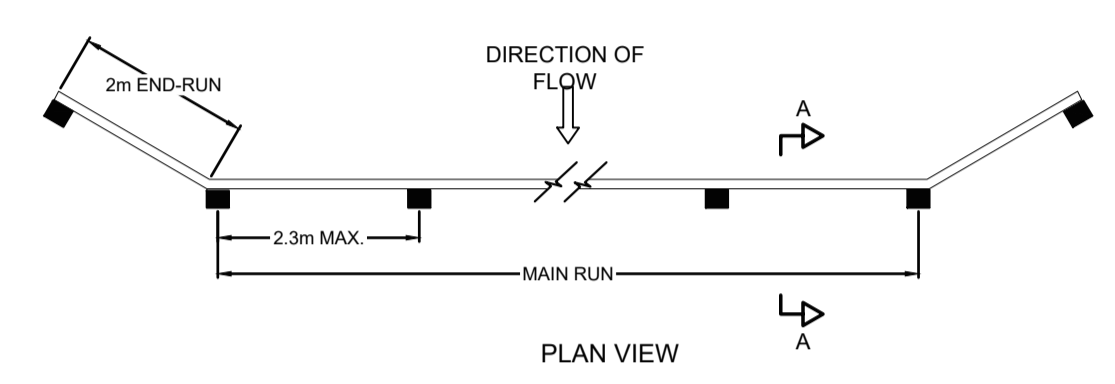
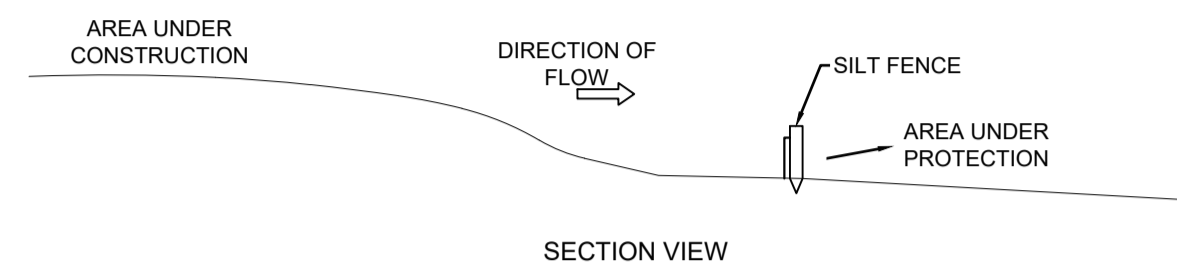
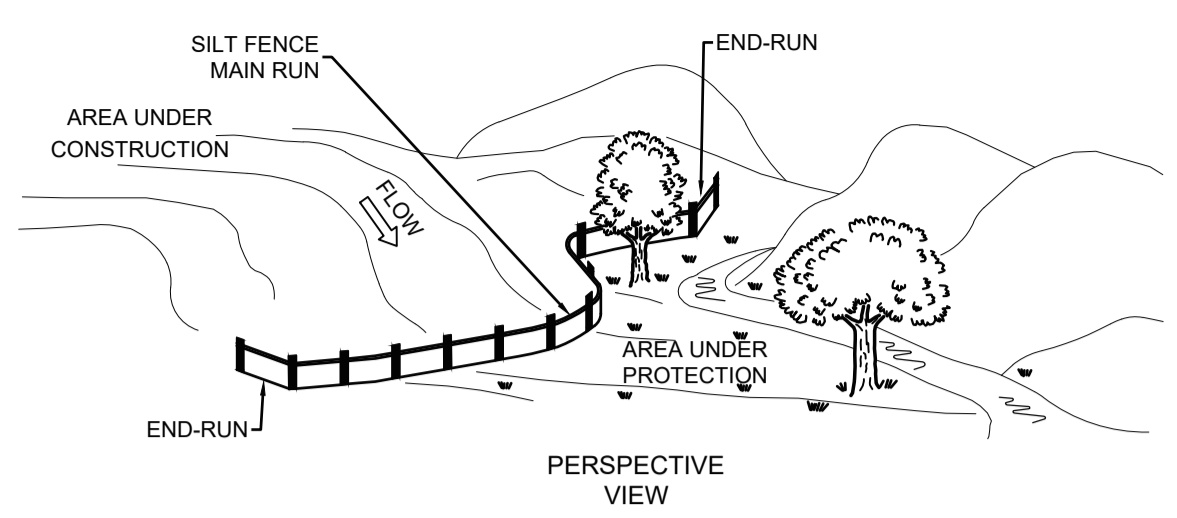
Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name

City of HAMILTON
Public Works Department

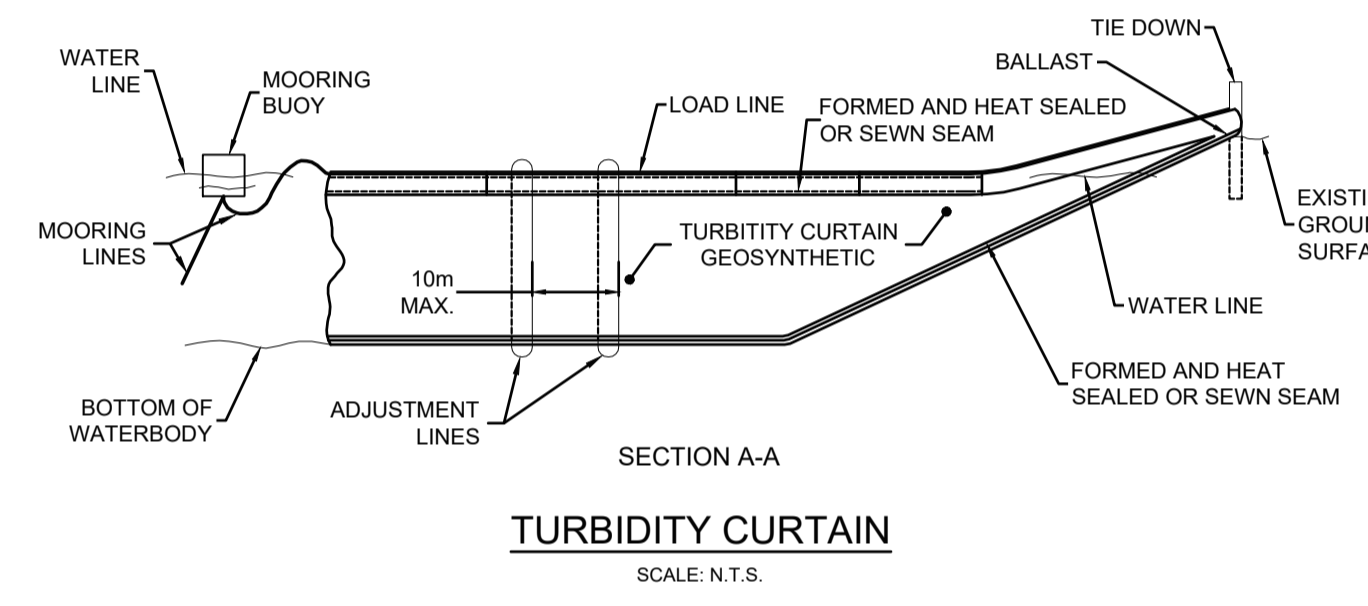
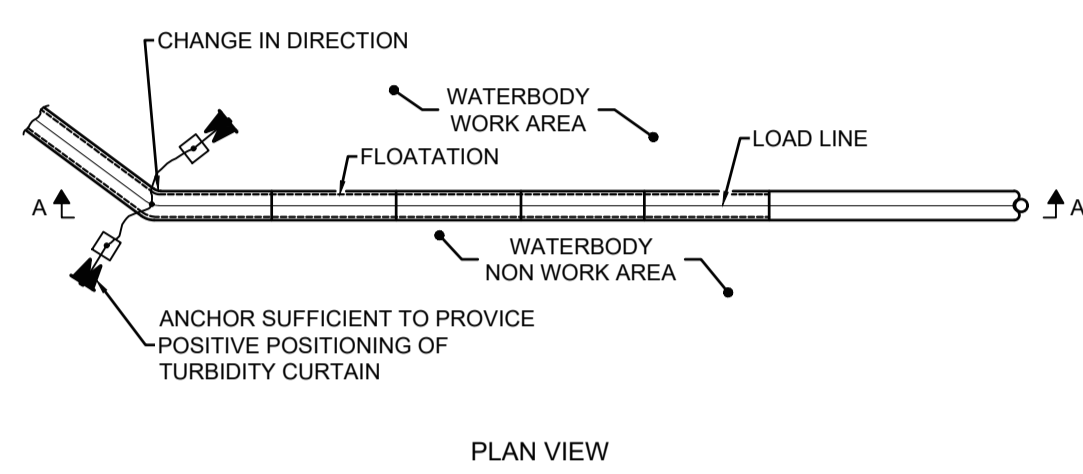
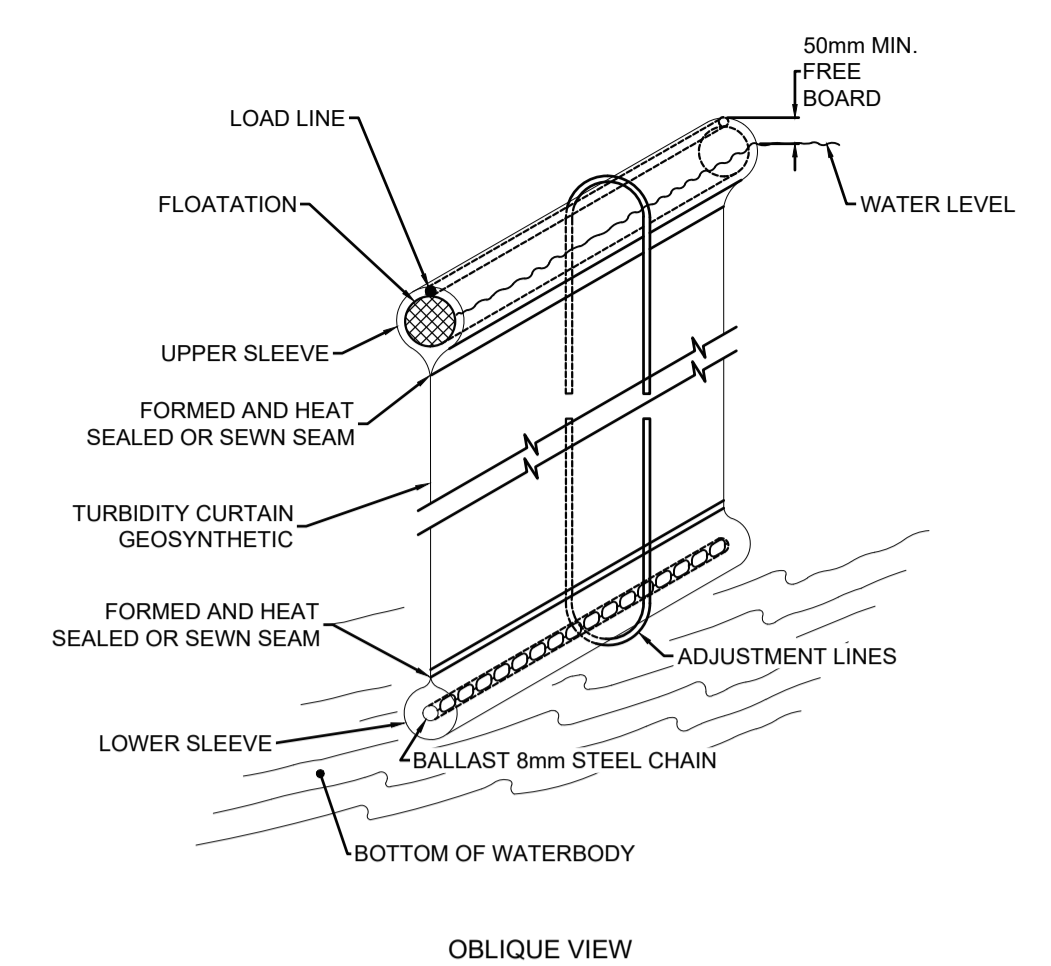
CHEDOKE CREEK REMEDIATION DREDGING PROJECT
HYDRAULIC DREDGE OPERATION TYPICAL DETAILS
CITY OF HAMILTON

SUBMITTED FOR TENDER

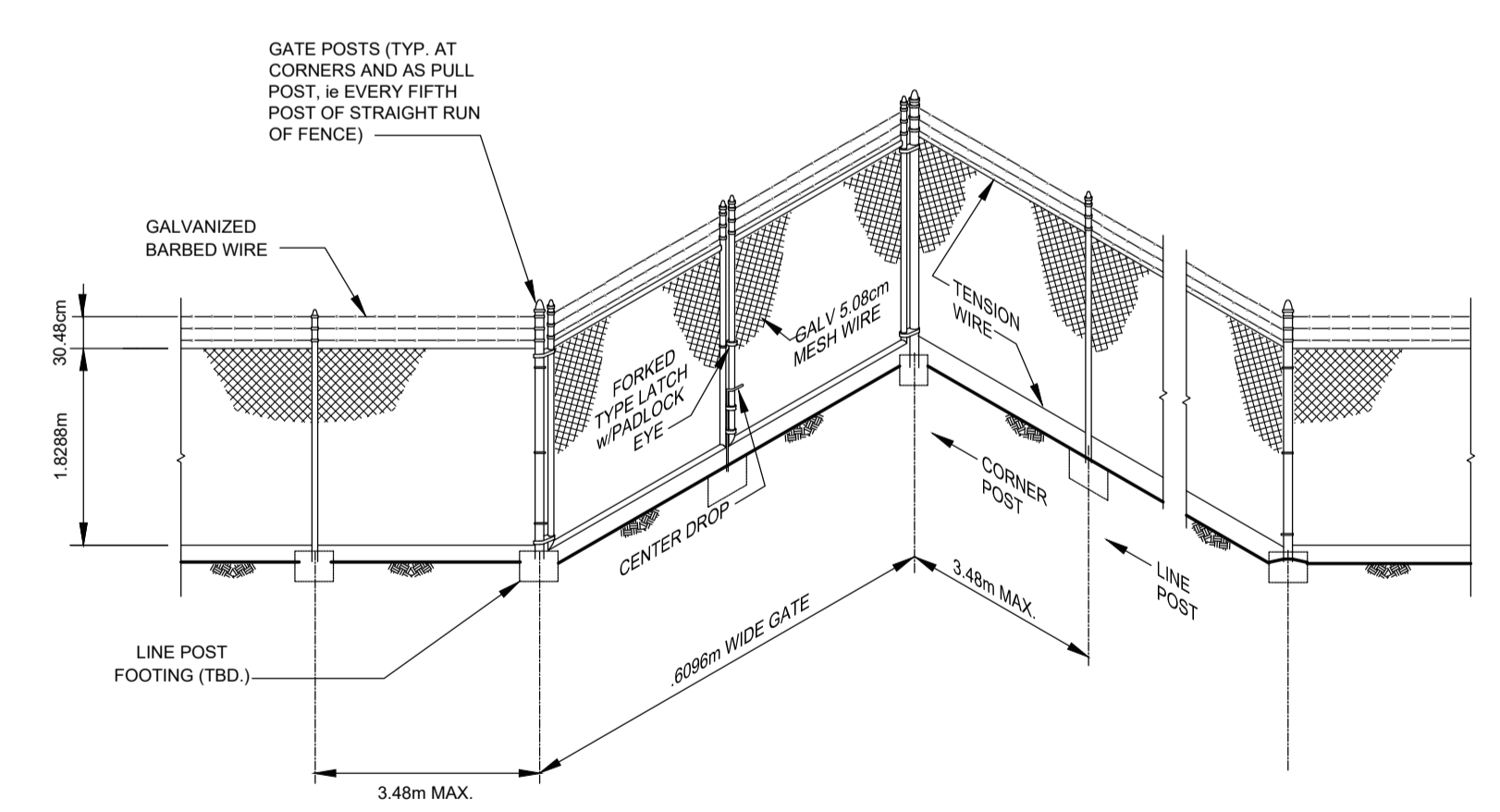
DIMENSIONS SHOWN ON THIS PLAN ARE IN METERS UNLESS OTHERWISE NOTED



1 TYPICAL SILT FENCE DETAIL
NOT TO SCALE



2 TURBIDITY BARRIERS DETAILS
NOT TO SCALE



NOTES:
1. CONTRACTOR NEED TO DETERMINED PROPER FOOTING FOR EXISTING CONDITIONS.

3 TYPICAL FENCE / GATE DETAIL
NOT TO SCALE

AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke_Creek\2021\Dec_2021\20101062_Chedoke_Erosion_Control_Details.dwg Mar 23/22 11:11pm mrtfiv:vw

No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: March 16, 2022
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22	REFERENCE MATERIAL: Surveyed by: Sewer Plans: Water Plans: Survey Plan:	
2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22		
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22		

SCALES	AS SHOWN
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Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name



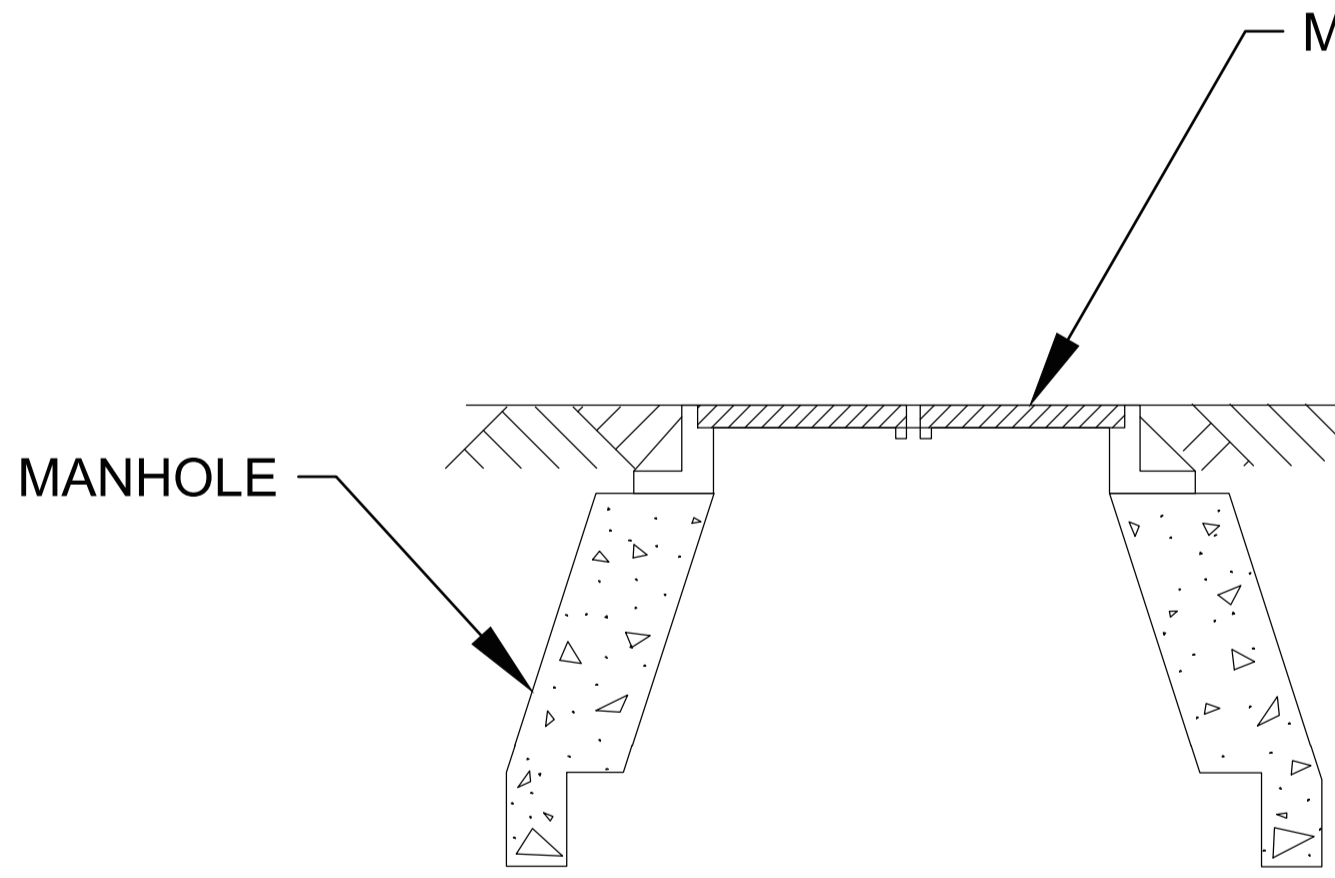
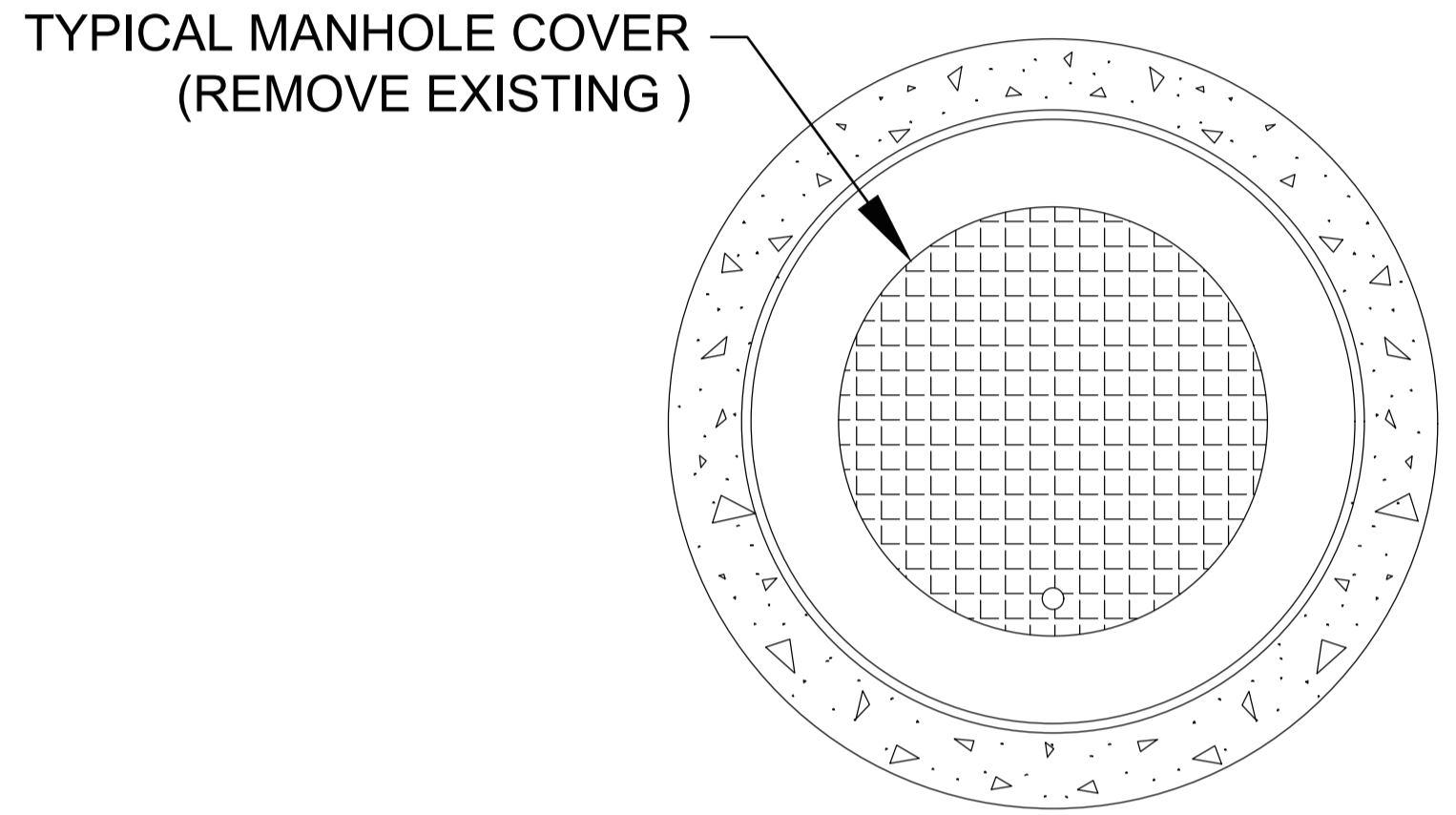
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WW20101062



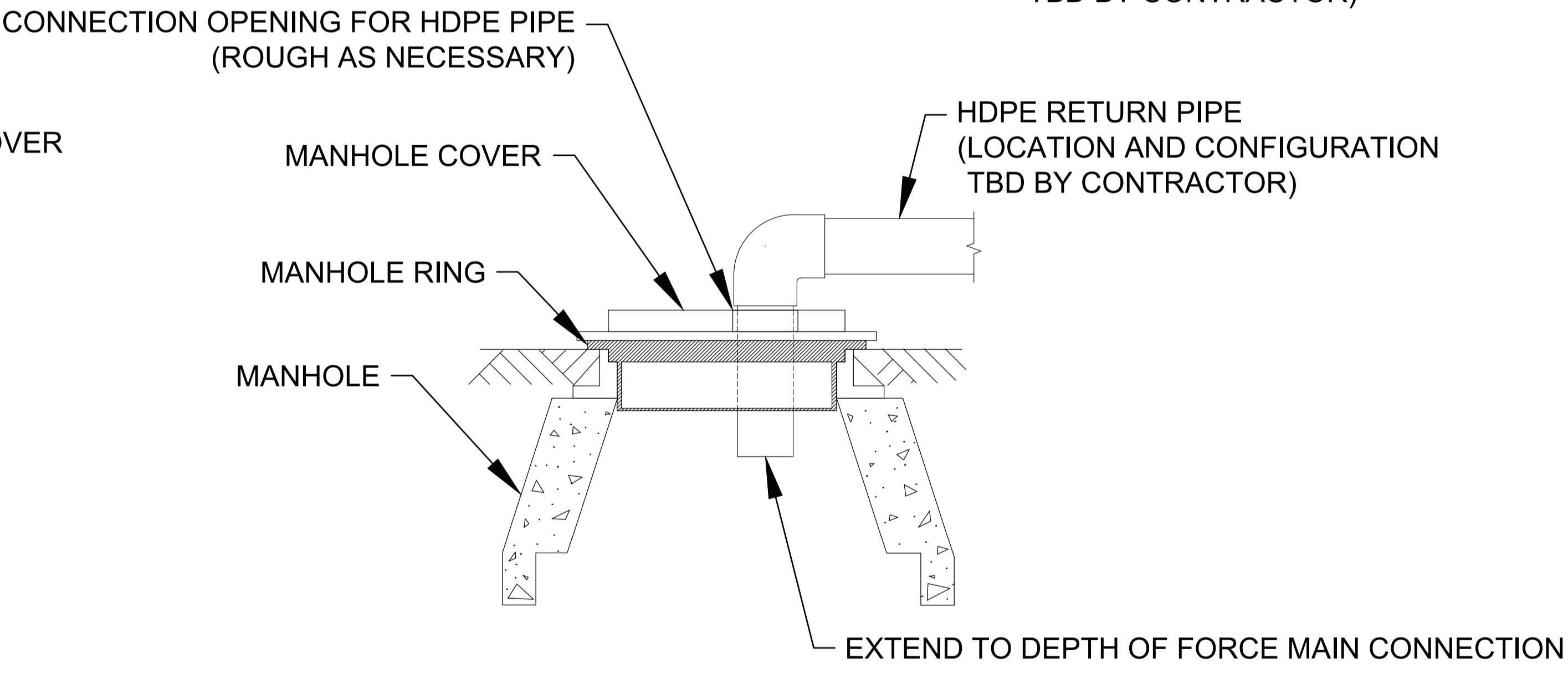
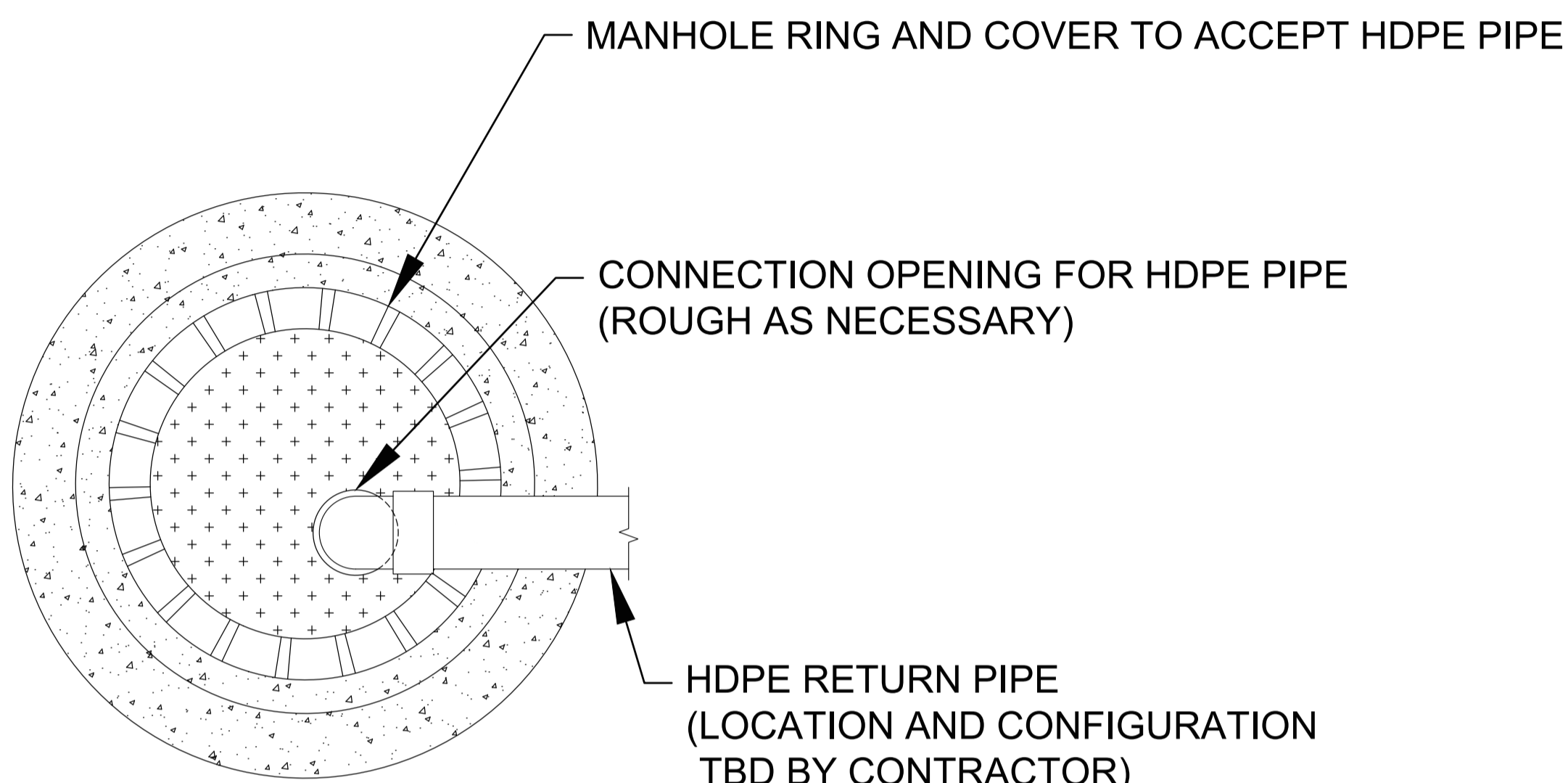
CHEDOKE CREEK REMEDIATION DREDGING PROJECT

EROSION CONTROL DETAILS
CITY OF HAMILTON

SUBMITTED FOR TENDER



TYPICAL MANHOLE OPENING AND COVER
(COVER NEED TO BE REMOVE)



TEMPORARY REPLACEMENT MANHOLE AND COVER
WITH OPENING FOR HDPE CONNECTION

1 MANHOLE CONNECTION DETAILS
NOT TO SCALE

AutoCAD drawing: F:\PROJECTS\CSD\20101062_Chedoke_Creek\2021\Dec_2021\20101062_Chedoke_Creek_Manhole_Details.dwg Mar 23/22 8:11pm mattlvives

SOURCE: DETAILS PROVIDE BY CITY OF HAMILTON.

No.	REVISIONS	INITIAL	DATE	DRAWN BY: M. VIVES	DATE: February 15, 2022
1	100% FINAL DESIGN - ISSUED FOR PERMIT	RS/LL	02-15-22	REFERENCE MATERIAL: Surveyed by : Sewer Plans : Water Plans : Survey Plan :	
2	UPDATED NOTES AND FENCE DETAILS	RS/LL	03-16-22		
3	100% FINAL DESIGN - ISSUED FOR TENDER	RS/LL	03-23-22		

SCALES

AS SHOWN



Project Manager (Design)
R. SCHECKENBERGER / L. LUMBARD
Name
Manager of Design
B. BISHOP / L. TORRES
Name



CHEDOKE CREEK REMEDIATION DREDGING PROJECT
TEMPORARY RETURN WATER CONNECTION
DETAILS
CITY OF HAMILTON

SUBMITTED FOR TENDER

APPENDIX

E: SEDIMENT & EROSION CONTROL

E.1

Terrafix Products



Canada's leader of complete geosynthetic solutions

terrafix[®]

geosynthetics inc.



Fencing Solutions

Terrafence Sediment Control,
terrafix[®] Wire Back Silt Fence,
terrafix[®] Safety Fence

To view our complete product line visit us at www.terrafixgeo.com

terrafix®

Terrafence Sediment Control

Preassembled Sediment Control Structure

Preassembled Sediment

Terrafence is specifically designed to control soil migration from construction sites, therefore, preventing contamination of adjacent sites such as streams, parking lots, streets and other sensitive areas. Terrafence is a preassembled sediment control structure designed with environmental concerns in mind. Terrafence fabric is made of woven polypropylene fibres which have been treated to resist degradation caused by exposure to sunlight. Terrafence fabric is a high strength geotextile that does not require additional reinforcing nets or other support systems. The light duty fence is preassembled with 1.5" x 1.5" x 48" oakwood posts which are securely attached to the fabric using industrial staples. The posts are tapered at the base. Terrafence heavy duty fabric is reinforced with polypropylene mesh for additional strength. Hardwood posts are attached to the fabric using heavy duty industrial staples. The posts are tapered at the base to facilitate ground penetration. A six inch flap is provided at the base of the fabric to allow for proper anchorage of the Terrafence. Each roll is delivered in a package approximately 10 inches in diameter. When unrolled, Terrafence is 3' high and covers 100 linear feet

Easy Installation

1. Dig a 6" x 6" trench along the lower perimeter of the site.
2. Unroll Terrafence, positioning the posts on the downstream side.
3. Drive posts into the ground until the lower washer / staple is approximately 2" from the trench bottom.
4. Lay the fabric flap in the bottom of the trench, backfill and compact. (figure 1)

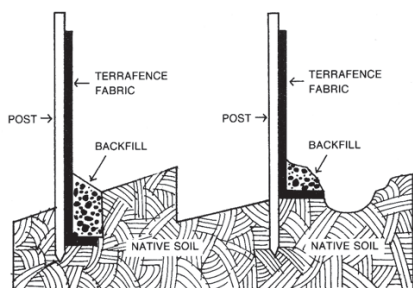


Figure 1

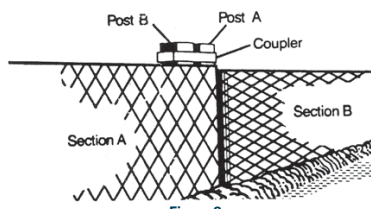


Figure 2

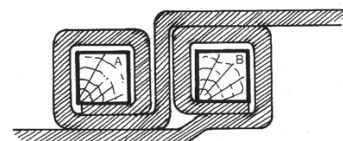


Figure 3

5. Fabric anchoring can also be accomplished by laying the fabric on untrenched ground and backfilling and compacting soil or gravel over the fabric flap at the base of the Terrafence structure.

Adjacent sections of Terrafence are joined as shown. (figure 3)
A coupler can be used to secure adjacent post as shown. (figure 2)

Silt Fencing Specifications • Light Duty

PROPERTIES	Unit	Value	Test Method
Grab Tensile Strength (MD)	lbs	95	ASTM D4632
Grab Tensile Strength (CD)	lbs	93	ASTM D4632
Grab Tensile Elongation	%	20	ASTM D4632
Mullen Burst Strength	lbs	347	ASTM D3786
Puncture Strength	lbs	39	ASTM D4833
Trapezoidal Tear	lbs	33	ASTM D4533
Apparent Opening	U.S. Std Sieve	40	ASTM D4751
Slurry Flow Rate	gpm/ft ²	30	ASTM D4491
UV Resistance after 500hrs	% Strength Retained	80	ASTM D4355

SIZE	36" x 100'
STAKES	1.5" x 1.5" x 48" (nominal) OAK
CENTERS	6.6' CENTERS (15 posts)

MATERIAL	POLYPROPYLENE
COLOR	BLACK

terrafix®

Terrafence Sediment Control

Silt Fencing Specifications • Heavy Duty

PROPERTIES	Unit	Value	Test Method
Grab Tensile Strength (MD)	lbs	120	ASTM D4632
Grab Tensile Strength (CD)	lbs	105	ASTM D4632
Grab Tensile Elongation	%	19	ASTM D4632
Mullen Burst Strength	lbs	225	ASTM D3786
Puncture Strength	lbs	75	ASTM D4833
Trapezoidal Tear	lbs	45	ASTM D4533
Apparent Opening	U.S. Std Sieve	.6mm	ASTM D4751
Slurry Flow Rate	gpm/ft2	.3	ASTM D4491
UV Resistance after 500hrs	% Strength Retained	80	ASTM D4355

PRODUCT	MESH BACKED FENCE
STAKES	1" x 2" x 60" (nominal) HARDWOOD
CENTERS	6' CENTERS (17 posts)
MATERIAL	POLYPROPYLENE
COLOR	BLACK

MESH SIZE	1 1/4" X 1"
TARGET WEIGHT	45 g/m ²
CORE SIZE	3" I.D.
MD BREAK LOAD	275 LB/FT
TD BREAK LOAD	160 LB/FT

Wire Backed Silt Fence

An alternative to the classic and very popular silt fence, the wire backed addition allows for a supplementary layer of silt control. The wire meshing provides a more rugged and reliable fencing option, while still being affordable and low maintenance for use around construction sites, road work, and other job locations. Wire backed silt fencing efficiently protects storm water drainage systems from polluting with silt, and will protect against environmental liability due to silt leaving project sites.

Wire Backed Silt Fence



PROPERTIES	Unit	Value	Test Method
Grab Tensile Strength (MD)	lbs	144	ASTM D4532
Grab Tensile Strength (CD)	lbs	115	ASTM D4632
Grab Tensile Elongation	%	19	ASTM D4632
Mullen Burst Strength	lbs	225	ASTM D3786
Puncture Strength	lbs	75	ASTM D4833
Trapezoidal Tear	lbs	45	ASTM D4533
Apparent Opening	U.S. Std Sieve	.35mm	ASTM D4751
Flow Rate/Permittivity	l/sec	.20	ASTM D4491
UV Resistance after 500hrs	% Strength Retained	90	ASTM D4355

PRODUCT	WIRE BACKED FENCE
FABRIC	46" X 100'
MATERIAL	POLYPROPYLENE

MESH SIZE	2" X 4"
MESH	35" X 100" 14 ga Wire Mesh
MATERIAL COLOUR	BLACK

terrafix[®] Safety Fence



Wire Farm Fence

Wire Farm Fence

Size: 4'×330'

Material: 12-14.5 gauge steel hinge knot

Weight: 90 lbs per roll



Wooden Snow Fence

Wooden Snow Fence

Size: 4'×50'

Material: Aspen or Cedar Lath

Weight: 70 lbs per roll



Utility Safety Fence

Utility Safety Fence

Size: 4'×100'

Weight: 25 lbs per roll

Use: Temporary visible barriers

Colors Available: Orange, Black and green

Diamond Smooth Fence

Size: 4'×100'

Weight: 30 lbs per roll

Colors Available: Orange, Black and green

Contractor grade product line

More fencing options such as agricultural and animal fencing available upon request.

The information contained herein has been compiled by Terrafix Geosynthetics Inc. and is, to the best of knowledge, true and accurate. All suggestions and recommendations are offered without guarantee. Final determination of suitability for use based on any information provided is the sole responsibility of the user. There is no implied or expressed warranty of merchantability or fitness of the product for the contemplated use.



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Fax (416) 674-1159



Diamond Smooth Fence

Filter sock media is composed of non-composted wood chips manufactured from Virgin Wood Chips or Clean Recycled Wood Stock.

Filter sock media is suitable for water processing, slowing down flow through rate without damming.

Filter sock media is suitable for sediment and erosion control.

Filter sock media material sizing specification 90% between 3/8" (9.53mm) to 2" (50mm)

Filter sock media is pH neutral, Environmentally Sound, Weed Free, Seed Free, and Disease Free.



8" Ultra			
Construction	Tubular Knit		
Chemical Reaction	Inert to most soil chemicals including Alkaline, weak acids and salt		
Properties	Fibre Material	Multi-Filament Polypropylene	
	Colour	Black	
	Melting Point	166°C	330°F
	UV Protection	Photodegradable / UV Stabilized	
	Approx. Life Expectancy*	2 - 4 Years	
	Mesh Opening	1/8"	
Strength Properties	ASTM 6241 & ASTM 5035	222 psi	

Weighs and packaging may vary slightly in different production runs.

All rolls can be shipped individually or combined on a pallet

*Life Expectancy will vary with your type of application, region and local climactic conditions and should be used as a guid only.

**Measurements are obtained from tests done in lab conditions and vary depending on accuracy of in field applications

All information supplied is considered to be true and accurate. Any non-standard conditions that may affect the application of the fabrics should be consulted with Silt Sock.

12" Ultra			
Construction	Tubular Knit		
Chemical Reaction	Inert to most soil chemicals including Alkaline, weak acids and salt		
Properties	Fibre Material	Multi-Filament Polypropylene	
	Colour	Black	
	Melting Point	166°C	330°F
	UV Protection	Photodegradable / UV Stabilized	
	UV Resistance ASTM G-155	100% at 1000 hr.	
	Approx. Life Expectancy*	2 - 4 Years	
	Mesh Opening	1/8"	
Strength Properties	ASTM 6241 & ASTM 5035	222 psi	

Weighs and packaging may vary slightly in different production runs.

All rolls can be shipped individually or combined on a pallet

*Life Expectancy will vary with your type of application, region and local climactic conditions and should be used as a guid only.

**Measurements are obtained from tests done in lab conditions and vary depending on accuracy of in field applications

All information supplied is considered to be true and accurate. Any non-standard conditions that may affect the application of the fabrics should be consulted with Silt Sock.

18" Ultra			
Construction	Tubular Knit		
Chemical Reaction	Inert to most soil chemicals including Alkaline, weak acids and salt		
Properties	Fibre Material	Multi-Filament Polypropylene	
	Colour	Black	
	Melting Point	166°C	330°F
	UV Protection	Photodegradable / UV Stabilized	
	UV Resistance ASTM G-155	100% at 1000 hr.	
	Approx. Life Expectancy*	2 - 4 Years	
	Mesh Opening	1/8"	
Strength Properties	ASTM 6241 & ASTM 5035	222 psi	

Weighs and packaging may vary slightly in different production runs.

All rolls can be shipped individually or combined on a pallet

*Life Expectancy will vary with your type of application, region and local climactic conditions and should be used as a guid only.

**Measurements are obtained from tests done in lab conditions and vary depending on accuracy of in field applications

All information supplied is considered to be true and accurate. Any non-standard conditions that may affect the application of the fabrics should be consulted with Silt Sock.

Canada's leader of complete geosynthetic solutions

terrafix[®]
geosynthetics inc.

SILTSACK[®]
Catch Basin

To view our complete product line visit us at www.terrafixgeo.com

terrafix[®]

geosynthetics inc.

Construction Sequence

To install the SILTSACK[®] in the catch basin, remove the grate and place the sack in the opening. Hold approximately six inches of the sack outside the frame. This is the area of the lifting straps. Replace the grate to hold the sack in place.

The SILTSACK[®] is full and should be emptied when the restraint cord is no longer visible.

To remove the SILTSACK[®], take two pieces of 1" diameter rebar and place through the lifting loops on each side of the sack to facilitate the lifting of the SILTSACK[®].

To empty the SILTSACK[®], place it where the contents will be collected. Place the rebar through the lift straps (connected to the bottom of the sack) and lift. This will turn the SILTSACK[®] inside out and empty the contents. Clean out and rinse. Return the SILTSACK[®] to its original shape and place back in the basin.

The SILTSACK[®] is reusable. Once the construction cycle is complete, remove the SILTSACK[®] from the basin and clean. The SILTSACK[®] should be stored out of the sunlight until needed on another project.



SILTSACK[®] Specifications

Control of Sediment Entering Catch Basins for Storm Water Management

The SILTSACK[®] will be manufactured from a woven polypropylene geotextile and sewn by a double needle machine, using a high strength nylon thread.

The SILTSACK[®] seams have a certified average wide width strength per ASTM D-4884 standards as follows:

SILTSACK [®] Style	Test Method	Minimum Values
Regular Flow	ASTM D-4884	165.0 lbs./in

The SILTSACK[®] will be manufactured to fit the opening of the catch basin or drop inlet. The SILTSACK[®] will have the following features: two dump straps attached at the bottom to facilitate the emptying of the SILTSACK[®]; the SILTSACK[®] will also have lifting loops as an integral part of the system to be used to lift the SILTSACK[®] from the basin. The SILTSACK[®] will have a restraint cord approximately halfway up the sack to keep the sides away from the catch basin walls, this yellow cord is also a visual means of indicating when the sack should be emptied. Once the strap is covered with sediment, the SILTSACK[®] should be emptied, cleaned, and placed back into the basin.

The geotextile fabric will be woven polypropylene fabric with the following properties:

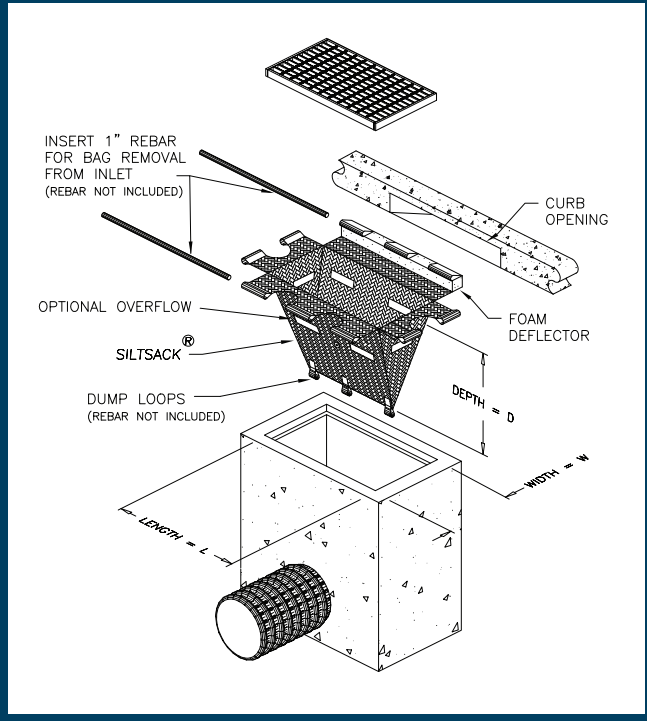
SILTSACK[®] Regular Flow

Property	Test Method	Minimum Value
Grab Tensile	ASTM D-4632	300 lbs.
Grab Elongation	ASTM D-4632	20%
Puncture	ASTM D-4633	120 lbs.
Mullen Burst	ASTM D-3786	800 psi
Trapezoid Tear	ASTM D-4533	120 lbs.
UV Resistance	ASTM D-4355	80%
Apparent Opening	ASTM D-4751	40 US Sieve
Flow Rate	ASTM D-4491	40 Gal/Min/Ft ²
Permittivity	ASTM D-4491	0.55 sec ⁻¹

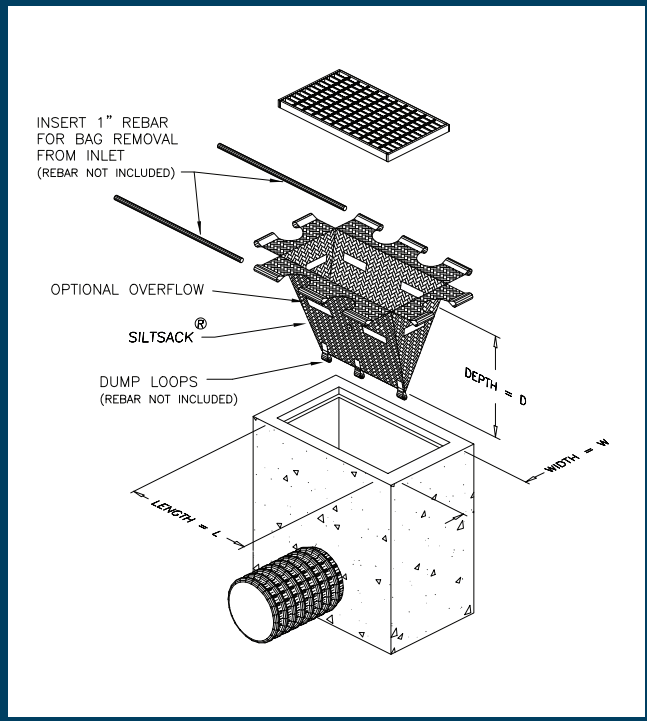
All properties are minimum average roll values

Catch Basin Sediment Capture Device

Typical Siltsack® Construction - Type A



Typical Siltsack® Construction - Type B





Catch Basin Sediment Capture Device



SILTSACK® Catch Basin

SILTSACK® is a simple and cost-effective solution to prevent clogging of catch basins.

SILTSACK® is a sediment control device used to prevent silt and sediment from entering your drainage system. SILTSACK® traps the silt / sediment but allows water to pass through into the sewer. SILTSACK® can be used as a primary or secondary sediment control device to prevent failure of drainage system due to clogging with silt / sedimentation. Maintenance of the SILTSACK® on a regular basis will ensure that the SILTSACK® will function properly.

Available in two styles:

- Regular flow
- High flow



Basic Installation Instructions

- Remove drain gate
- Insert SILTSACK®
- Replace grate to hold SILTSACK® in position

Benefits

- SILTSACK® traps silt & sediment
- Saves money and time

Routine Inspection of the SILTSACK®'s collected sediment level is important to prevent over-flow of silt and sediment.

SILTSACK® should be inspected every 2-3 weeks and after every major storm.

The yellow restraint cord should be visible at all times. If the cord is covered with sediment, the SILTSACK® should be emptied.



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E.2

Erosion and Sediment Control Reporting and Submission Tracking



Chedoke Creek Dredging - Reporting and Submission Tracking

Erosion and Sediment Control

Date	Inspector	Current and <i>Past 24-hr Weather</i>	Condition of Erosion and Sediment Controls
3-Aug-22	Pri Fernando	Partly cloudy.... <i>Mainly Sunny</i>	Installation of silt fence as per plan in DMMA
4-Aug-22	Pri Fernando	Overcast.... <i>Cloudy</i>	Installation of silt fence as per plan in DMMA
8-Aug-22	Pri Fernando	Cloudy... <i>Cloudy</i>	Installation of silt traps on DCBs(2ea) at DMMA
10-Aug-22	Pri Fernando	Mainly Sunny... <i>Overcast</i>	Installation of silt fence as per plan in DMMA
22-Aug-22	Pri Fernando	Cloudy... <i>Rainy</i>	No issues on ESC measures--All Functional
28-Sep-22	Pri Fernando	Partly cloudy... <i>Cloudy</i>	No issues on ESC measures--All Functional
14-Oct-22	Pri Fernando	Light rain.... <i>Light Rain/Cloudy</i>	No issues on ESC measures--All Functional
9-Nov-22	Pri Fernando	Mainly clear... <i>Mainly clear</i>	No issues on ESC measures--All Functional
5-Jul-23	Pri Fernando	Scttared clouds... <i>Scttared clouds</i>	Silt fence upgraded as per plan--Acceptable
13-Jul-23	Pri Fernando	Cloudy... <i>Light rain</i>	Minor damaged on silt fence--Functional
27-Jul-23	Pri Fernando	Overcast... <i>Rainy</i>	CB Silt traps replacement needed.
28-Jul-23	Pri Fernando	Few clouds... <i>Cloudy</i>	CB Silt traps were replaced--All functional
15-Aug-23	Pri Fernando	Cloudy/Rainy... <i>Partly cloudy</i>	No issues on ESC measures--All Functional
16-Aug-23	Pri Fernando	Passing clouds... <i>Rainy</i>	CB Silt Traps replacement required
21-Aug-23	Pri Fernando	Partly cloudy... <i>Cloudy</i>	Functional- CB Silt Traps replaced
24-Aug-23	Pri Fernando	Light drizzle... <i>Cloudy/Rainy</i>	Functional- CB Silt Traps in good condition
25-Aug-23	Pri Fernando	Overcast... <i>Rainy</i>	No issues on ESC measures--All Functional
7-Sep-23	Pri Fernando	Partly cloudy... <i>Mostly clear</i>	Functional- CB silt Traps in good condition
14-Sep-23	Pri Fernando	Sunny... <i>Unsettle/Cloudy</i>	Silt socks Installed as required--Good condition
26-Sep-23	Pri Fernando	Cloudy... <i>Sun & clouds</i>	No issues on ESC measures--All Functional
5-Oct-23	Pri Fernando	Overcast.... <i>Clear</i>	No issues on ESC measures--All Functional
10-Oct-23	Pri Fernando	Overcast.... <i>Partly cloudy</i>	No issues on ESC measures--All Functional
16-Oct-23	Pri Fernando	Mostly cloudy... <i>Light rain/cloudy</i>	No issues on ESC measures--All Functional
30-Oct-23	Pri Fernando	Light rain... <i>Mostly Cloudy</i>	No issues on ESC measures--All Functional
9-Nov-23	Pri Fernando	Overcast.... <i>Rain</i>	SF maintenance required--All functional
29-Nov-23	Pri Fernando	Light snow... <i>Overcast/Light snow</i>	No issues on ESC measures--All Functional
28-Dec-23	Pri Fernando	Light Rain... <i>Rain</i>	No issues on ESC measures--All Functional
8-Jan-24	Pri Fernando	Cloudy... <i>Overcast</i>	No issues on ESC measures--All Functional
18-Jan-24	Pri Fernando	Light Snow... <i>Passing clouds</i>	No issues on ESC measures--All Functional

APPENDIX

F: TURBIDITY RESULTS



Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 07/17/23 to 07/23/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
17-Jul-23	1:00 PM	5:30 PM	Y	N	Natural fluctuation
18-Jul-23	1:00 PM	6:00 PM	N	N	-
19-Jul-23	8:30 AM	6:00 PM	Y	N	Natural fluctuation
20-Jul-23	8:30 AM	4:00 PM	Y	N	Natural fluctuation c/w adverse weather
21-Jul-23	-	-	-	-	No dredging activities
22-Jul-23	-	-	-	-	No dredging activities
23-Jul-23	-	-	-	-	No dredging activities

*Does not include downtime.

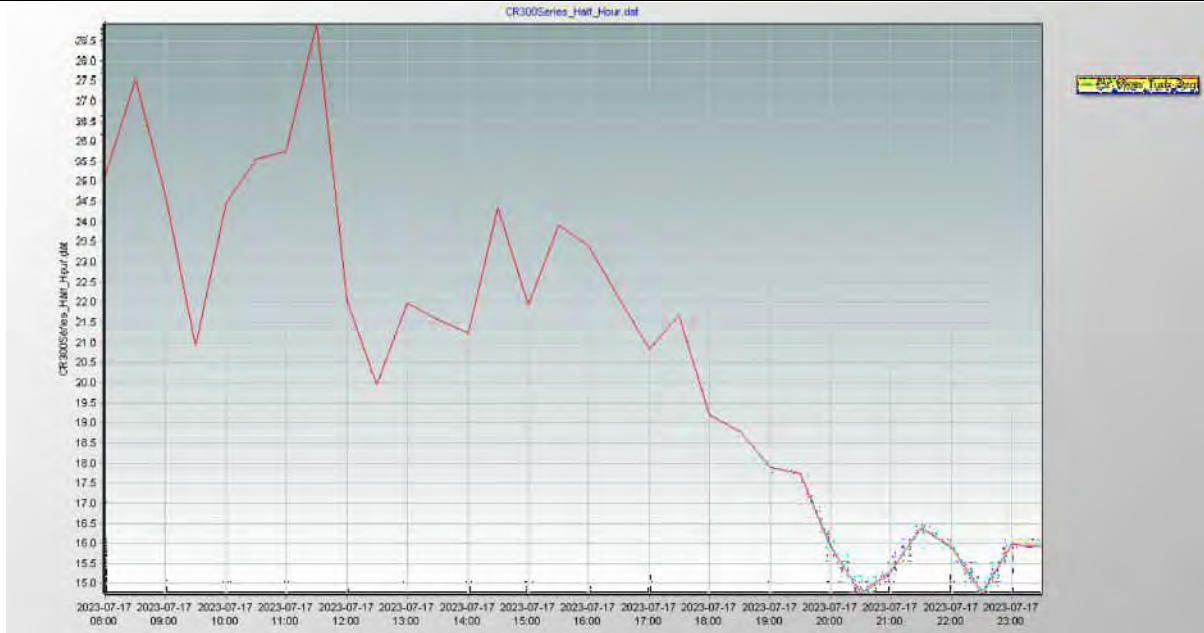
Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.

***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Campbell Scientific ClariVUE10 turbidity monitoring system	17-Jul-23
Start of Dredging Activities (hh:mm):	1:00 PM
End of Dredging Activities (hh:mm):	5:30 PM
Check Points	
7:00 AM	NA
7:30 AM	NA
8:00 AM	25.1
8:30 AM	27.6
9:00 AM	24.7
9:30 AM	20.9
10:00 AM	24.5
10:30 AM	25.6
11:00 AM	25.8
11:30 AM	28.9
12:00 PM	22.0
12:30 PM	20.0
1:00 PM	22.0
1:30 PM	21.6
2:00 PM	21.2
2:30 PM	24.4
3:00 PM	21.9
3:30 PM	23.9
4:00 PM	23.4
4:30 PM	22.1
5:00 PM	20.9
5:30 PM	21.7
6:00 PM	19.2
6:30 PM	18.8
7:00 PM	17.9
Exceedance (Y/N)	N
Exceedance contributed to Dredging Activities (Y/N)	N
Comments	NA



Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.

***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	17-Jul-23	17-Jul-23
	Background (taken during non-operating dredging hours)	Daily Check
Monitoring Location #1		
Time (hh:mm)	8:07 AM	2:44 PM
Depth below water surface (meters)	0.75 m	0.75 m
NTU	25.2	31.6
NTU Increase Limit (10%)	27.7	Exceeded
Corresponding TSS	34.6	44.7
TSS Increase Limit (25 mg/L - 24 Hour Period)	59.6	Not exceeded
TSS Increase Limit (5 mg/L - 1 to 30 days)	39.6	NA - see comment below
Exceedance (Y/N)	-	Y
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	Upstream monitoring location also increased. Wind and current fluctuated throughout the day. Turbidity increase due to natural fluctuation.
Monitoring Location #2		
Time (hh:mm)	8:16 AM	2:54 PM
Depth below water surface (meters)	0.50 m	0.50 m
NTU	27.4	28.5
NTU Increase Limit (10%)	30.1	Not exceeded
Corresponding TSS	38.1	39.8
TSS Limit (25 mg/L - 24 Hour Period)	63.1	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	43.1	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	Sample taken adjacent to dredge work area.
Monitoring Location #3		
Time (hh:mm)	8:21 AM	3:00 PM
Depth below water surface (meters)	0.75 m	0.75 m
NTU	29.3	24.6
NTU Increase Limit (10%)	32.2	Not exceeded
Corresponding TSS	41.1	33.7
TSS Limit (25 mg/L - 24 Hour Period)	66.1	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	46.1	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA
Monitoring Location #4		
Time (hh:mm)	8:27 AM	3:20 PM
Depth below water surface (meters)	0.5 m	0.5 m
NTU	25.6	33.1
NTU Increase Limit (10%)	28.2	Exceeded
Corresponding TSS	35.3	47.1
TSS Limit (25 mg/L - 24 Hour Period)	60.3	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	40.3	NA - see comment below
Exceedance (Y/N)	-	Y
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	Monitoring location upstream of dredging activities. Wind and current fluctuated throughout the day. Turbidity increase due to natural fluctuation.

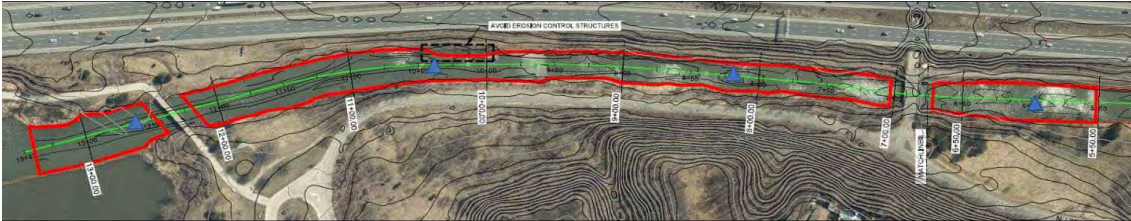
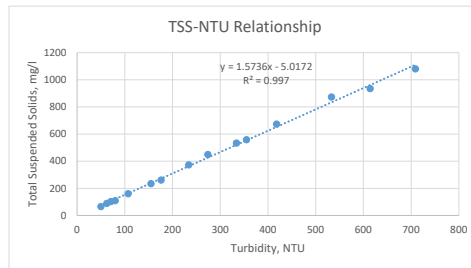


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.

***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Campbell Scientific ClariVUE10 turbidity monitoring system		18-Jul-23
Start of Dredging Activities (hh:mm):		1:00 PM
End of Dredging Activities (hh:mm):		6:00 PM
Check Points		
7:00 AM		22.1
7:30 AM		22.1
8:00 AM		22.7
8:30 AM		19.3
9:00 AM		20.0
9:30 AM		20.7
10:00 AM		21.1
10:30 AM		19.1
11:00 AM		22.0
11:30 AM		21.3
12:00 PM		26.3
12:30 PM		21.1
1:00 PM		18.9
1:30 PM		19.1
2:00 PM		14.8
2:30 PM		15.9
3:00 PM		18.2
3:30 PM		20.1
4:00 PM		21.4
4:30 PM		24.4
5:00 PM		24.4
5:30 PM		23.0
6:00 PM		24.3
6:30 PM		25.5
7:00 PM		23.3
Exceedance (Y/N)		N
Exceedance contributed to Dredging Activities (Y/N)		N
Comments		NA



Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	18-Jul-23	18-Jul-23
	Background (taken during non-operating dredging hours)	Daily Check
Monitoring Location #1		
Time (hh:mm)	7:53 AM	4:55 PM
Depth below water surface (meters)	0.75 m	0.75 m
NTU	33.4	30.9
NTU Increase Limit (10%)	36.7	Not exceeded
Corresponding TSS	47.5	43.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	72.5	Not exceeded
TSS Increase Limit (5 mg/L - 1 to 30 days)	52.5	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA
Monitoring Location #2		
Time (hh:mm)	8:02 AM	5:04 PM
Depth below water surface (meters)	0.50 m	0.50 m
NTU	31.9	31.1
NTU Increase Limit (10%)	35.1	Not exceeded
Corresponding TSS	45.2	43.9
TSS Limit (25 mg/L - 24 Hour Period)	70.2	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	50.2	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA
Monitoring Location #3		
Time (hh:mm)	8:12 AM	5:13 PM
Depth below water surface (meters)	0.75 m	0.75 m
NTU	32.9	26.2
NTU Increase Limit (10%)	36.2	Not exceeded
Corresponding TSS	46.8	36.2
TSS Limit (25 mg/L - 24 Hour Period)	71.8	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	51.8	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA
Monitoring Location #4		
Time (hh:mm)	8:21 AM	5:19 PM
Depth below water surface (meters)	0.5 m	0.5 m
NTU	27.0	23.4
NTU Increase Limit (10%)	29.7	Not exceeded
Corresponding TSS	37.5	31.8
TSS Limit (25 mg/L - 24 Hour Period)	62.5	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	42.5	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA

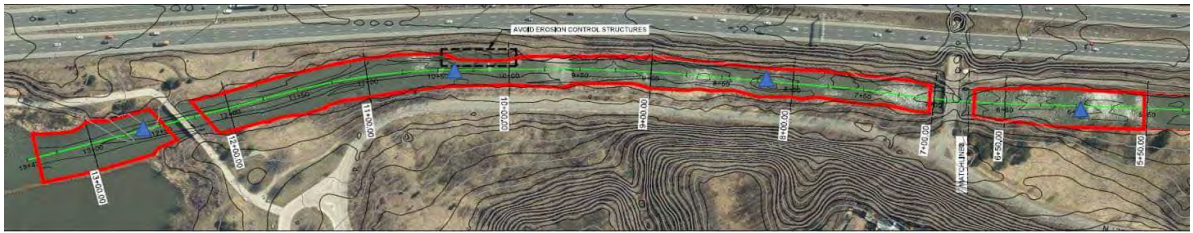
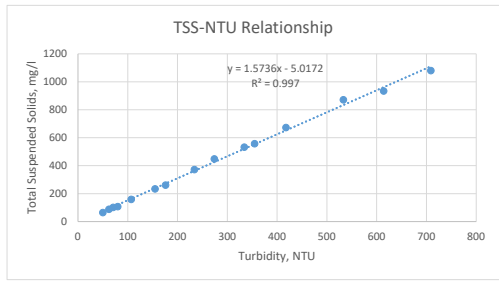


Figure 1: Monitoring Locations 1 through 4 (North to South)

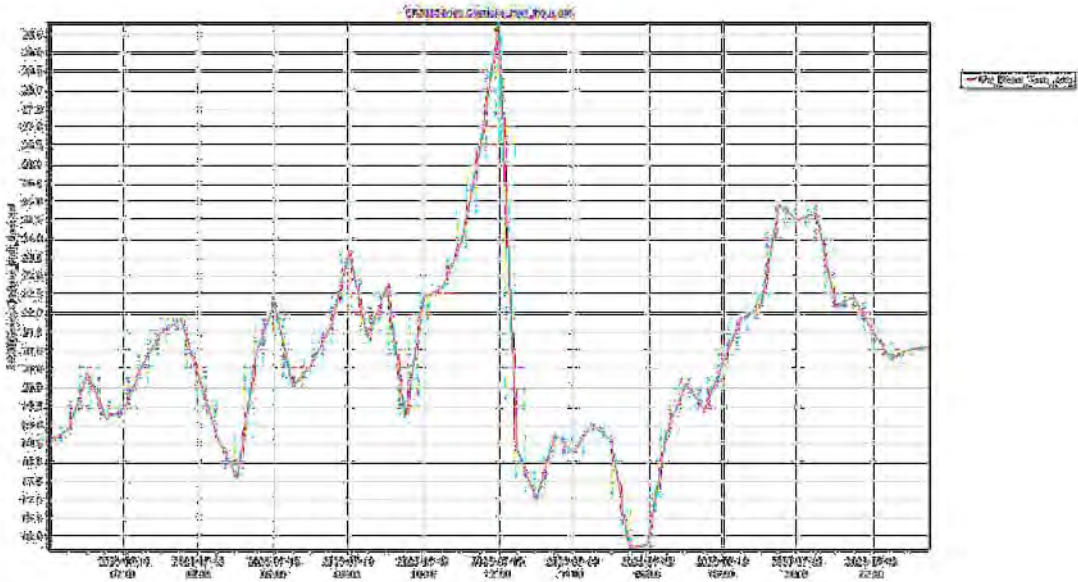


Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.

***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

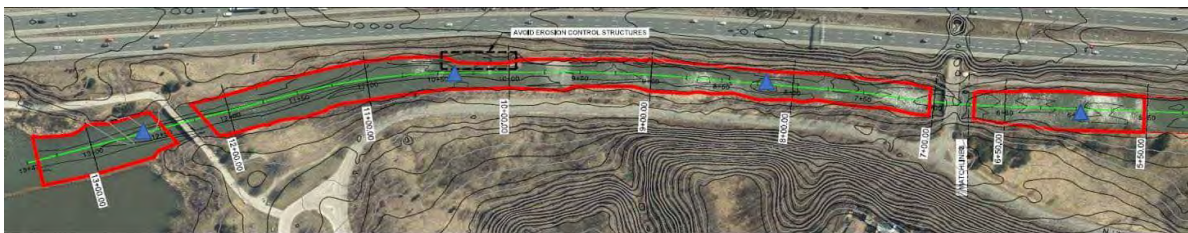
Campbell Scientific ClariVUE10 turbidity monitoring system		19-Jul-23
Start of Dredging Activities (hh:mm):		8:30 AM
End of Dredging Activities (hh:mm):		6:00 PM
Check Points		
7:00 AM		20.7
7:30 AM		21.6
8:00 AM		23.7
8:30 AM		21.3
9:00 AM		22.7
9:30 AM		19.2
10:00 AM		22.4
10:30 AM		22.7
11:00 AM		23.9
11:30 AM		26.4
12:00 PM		29.8
12:30 PM		18.4
1:00 PM		17.0
1:30 PM		18.8
2:00 PM		18.3
2:30 PM		19.0
3:00 PM		18.6
3:30 PM		15.7
4:00 PM		15.8
4:30 PM		18.8
5:00 PM		20.1
5:30 PM		19.4
6:00 PM		20.7
6:30 PM		21.9
7:00 PM		22.2
Exceedance (Y/N)		Y
Exceedance contributed to Dredging Activities (Y/N)		N
Comments	Creek turbidity naturally fluctuates. No exceedance detected at surrounding monitoring locations (i.e. #2 an #3)	



Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	19-Jul-23	19-Jul-23
	Background (taken during non-operating dredging hours)	Daily Check
Monitoring Location #1		
Time (hh:mm)	7:53 AM	12:47 PM
Depth below water surface (meters)	0.75 m	0.75 m
NTU	33.5	29.4
NTU Increase Limit (10%)	36.9	Not exceeded
Corresponding TSS	47.7	41.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	72.7	Not exceeded
TSS Increase Limit (5 mg/L - 1 to 30 days)	52.7	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA
Monitoring Location #2		
Time (hh:mm)	8:00 AM	12:56 PM
Depth below water surface (meters)	0.50 m	0.50 m
NTU	27.6	29.4
NTU Increase Limit (10%)	30.4	Not exceeded
Corresponding TSS	38.4	41.2
TSS Limit (25 mg/L - 24 Hour Period)	63.4	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	43.4	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	Dredge working between Monitoring Location #2 and Monitoring Location #3.
Monitoring Location #3		
Time (hh:mm)	8:07 AM	1:32 PM
Depth below water surface (meters)	0.75 m	0.75 m
NTU	28.5	31.1
NTU Increase Limit (10%)	31.4	Not exceeded
Corresponding TSS	39.8	43.9
TSS Limit (25 mg/L - 24 Hour Period)	64.8	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	44.8	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	Dredge working between Monitoring Location #2 and Monitoring Location #3.
Monitoring Location #4		
Time (hh:mm)	8:10 AM	1:48 PM
Depth below water surface (meters)	0.5 m	0.5 m
NTU	24.0	25.9
NTU Increase Limit (10%)	26.4	Not exceeded
Corresponding TSS	32.7	35.7
TSS Limit (25 mg/L - 24 Hour Period)	57.7	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	37.7	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA

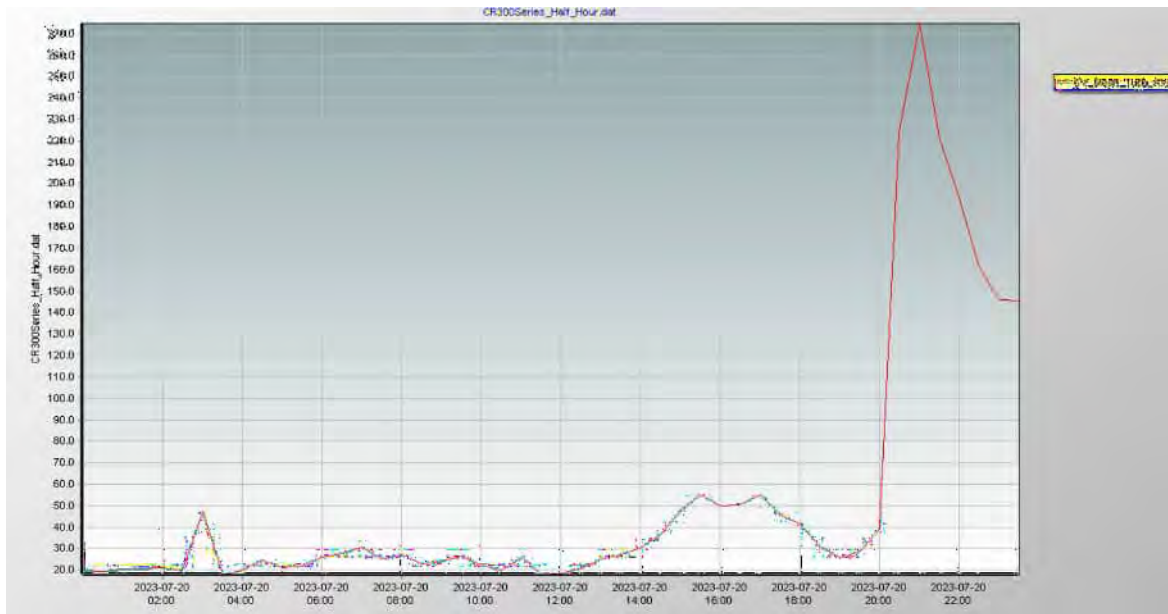


Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.

***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Campbell Scientific ClariVUE10 turbidity monitoring system		20-Jul-23
Start of Dredging Activities (hh:mm):		8:30 AM
End of Dredging Activities (hh:mm):		4:00 PM
Check Points		
7:00 AM		30.7
7:30 AM		25.0
8:00 AM		27.1
8:30 AM		22.9
9:00 AM		24.0
9:30 AM		26.3
10:00 AM		22.2
10:30 AM		19.9
11:00 AM		25.6
11:30 AM		17.9
12:00 PM		18.3
12:30 PM		20.6
1:00 PM		24.8
1:30 PM		27.3
2:00 PM		30.4
2:30 PM		36.5
3:00 PM		47.8
3:30 PM		55.1
4:00 PM		49.8
4:30 PM		50.3
5:00 PM		55.2
5:30 PM		45.5
6:00 PM		41.8
6:30 PM		30.9
7:00 PM		25.9
Exceedance (Y/N)		Y
Exceedance contributed to Dredging Activities (Y/N)		N
Comments	Wind and current picked up throughout the day. Heavy rainfall and high wind gusts ensued late afternoon into the evening. Exceedances due to natural circumstances.	



Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.

***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	20-Jul-23	20-Jul-23
	Background (taken during non-operating dredging hours)	Daily Check
Monitoring Location #1		
Time (hh:mm)	7:40 AM	1:06 PM
Depth below water surface (meters)	0.75 m	0.75 m
NTU	33.3	28.5
NTU Increase Limit (10%)	36.6	Not exceeded
Corresponding TSS	47.4	39.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	72.4	Not Exceeded
TSS Increase Limit (5 mg/L - 1 to 30 days)	52.4	Not Exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA
Monitoring Location #2		
Time (hh:mm)	7:45 AM	1:16 PM
Depth below water surface (meters)	0.50 m	0.50 m
NTU	31.7	34.5
NTU Increase Limit (10%)	34.9	Not exceeded
Corresponding TSS	44.9	49.3
TSS Limit (25 mg/L - 24 Hour Period)	69.9	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	49.9	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA
Monitoring Location #3		
Time (hh:mm)	7:52 AM	1:30 PM
Depth below water surface (meters)	0.75 m	0.75 m
NTU	35.5	38.0
NTU Increase Limit (10%)	39.1	Not exceeded
Corresponding TSS	50.8	54.8
TSS Limit (25 mg/L - 24 Hour Period)	75.8	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	55.8	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	Dredge working between overpass bridge and Monitoring Location #3.
Monitoring Location #4		
Time (hh:mm)	7:57 AM	1:56 PM
Depth below water surface (meters)	0.5 m	0.5 m
NTU	26.4	27.6
NTU Increase Limit (10%)	29.0	Not exceeded
Corresponding TSS	36.5	38.4
TSS Limit (25 mg/L - 24 Hour Period)	61.5	Not exceeded
TSS Limit (5 mg/L - 1 to 30 days)	41.5	Not exceeded
Exceedance (Y/N)	-	N
Exceedance contributed to Dredging Activities (Y/N)	-	N
Comments (if applicable)	-	NA

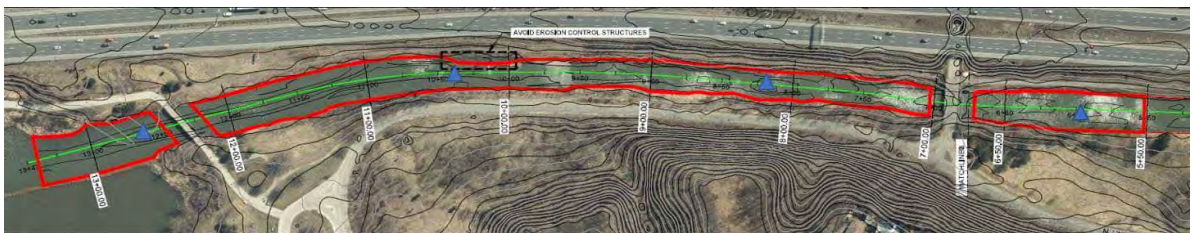
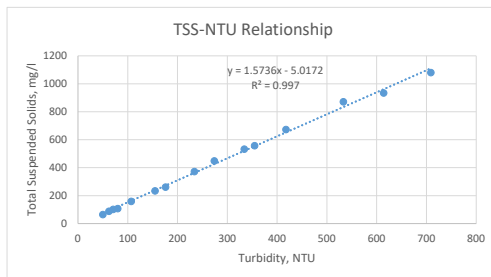


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 07/24/23 to 07/30/23

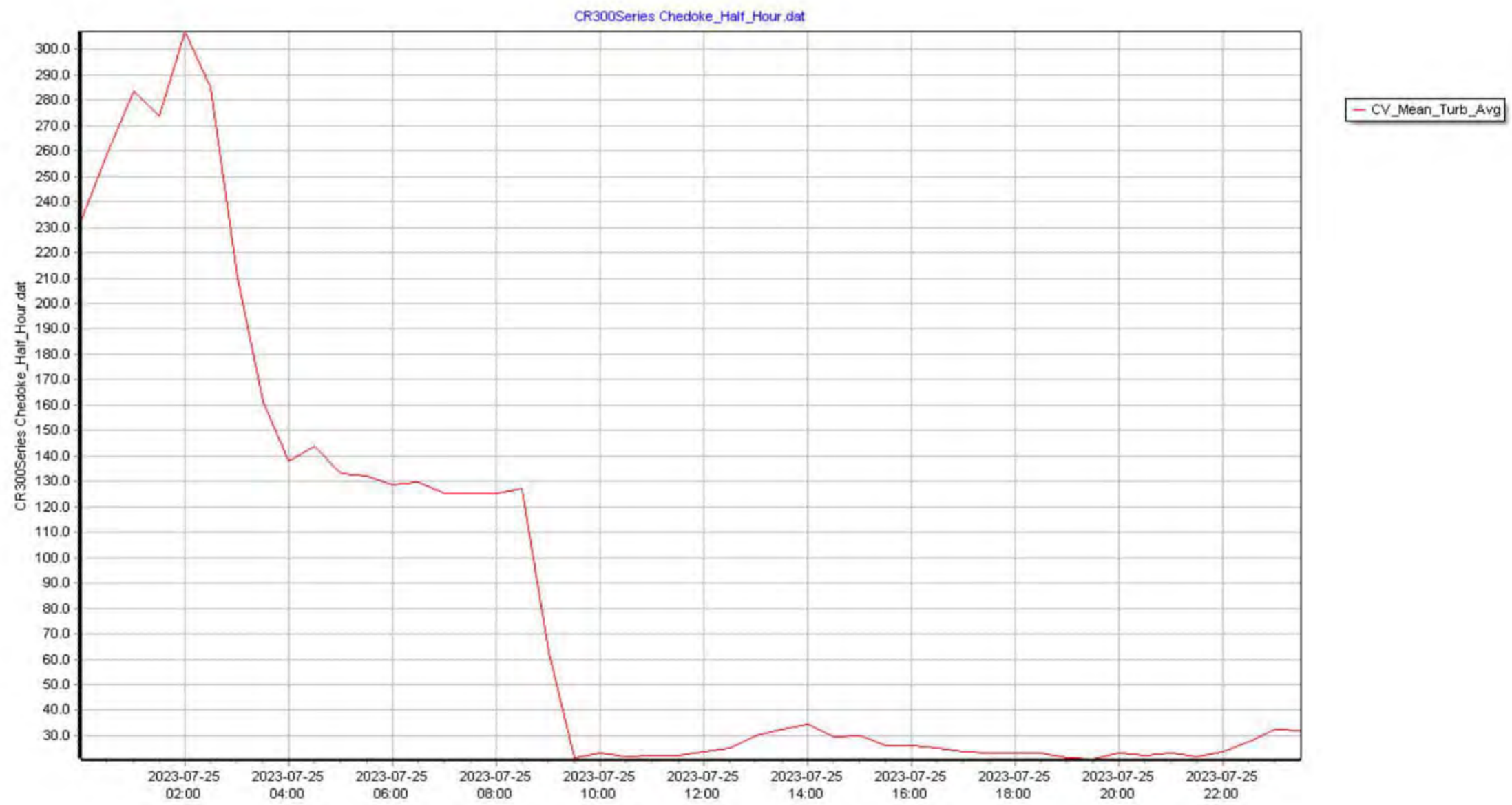
Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
24-Jul-23	-	-	-	-	No dredging activities
25-Jul-23	4:00 PM	7:00 PM	N	N	First day of hydraulic dredging
26-Jul-23	12:00 PM	5:00 PM	N	N	Stationary monitor damaged from extreme weather event
27-Jul-23	-	-	-	-	No dredging activities
28-Jul-23	8:00 AM	2:30 PM	N	N	Dredging activities stopped at 2:30 pm due to incoming rain (holding pond approaching storage capacity)
29-Jul-23	-	-	-	-	No dredging activities
30-Jul-23	11:00 AM	12:00 PM	N	N	Dredging delayed in morning due to CSO. Dredging halted at around 11:30am due to pipe damage.

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek	
***Turbidity is in excess if any monitor detects a 10% increase from background levels. ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.	
Campbell Scientific ClariVUE10 turbidity monitoring system	25-Jul-23
Start of Dredging Activities (hh:mm):	4:00 PM
End of Dredging Activities (hh:mm):	7:00 PM
Check Points	
7:00 AM	125.4
7:30 AM	125.5
8:00 AM	125.3
8:30 AM	127.2
9:00 AM	62.9
9:30 AM	21.3
10:00 AM	23.0
10:30 AM	21.8
11:00 AM	22.1
11:30 AM	21.9
12:00 PM	23.4
12:30 PM	25.2
1:00 PM	29.9
1:30 PM	32.6
2:00 PM	34.3
2:30 PM	29.5
3:00 PM	30.0
3:30 PM	26.2
4:00 PM	25.9
4:30 PM	25.1
5:00 PM	23.7
5:30 PM	23.0
6:00 PM	23.1
6:30 PM	23.0
7:00 PM	21.1
Exceedance (Y/N)	N
Exceedance contributed to Dredging Activities (Y/N)	N
Comments	Heavy rainfall overnight and into early morning of July 25/23.



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	25-Jul-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:01 AM	8:14 AM	8:23 AM	8:28 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	29.5	27.5	26.9	23.8
NTU Increase Limit (10%)	32.5	30.3	29.6	26.2
Corresponding TSS	41.4	38.3	37.3	32.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	66.4	63.3	62.3	57.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	46.4	43.3	42.3	37.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	5:20 PM	5:33 PM	NA	NA
Depth below water surface (meters)	0.75 m	0.50 m	NA	NA
NTU	31.6	27.2	NA	NA
Corresponding TSS	44.7	37.8	NA	NA
TSS Limit (25 mg/L - 24 Hour Period)	No exceedance	No exceedance	NA	NA
TSS Limit (5 mg/L - 1 to 30 days)	No exceedance	No exceedance	NA	NA
Exceedance (Y/N)	N	N	NA	NA
Exceedance contributed to Dredging Activities (Y/N)	N	N	NA	NA
Comments (if applicable)	-	-	NA	NA

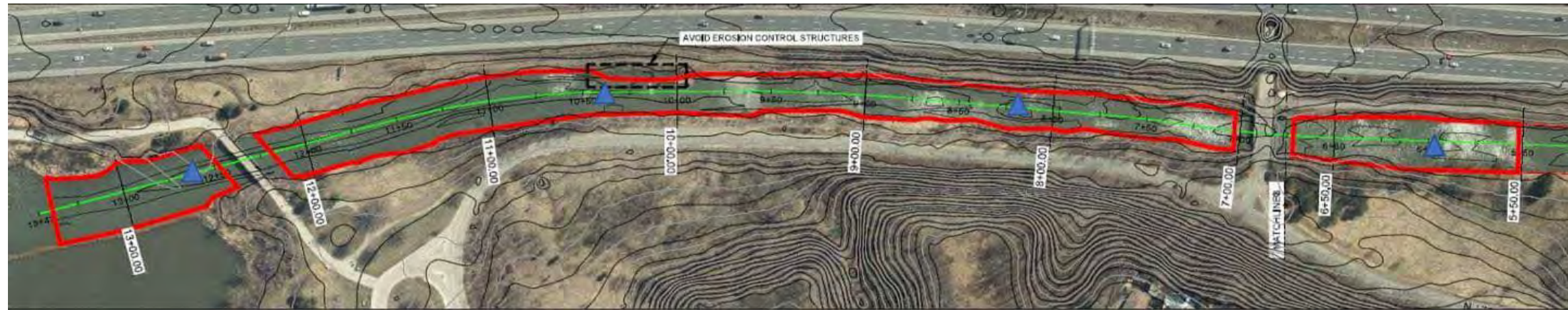
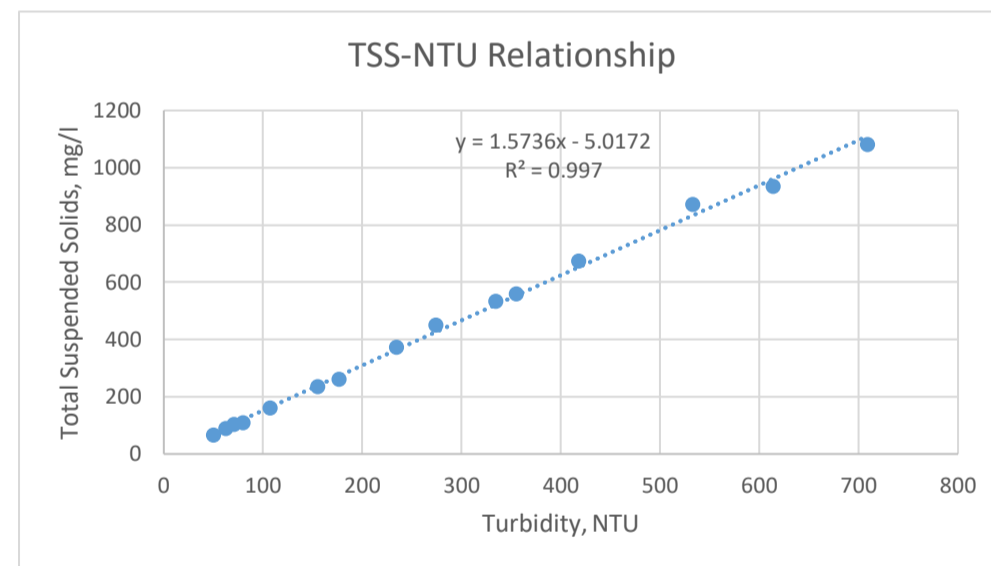
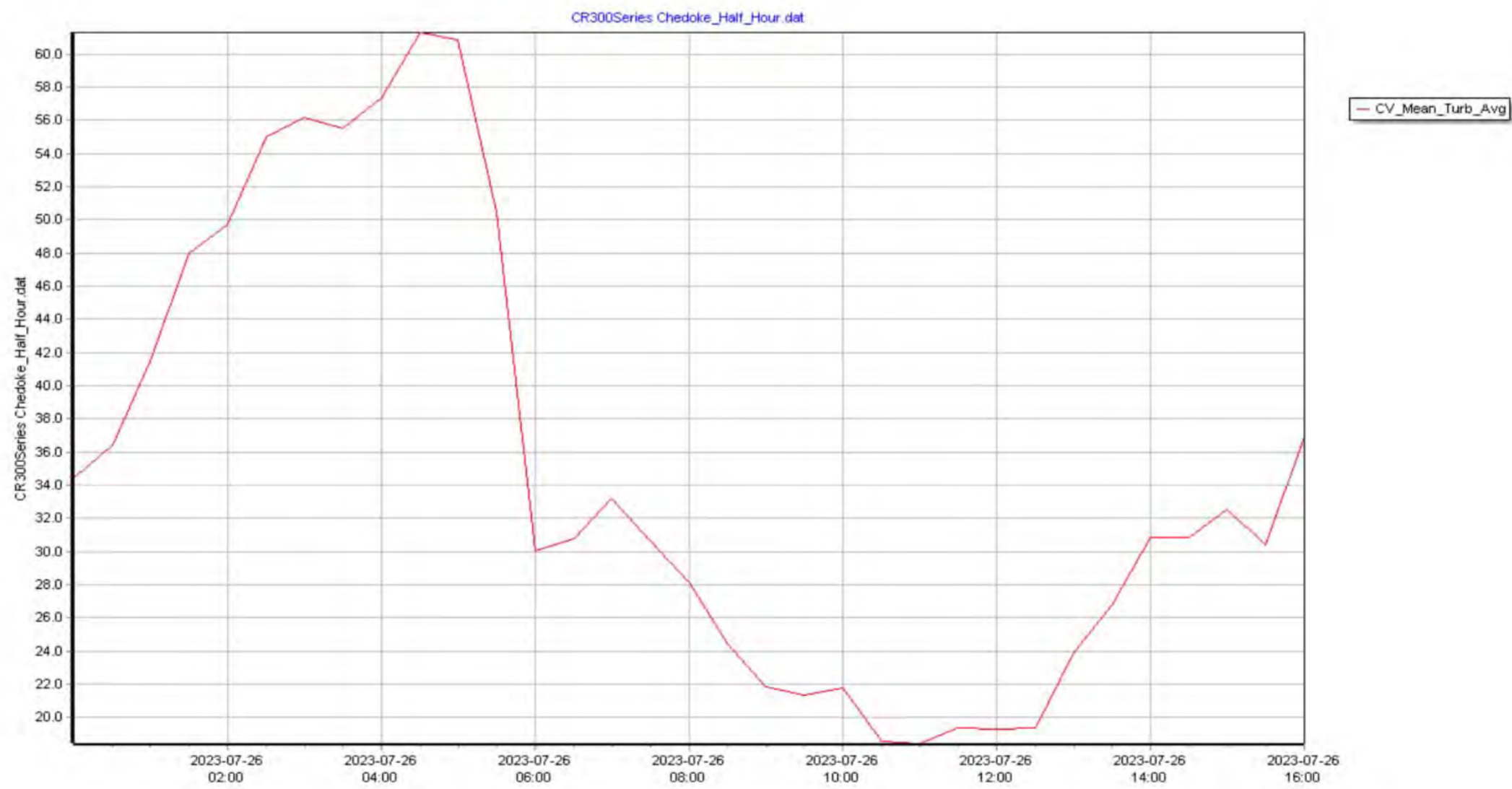


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek	
***Turbidity is in excess if any monitor detects a 10% increase from background levels. ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.	
Campbell Scientific ClariVUE10 turbidity monitoring system	26-Jul-23
Start of Dredging Activities (hh:mm):	12:00 PM
End of Dredging Activities (hh:mm):	5:00 PM
Check Points	
7:00 AM	33.2
7:30 AM	30.6
8:00 AM	28.2
8:30 AM	24.4
9:00 AM	21.9
9:30 AM	21.3
10:00 AM	21.8
10:30 AM	18.6
11:00 AM	18.4
11:30 AM	19.4
12:00 PM	19.3
12:30 PM	19.4
1:00 PM	23.9
1:30 PM	26.7
2:00 PM	30.9
2:30 PM	30.8
3:00 PM	32.5
3:30 PM	30.4
4:00 PM	37.0
4:30 PM	-
5:00 PM	-
5:30 PM	-
6:00 PM	-
6:30 PM	-
7:00 PM	-
Exceedance (Y/N)	N
Exceedance contributed to Dredging Activities (Y/N)	N
Comments	Last available readings on data logger (lost connection due to damage during extreme weather)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
26-Jul-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:26 AM	8:37 AM	8:53 AM	9:10 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	35.3	44.4	26.5	24.2
NTU Increase Limit (10%)	38.8	48.8	29.2	26.6
Corresponding TSS	50.5	64.9	36.7	33.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	75.5	89.9	61.7	58.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	55.5	69.9	41.7	38.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:11 PM	2:22 PM	NA	NA
Depth below water surface (meters)	0.75 m	0.50 m	NA	NA
NTU	31.3	25.1	NA	NA
NTU Increase Limit (10%)	34.4	27.6	NA	NA
Corresponding TSS	44.2	34.5	NA	NA
Exceedance (Y/N)	N	N	NA	NA
Exceedance contributed to Dredging Activities (Y/N)	N	N	NA	NA
Comments (if applicable)	-	-	NA	NA

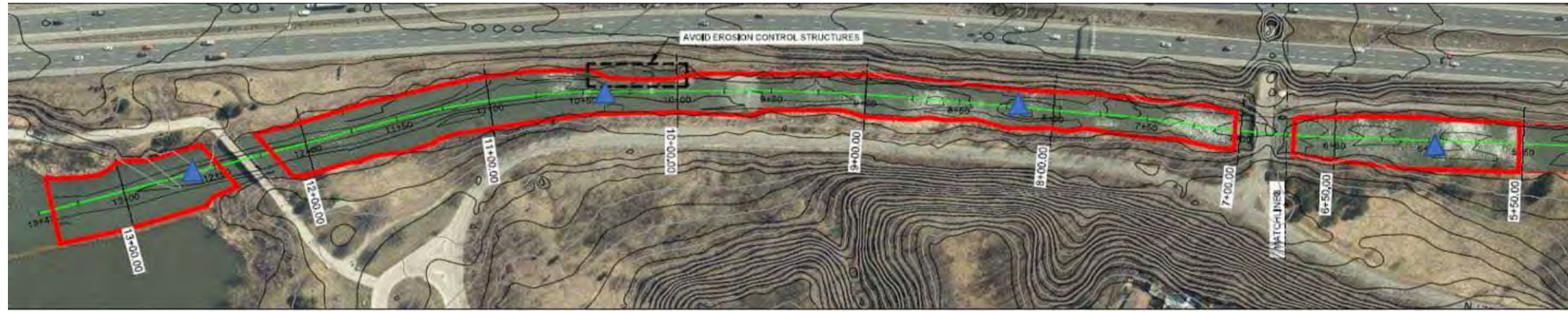
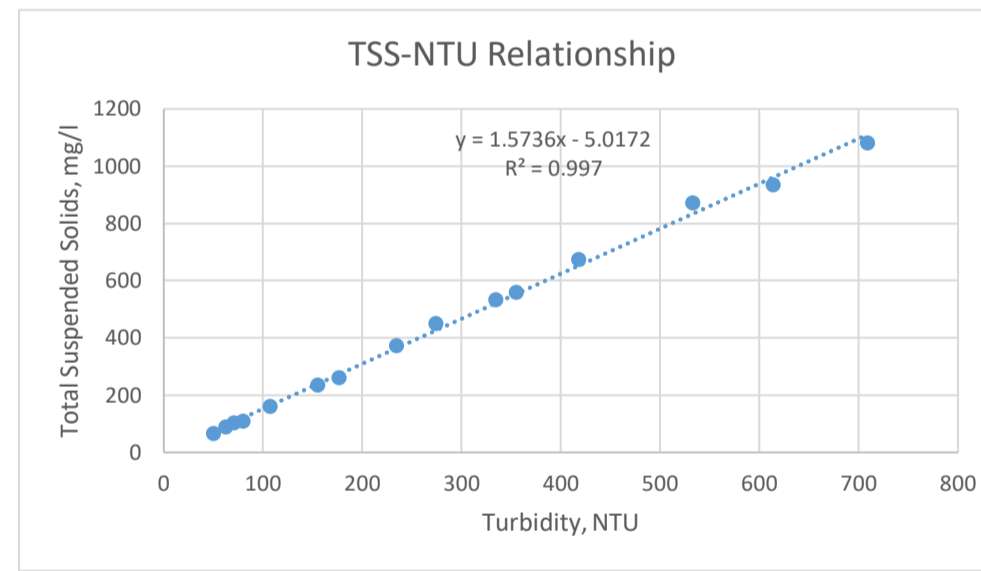


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
28-Jul-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:22 AM	7:37 AM	7:49 AM	8:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	57.1	50.5	47.3	53.9
NTU Increase Limit (10%)	62.8	55.6	52.0	59.3
Corresponding TSS	84.8	74.4	69.4	79.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	109.8	99.4	94.4	104.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	89.8	79.4	74.4	84.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:55 PM	1:05 PM	NA	NA
Depth below water surface (meters)	0.75 m	0.50 m	NA	NA
NTU	52.2	44.4	NA	NA
NTU Increase Limit (10%)	57.4	48.8	NA	NA
Corresponding TSS	77.1	64.9	NA	NA
Exceedance (Y/N)	N	N	NA	NA
Exceedance contributed to Dredging Activities (Y/N)	N	N	NA	NA
Comments (if applicable)	Dredging activities stopped at 2:30 pm due to incoming rain (holding pond approaching storage capacity)	Dredging activities stopped at 2:30 pm due to incoming rain (holding pond approaching storage capacity)	NA	NA

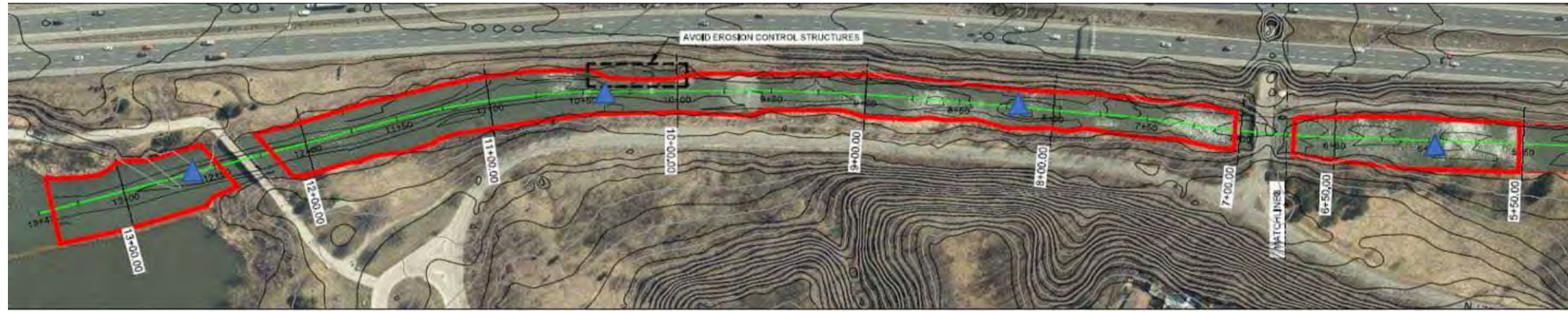
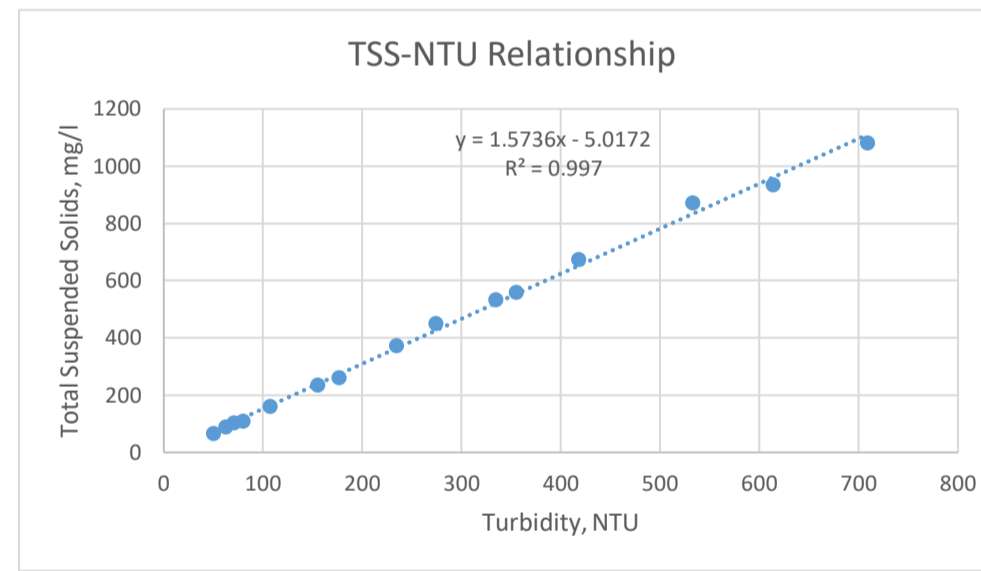


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
30-Jul-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	9:45 AM	9:51 AM	9:57 AM	10:02 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	45.3	42.0	41.6	40.1
NTU Increase Limit (10%)	49.8	46.2	45.8	44.1
Corresponding TSS	66.3	61.1	60.4	58.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	91.3	86.1	85.4	83.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	71.3	66.1	65.4	63.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	4:48 PM	4:51 PM	NA	NA
Depth below water surface (meters)	0.75 m	0.50 m	NA	NA
NTU	42.1	38.9	NA	NA
NTU Increase Limit (10%)	46.3	42.8	NA	NA
Corresponding TSS	61.2	56.2	NA	NA
Exceedance (Y/N)	N	N	NA	NA
Exceedance contributed to Dredging Activities (Y/N)	N	N	NA	NA
Comments (if applicable)	Dredging activities halted at around 11:30am due to pipe damage.	Dredging activities halted at around 11:30am due to pipe damage.	NA	NA

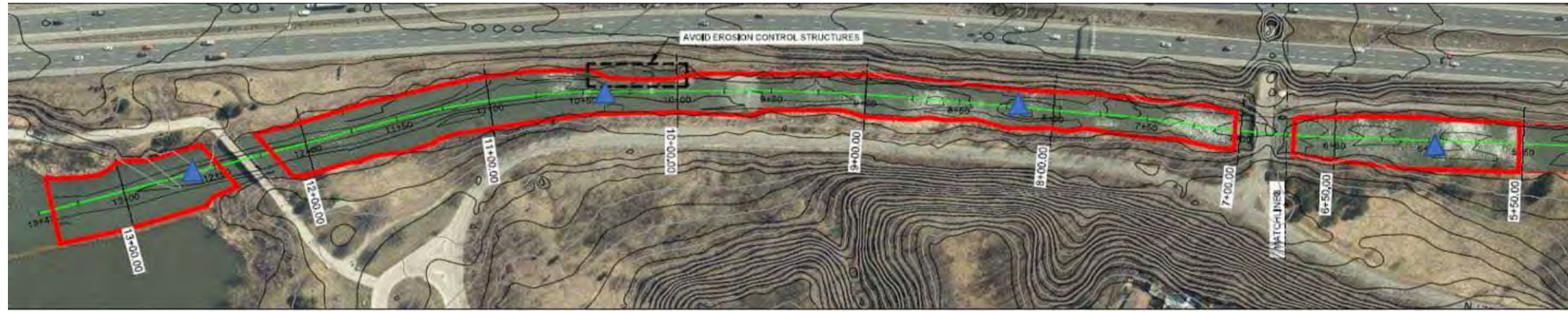
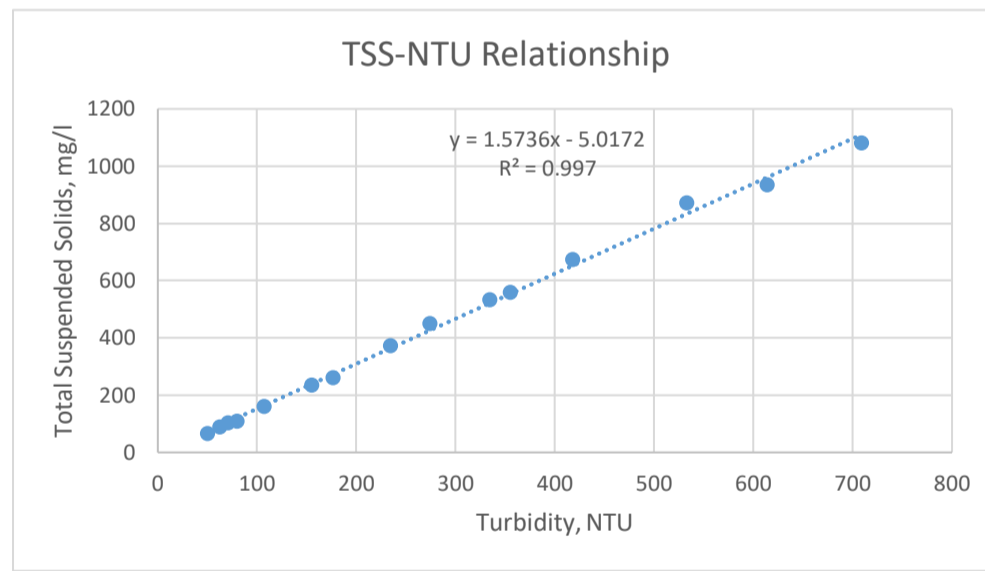


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 07/31/23 to 08/06/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
31-Jul-23	12:00 PM	7:00 PM	N	N	-
01-Aug-23	8:30 AM	12:00 PM	N	N	-
02-Aug-23	5:30 PM	7:00 PM	N	N	-
03-Aug-23	8:30 AM	5:00 PM	N	N	-
04-Aug-23	9:00 AM	6:00 PM	N	N	-
05-Aug-23	12:30 PM	6:00 PM	N	N	-
06-Aug-23	8:00 AM	3:30 PM	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
31-Jul-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	10:57 AM	11:03 AM	11:13 AM	11:21 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	34.3	26.7	26.8	28.2
NTU Increase Limit (10%)	37.7	29.4	29.5	31.0
Corresponding TSS	49.0	37.0	37.2	39.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	74.0	62.0	62.2	64.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	54.0	42.0	42.2	44.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	4:07 PM	4:21 PM	NA	NA
Depth below water surface (meters)	0.75 m	0.50 m	NA	NA
NTU	34.8	25.6	NA	NA
Corresponding TSS	49.7	35.3	NA	NA
Exceedance (Y/N)	N	N	NA	NA
Exceedance contributed to Dredging Activities (Y/N)	N	N	NA	NA
Comments (if applicable)	-	-	NA	NA

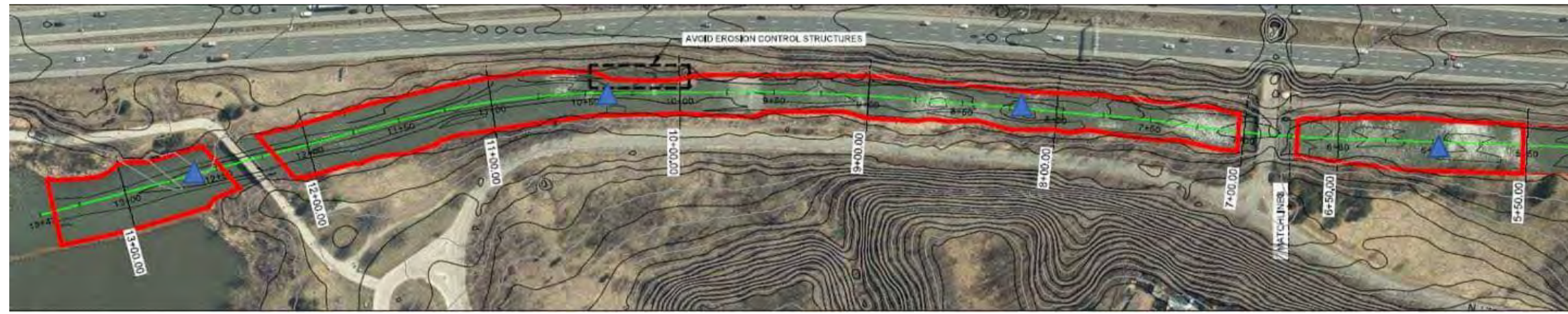
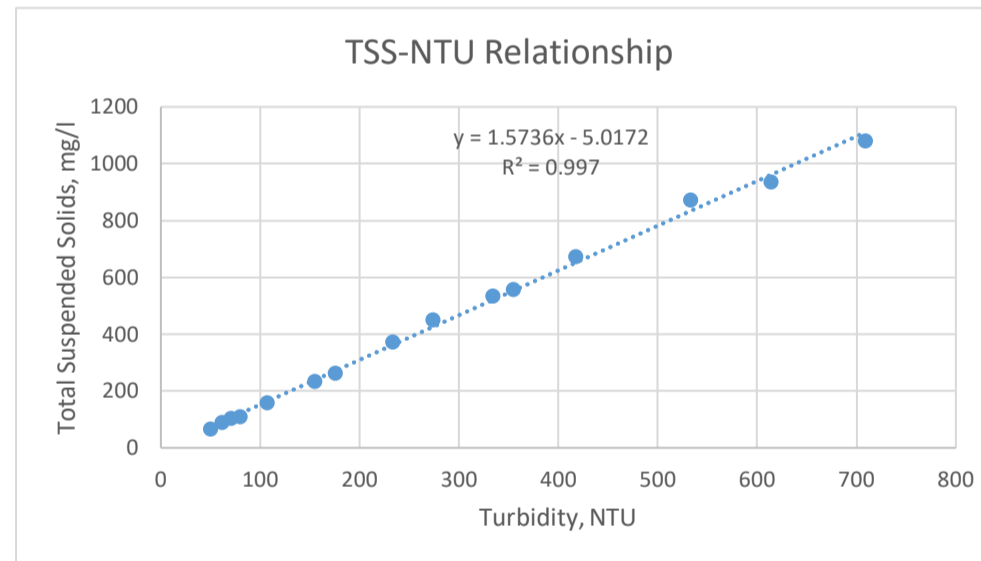


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
01-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:55 AM	8:07 AM	8:24 AM	8:37 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	34.8	38.6	42.5	40.7
NTU Increase Limit (10%)	38.3	42.5	46.8	44.8
Corresponding TSS	49.7	55.7	61.9	59.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	74.7	80.7	86.9	84.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	54.7	60.7	66.9	64.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:53 PM	2:04 PM	NA	NA
Depth below water surface (meters)	0.75 m	0.50 m	NA	NA
NTU	36.0	37.3	NA	NA
Corresponding TSS	51.6	53.7	NA	NA
Exceedance (Y/N)	N	N	NA	NA
Exceedance contributed to Dredging Activities (Y/N)	N	N	NA	NA
Comments (if applicable)	-	-	NA	NA

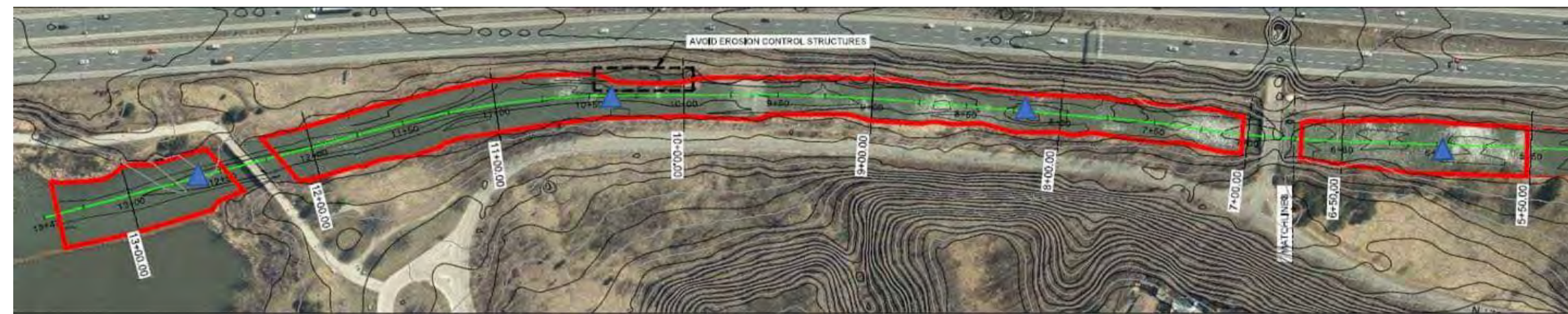
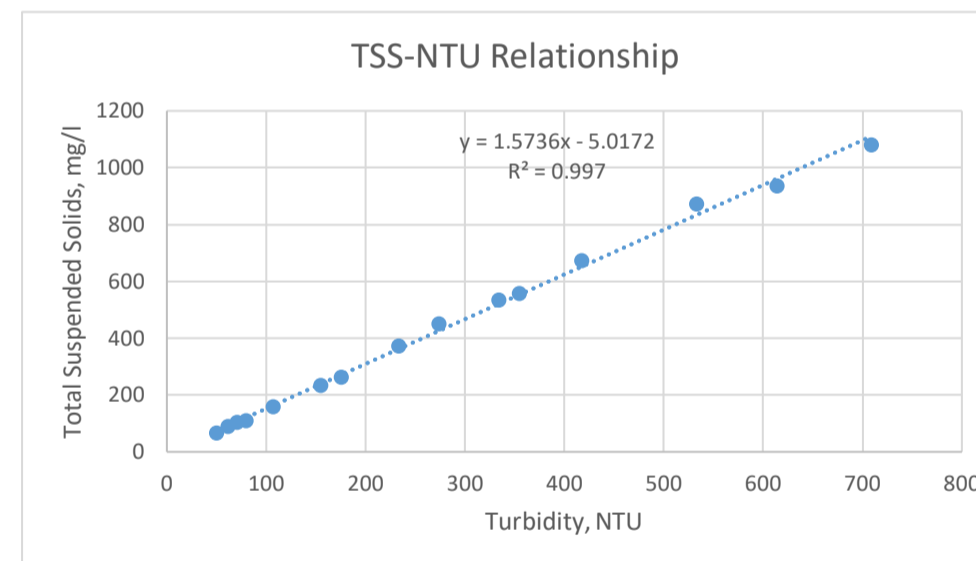


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
02-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	9:45 AM	9:49 AM	9:55 AM	10:07 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	38.7	31.6	29.9	32.1
NTU Increase Limit (10%)	42.6	34.8	32.9	35.3
Corresponding TSS	55.9	44.7	42.0	45.5
TSS Increase Limit (25 mg/L - 24 Hour Period)	80.9	69.7	67.0	70.5
TSS Increase Limit (5 mg/L - 1 to 30 days)	60.9	49.7	47.0	50.5
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	5:23 PM	5:30 PM	6:37 PM	6:45 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	33.6	29.6	35.6	30.5
Corresponding TSS	47.9	41.6	51.0	43.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

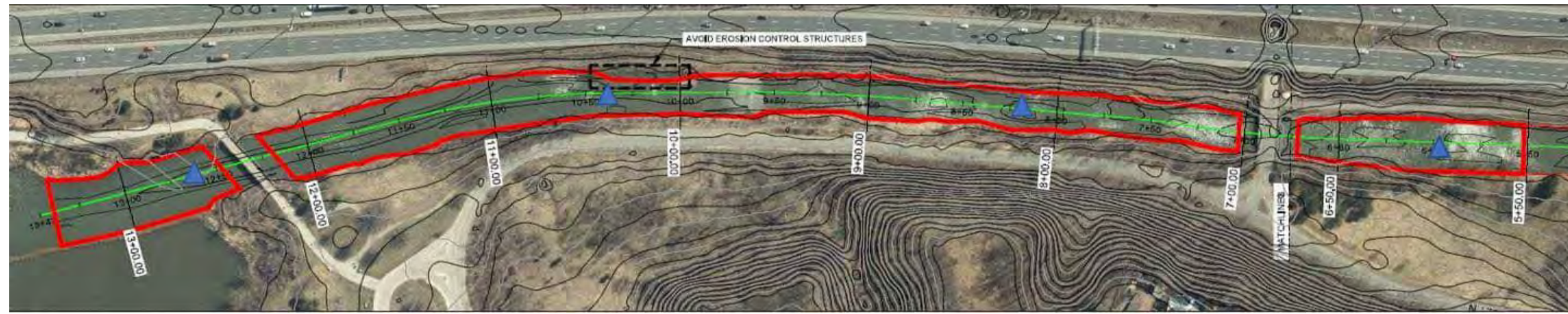
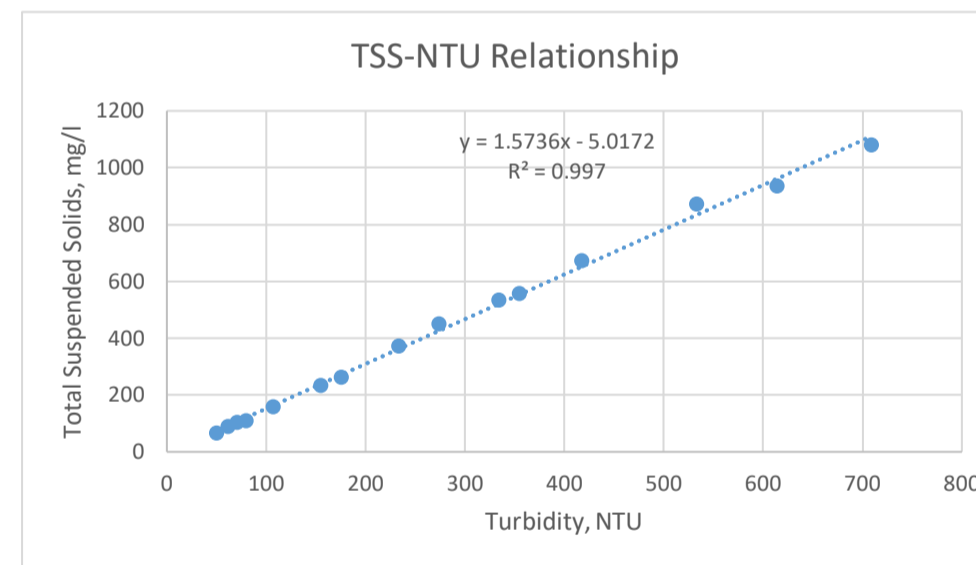


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
03-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:53 AM	7:56 AM	8:01 AM	8:07 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	29.5	25.5	27.6	22.9
NTU Increase Limit (10%)	32.5	28.1	30.4	25.2
Corresponding TSS	41.4	35.1	38.4	31.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	66.4	60.1	63.4	56.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	46.4	40.1	43.4	36.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:29 PM	1:41 PM	5:29 PM	5:51 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	31.6	27.5	29.1	29.3
Corresponding TSS	44.7	38.3	40.8	41.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

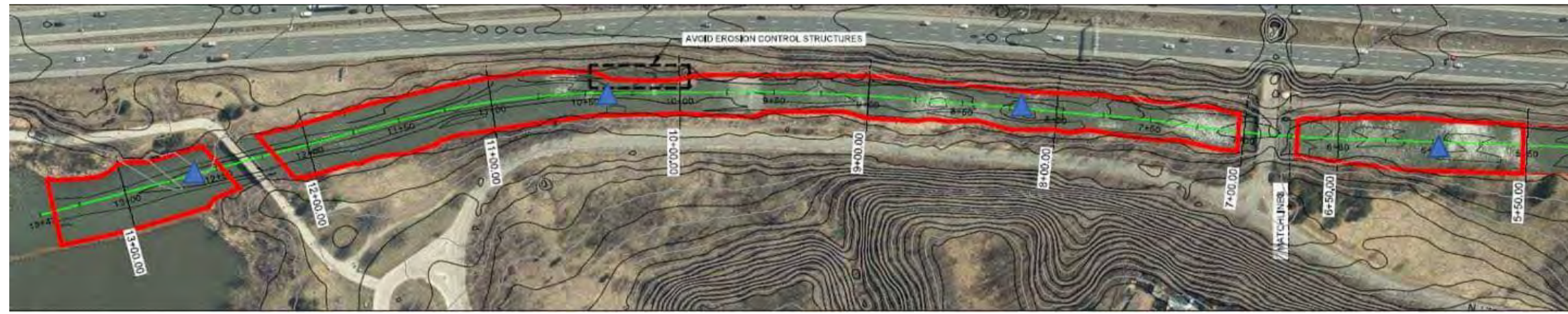
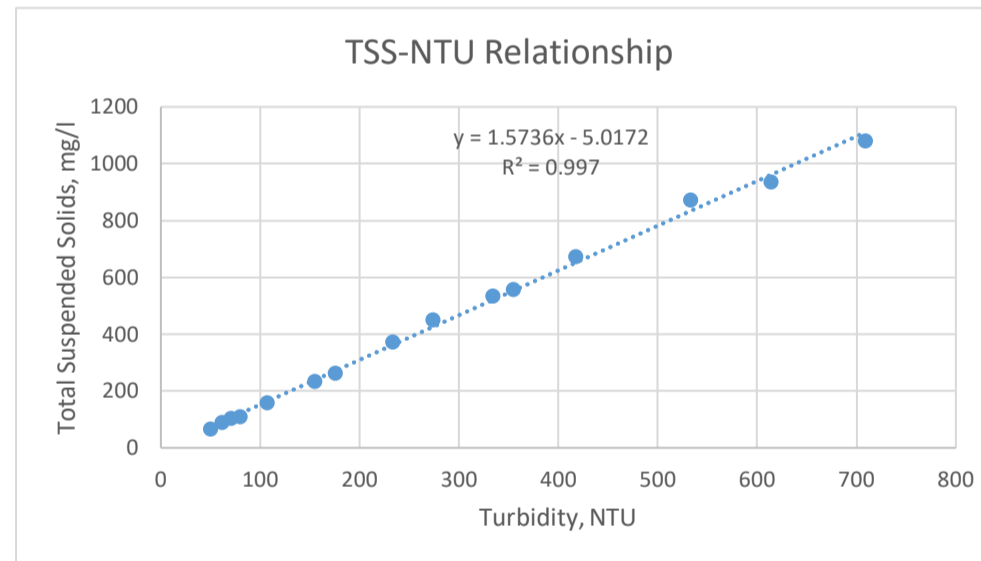


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

04-Aug-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Background (taken during non-operating dredging hours)				
Time (hh:mm)	7:36 AM	7:45 AM	7:51 AM	7:55 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	29.2	31.5	32.2	27.4
NTU Increase Limit (10%)	32.1	34.7	35.4	30.1
Corresponding TSS	40.9	44.6	45.7	38.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	65.9	69.6	70.7	63.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	45.9	49.6	50.7	43.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:27 PM	2:38 PM	5:48 PM	5:57 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	32.8	32.0	31.2	31.7
Corresponding TSS	46.6	45.3	44.1	44.9
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

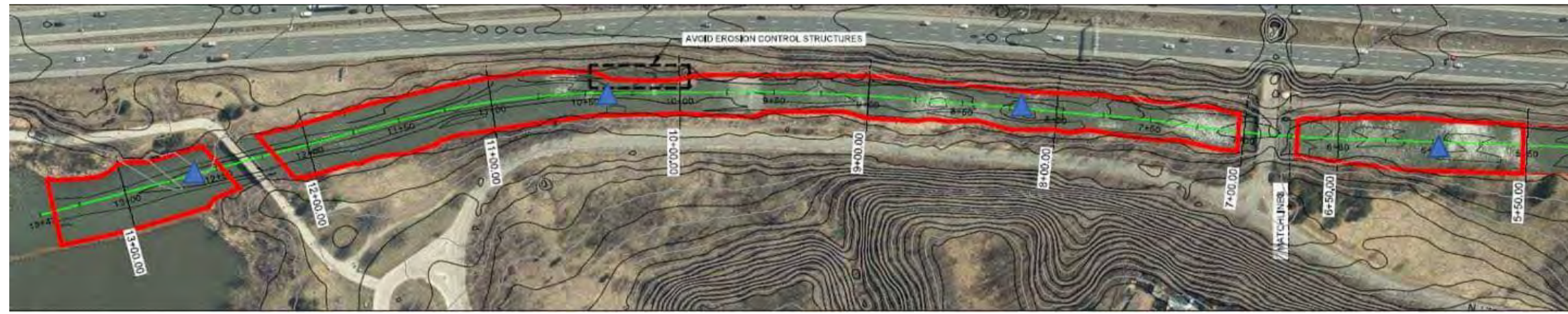
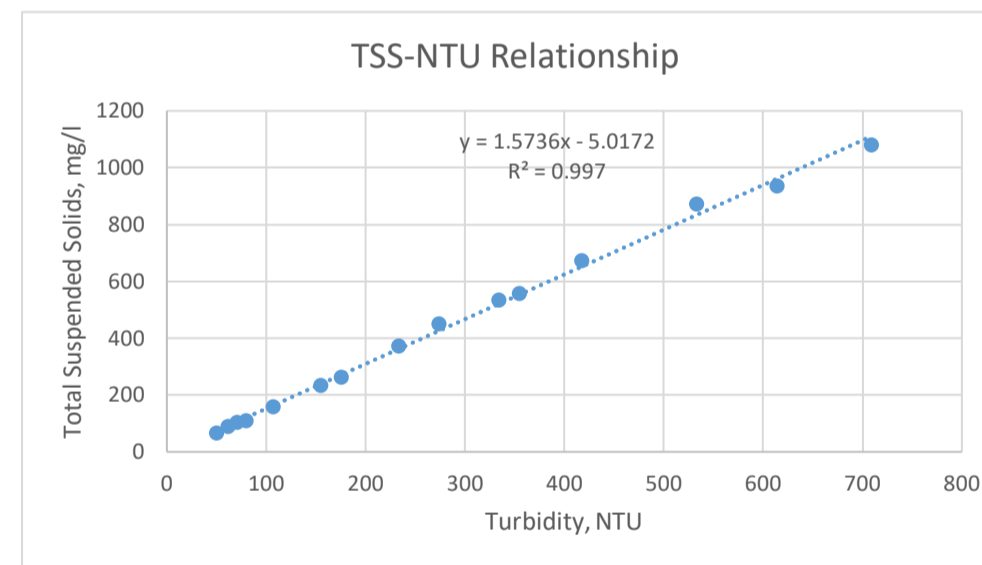


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
05-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:34 AM	7:36 AM	7:43 AM	7:55 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	34.8	26.4	27.2	29.8
NTU Increase Limit (10%)	38.3	29.0	29.9	32.8
Corresponding TSS	49.7	36.5	37.8	41.9
TSS Increase Limit (25 mg/L - 24 Hour Period)	74.7	61.5	62.8	66.9
TSS Increase Limit (5 mg/L - 1 to 30 days)	54.7	41.5	42.8	46.9
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	3:07 PM	3:13 PM	5:19 PM	5:25 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	25.4	24.3	24.3	25.2
Corresponding TSS	35.0	33.2	33.2	34.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

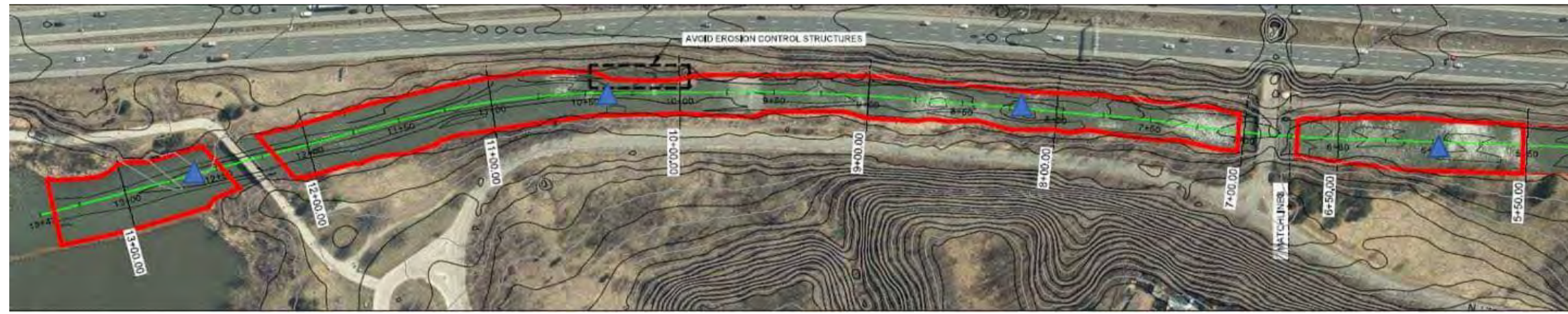
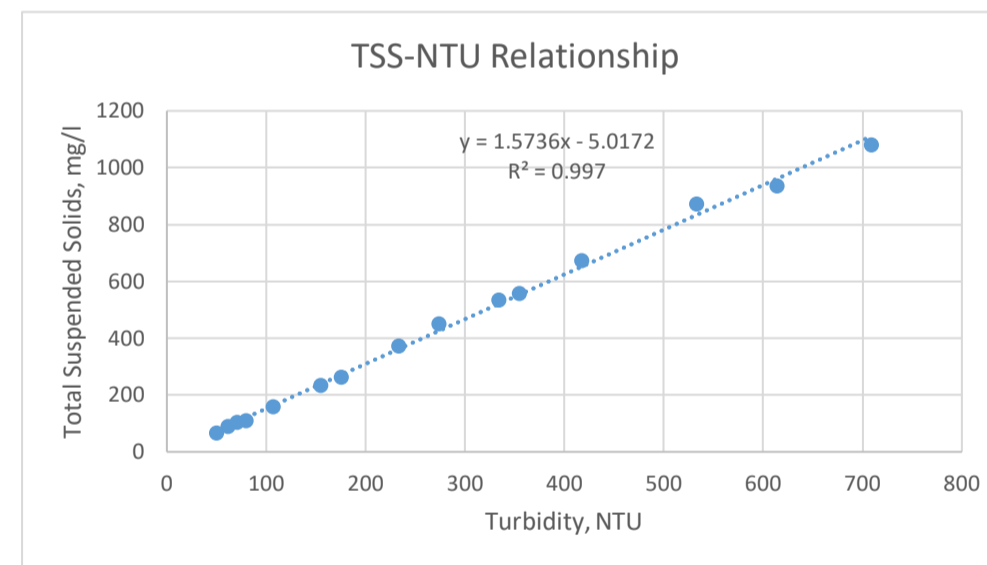


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

06-Aug-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Background (taken during non-operating dredging hours)				
Time (hh:mm)	7:31 AM	7:36 AM	7:43 AM	7:55 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	41.9	24.6	27.6	27.4
NTU Increase Limit (10%)	46.1	27.1	30.4	30.1
Corresponding TSS	60.9	33.7	38.4	38.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	85.9	58.7	63.4	63.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	65.9	38.7	43.4	43.1
Comments (if applicable)	strong north-to-south current	strong north-to-south current	strong north-to-south current	strong north-to-south current

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:04 PM	2:10 PM	4:38 PM	4:45 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	37.2	34.1	38.3	34.2
Corresponding TSS	53.5	48.6	55.3	48.8
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	strong north-to-south current	strong north-to-south current	strong north-to-south current	strong north-to-south current

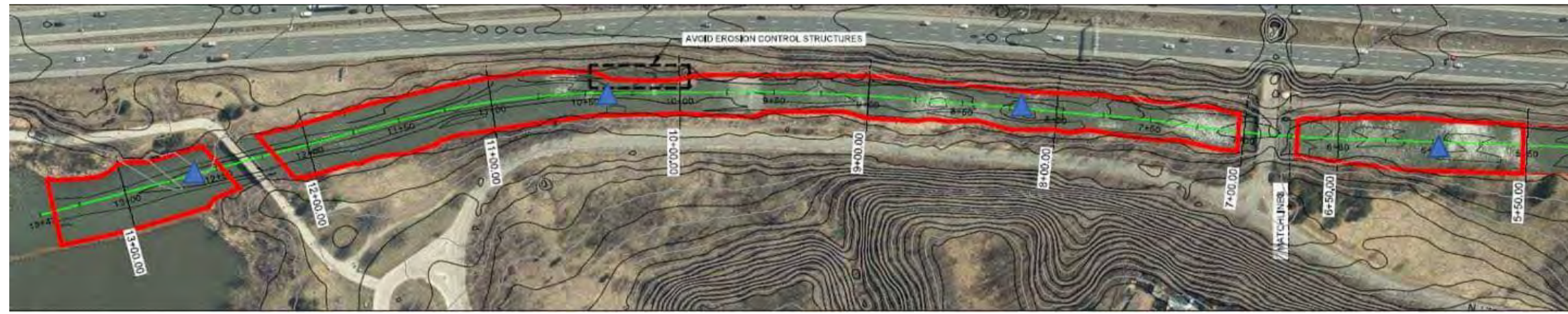
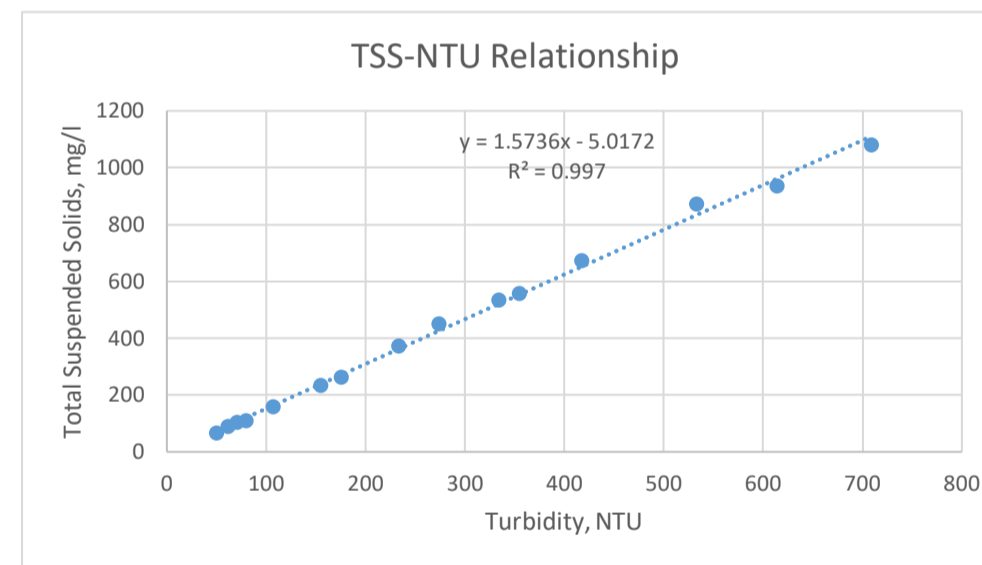


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 07/17/23 to 07/23/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
7-Aug-23	-	-	-	-	No dredging due to rain
8-Aug-23	8:00am	7:00pm	N	N	Strong north-to south current
9-Aug-23	8:00am	12:00pm	N	N	-
10-Aug-23	-	-	-	-	No dredging due to booster pump
11-Aug-23	11:00am	6:00pm	Y	N	Strong north-to south current
12-Aug-23	9:00am	10:00am	N	N	Heavy rain ended dredging
13-Aug-23	9:00am	3:00pm	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor		8-Aug-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4	
Time (hh:mm)	7:33 AM	7:40 AM	7:48 AM	7:51 AM	
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m	
NTU	49.0	38.6	40.1	34.4	
NTU Increase Limit (10%)	53.9	42.5	44.1	37.8	
Corresponding TSS	72.1	55.7	58.1	49.1	
TSS Increase Limit (25 mg/L - 24 Hour Period)	97.1	80.7	83.1	74.1	
TSS Increase Limit (5 mg/L - 1 to 30 days)	77.1	60.7	63.1	54.1	
Comments (if applicable)	strong north-to-south current	strong north-to-south current	strong north-to-south current	strong north-to-south current	

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:07 PM	12:15 PM	5:49 PM	5:58 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	40.5	36.6	49.8	52.2
Corresponding TSS	58.7	52.6	73.3	77.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	strong north-to-south current	strong north-to-south current	strong north-to-south current	strong north-to-south current

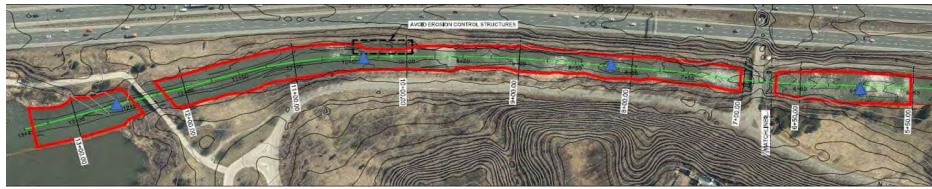
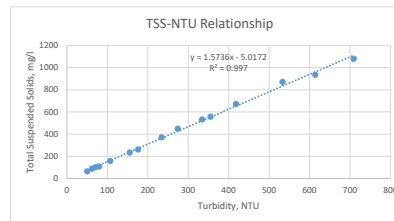


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

9-Aug-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:42 AM	7:53 AM	8:02 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	64.3	45.9	38.1	37.1
NTU Increase Limit (10%)	70.7	50.5	41.9	40.8
Corresponding TSS	96.2	67.2	54.9	53.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	121.2	92.2	79.9	78.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	101.2	72.2	59.9	58.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:00 PM	2:20 PM	5:00 PM	5:29 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	49.2	34.5	45.2	44.1
Corresponding TSS	72.4	49.3	66.1	64.4
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

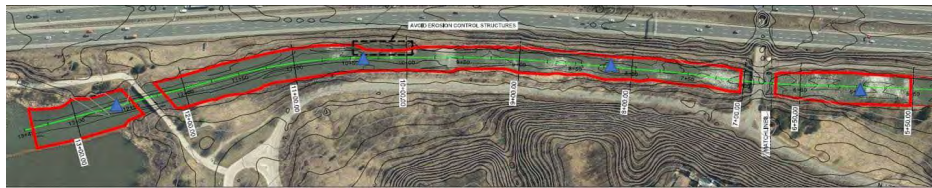
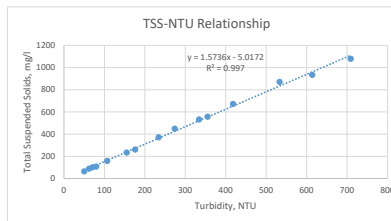


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
10-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:01 AM	8:09 AM	8:22 AM	8:30 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	46.1	31.6	27.2	26.1
NTU Increase Limit (10%)	50.7	34.8	29.9	28.7
Corresponding TSS	67.5	44.7	37.8	36.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	92.5	69.7	62.8	61.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	72.5	49.7	42.8	41.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)				
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU				
Corresponding TSS				
Exceedance (Y/N)				
Exceedance contributed to Dredging Activities (Y/N)				
Comments (if applicable)	No dredging activities	No dredging activities	No dredging activities	No dredging activities

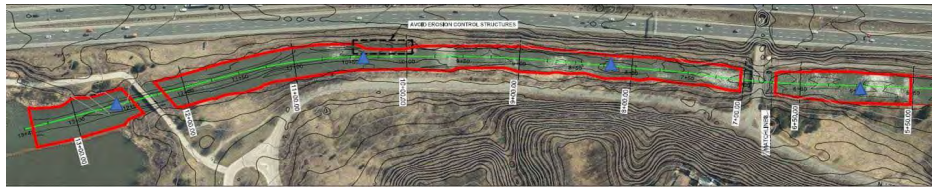
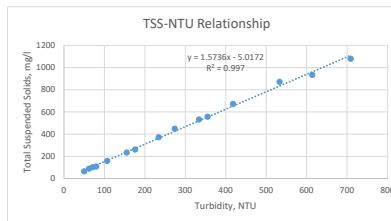


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

11-Aug-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:24 AM	7:34 AM	7:48 AM	7:59 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	33.3	29.4	30.9	27.2
NTU Increase Limit (10%)	36.6	32.3	34.0	29.9
Corresponding TSS	47.4	41.2	43.6	37.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	72.4	66.2	68.6	62.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	52.4	46.2	48.6	42.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:38 PM	12:58 PM	5:20 PM	5:40 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	41.8	31.8	36.9	33.7
Corresponding TSS	60.8	45.0	53.0	48.0
Exceedance (Y/N)	Y	N	Y	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	Current moving southbound into the creek causing turbidity	-	Current moving southbound into creek causing turbidity	-

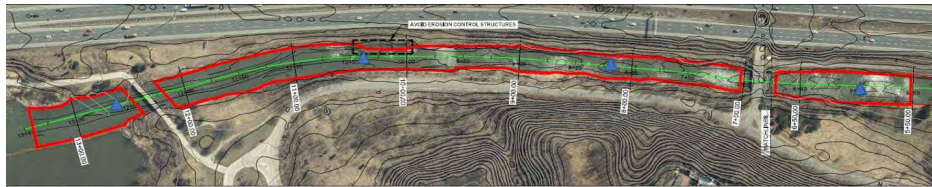
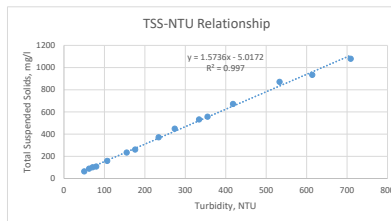


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
12-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:54 AM	8:01 AM	8:14 AM	8:23 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	44.3	30.2	27.0	27.8
NTU Increase Limit (10%)	48.7	33.2	29.7	30.6
Corresponding TSS	64.7	42.5	37.5	38.7
TSS Increase Limit (25 mg/L - 24 Hour Period)	89.7	67.5	62.5	63.7
TSS Increase Limit (5 mg/L - 1 to 30 days)	69.7	47.5	42.5	43.7
Comments (if applicable)	-	-	-	-

Daily Check	South end Access Bridge	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	10:57 AM			
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	583.0			
Corresponding TSS	912.4	-5.0	-5.0	-5.0
Exceedance (Y/N)	N/A			
Exceedance contributed to Dredging Activities (Y/N)	N/A			
Comments (if applicable)	Taken 10mins after severe rainfall event for background info only of turbidity following heavy rainfall. Sample taken by south end access bridge adjacent to Kay Drage overpass bridge	-	-	-

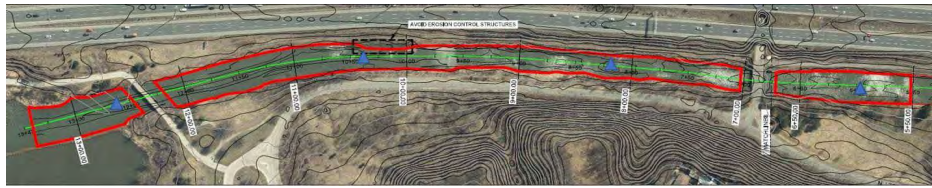
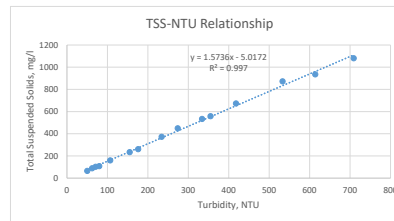


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
13-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:23 AM	8:27 AM	8:35 AM	8:44 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	151.0	104.0	86.5	83.4
NTU Increase Limit (10%)	166.1	114.4	95.2	91.7
Corresponding TSS	232.6	158.6	131.1	126.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	257.6	183.6	156.1	151.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	237.6	163.6	136.1	131.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	3:37 PM	3:50 PM		
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	64.8	109.0		
Corresponding TSS	97.0	166.5	-5.0	-5.0
Exceedance (Y/N)	N	N		
Exceedance contributed to Dredging Activities (Y/N)	N	N		
Comments (if applicable)	-	-	-	-

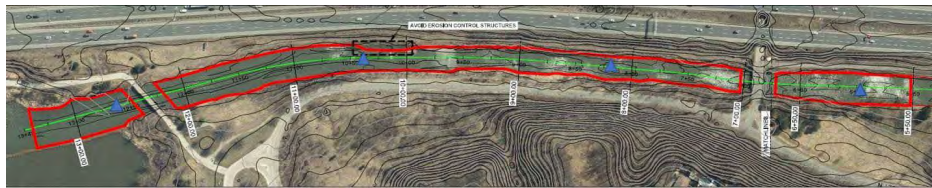
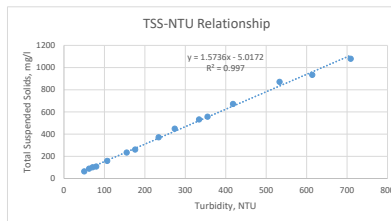


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 08/14/23 to 08/20/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
14-Aug-23	8:30am	6:30pm	N	N	-
15-Aug-23	8:00am	9:00am	-	-	Surveying in Creek
16-Aug-23	-	-	-	-	No dredging due to rain
17-Aug-23	7:30am	10:30am	N	N	-
18-Aug-23	10:00am	6:00pm	N	N	Heavy rain caused high turbidity
19-Aug-23	9:00am	7:00pm	N	N	-
20-Aug-23	8:00am	7:00pm	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
14-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:29 AM	7:43 AM	7:50 AM	7:57 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	75.7	70.6	45.5	45.7
NTU Increase Limit (10%)	83.3	77.7	50.1	50.3
Corresponding TSS	114.1	106.1	66.6	66.9
TSS Increase Limit (25 mg/L - 24 Hour Period)	139.1	131.1	91.6	91.9
TSS Increase Limit (5 mg/L - 1 to 30 days)	119.1	111.1	71.6	71.9
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:31 PM	12:40 PM	5:56 PM	6:03 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	33.5	75.1	35.2	74.6
Corresponding TSS	47.7	113.2	50.4	112.4
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

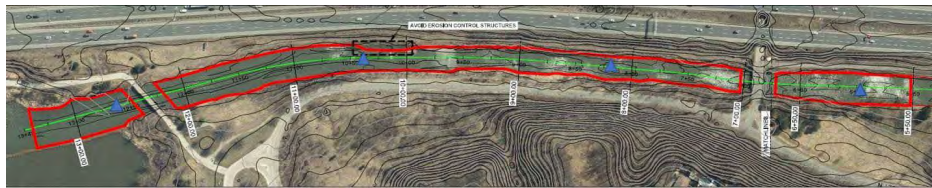
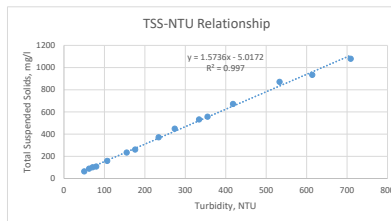


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
15-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:23 AM	7:31 AM	7:43 AM	7:47 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	44.7	43.3	34.2	33.0
NTU Increase Limit (10%)	49.2	47.6	37.6	36.3
Corresponding TSS	65.3	63.1	48.8	46.9
TSS Increase Limit (25 mg/L - 24 Hour Period)	90.3	88.1	73.8	71.9
TSS Increase Limit (5 mg/L - 1 to 30 days)	70.3	68.1	53.8	51.9
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	-	-	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	-	-	-	-
Corresponding TSS	-	-	-	-
Exceedance (Y/N)	-	-	-	-
Exceedance contributed to Dredging Activities (Y/N)	-	-	-	-
Comments (if applicable)	Dredged for 1hr prior to hydrographic survey	Dredged for 1hr prior to hydrographic survey	Dredged for 1hr prior to hydrographic survey	Dredged for 1hr prior to hydrographic survey

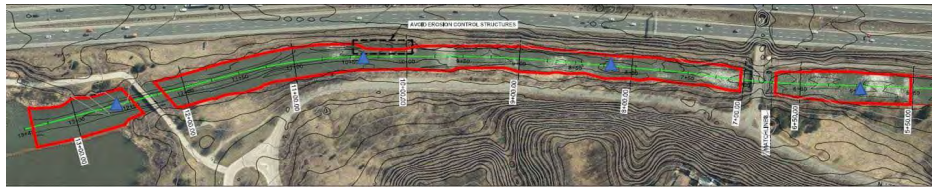
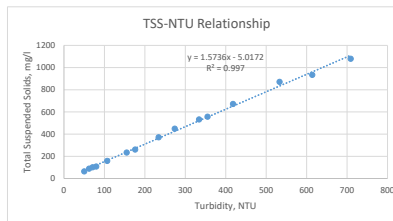


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
16-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:25 AM	8:37 AM	8:47 AM	9:01 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	62.8	60.5	58.8	74.5
NTU Increase Limit (10%)	69.1	66.6	64.7	82.0
Corresponding TSS	93.8	90.2	87.5	112.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	118.8	115.2	112.5	137.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	98.8	95.2	92.5	117.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	-	-	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	-	-	-	-
Corresponding TSS	-	-	-	-
Exceedance (Y/N)	-	-	-	-
Exceedance contributed to Dredging Activities (Y/N)	-	-	-	-
Comments (if applicable)	No dredging due to rain	No dredging due to rain	No dredging due to rain	No dredging due to rain

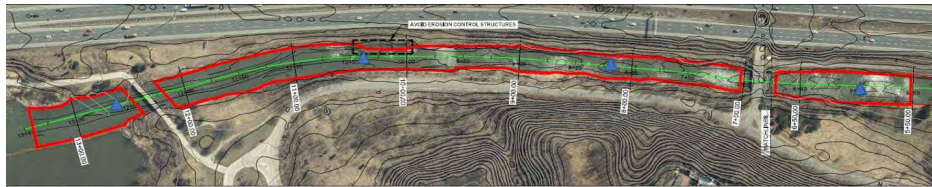
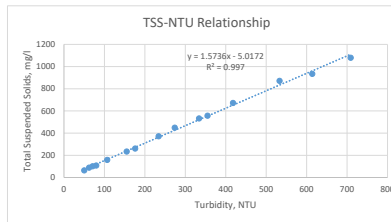


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
17-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:12 AM	7:20 AM	7:33 AM	7:41 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	76.4	50.2	41.4	44.2
NTU Increase Limit (10%)	84.0	55.2	45.5	48.6
Corresponding TSS	115.2	74.0	60.1	64.5
TSS Increase Limit (25 mg/L - 24 Hour Period)	140.2	99.0	85.1	89.5
TSS Increase Limit (5 mg/L - 1 to 30 days)	120.2	79.0	65.1	69.5
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:26 PM	2:37 PM	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	55.2	53.7	-	-
Corresponding TSS	81.8	79.5	-	-
Exceedance (Y/N)	N	N	-	-
Exceedance contributed to Dredging Activities (Y/N)	N	N	-	-
Comments (if applicable)	-	-	N/A	N/A

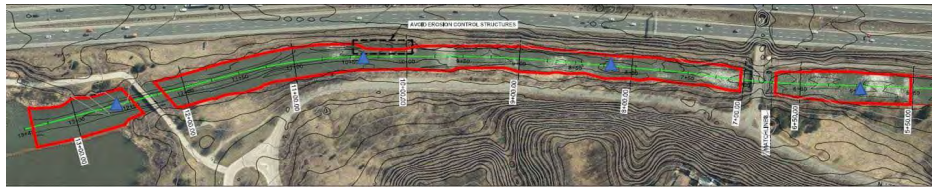
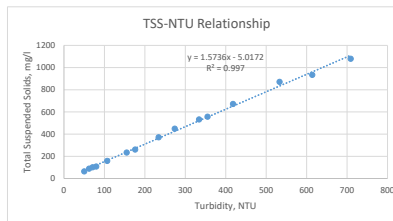


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor		18-Aug-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4	
Time (hh:mm)	7:49 AM	7:57 AM	8:10 AM	8:18 AM	
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m	
NTU	364.0	211.0	87.7	55.1	
NTU Increase Limit (10%)	400.4	232.1	96.5	60.6	
Corresponding TSS	567.8	327.0	133.0	81.7	
TSS Increase Limit (25 mg/L - 24 Hour Period)	592.8	352.0	158.0	106.7	
TSS Increase Limit (5 mg/L - 1 to 30 days)	572.8	332.0	138.0	86.7	
Comments (if applicable)	Heavy rain event night prior causing high turbidity	Heavy rain event night prior causing high turbidity	Heavy rain event night prior causing high turbidity	Heavy rain event night prior causing high turbidity	

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:54 PM	1:04 PM	4:54 PM	5:00 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	149.0	103.0	188.0	159.0
Corresponding TSS	229.4	157.1	290.8	245.2
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	Heavy rain event night prior causing high turbidity	Heavy rain event night prior causing high turbidity	Heavy rain event night prior causing high turbidity	Heavy rain event night prior causing high turbidity

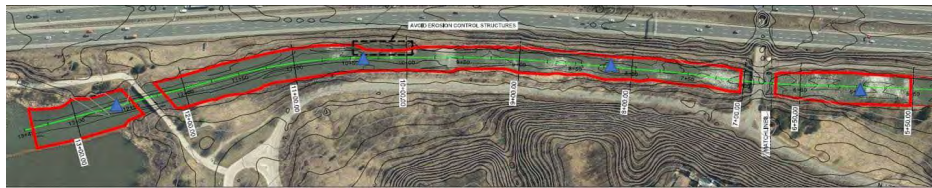
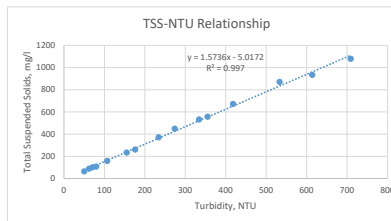


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
19-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:33 AM	7:41 AM	7:49 AM	7:54 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	130.0	59.1	51.3	40.2
NTU Increase Limit (10%)	143.0	65.0	56.4	44.2
Corresponding TSS	199.6	88.0	75.7	58.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	224.6	113.0	100.7	83.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	204.6	93.0	80.7	63.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	11:53 AM	12:03 PM	6:16 PM	6:20 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	81.7	50.5	66.3	50.9
Corresponding TSS	123.5	74.4	99.3	75.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

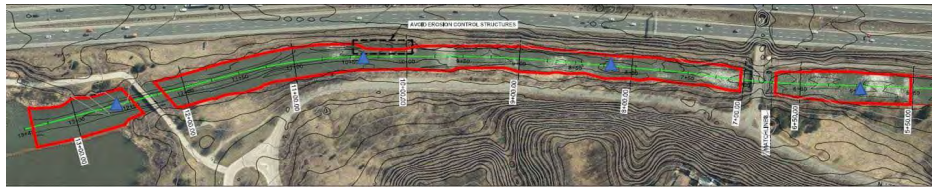
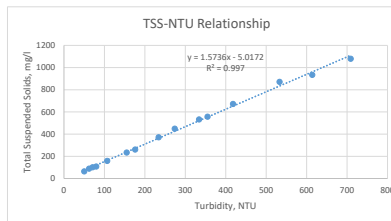


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

20-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:41 AM	7:49 AM	7:56 AM	8:02 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	55.8	39.1	39.2	26.4
NTU Increase Limit (10%)	61.4	43.0	43.1	29.0
Corresponding TSS	82.8	56.5	56.7	36.5
TSS Increase Limit (25 mg/L - 24 Hour Period)	107.8	81.5	81.7	61.5
TSS Increase Limit (5 mg/L - 1 to 30 days)	87.8	61.5	61.7	41.5
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:44 PM	2:03 PM	5:37 PM	5:44 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	41.3	33.7	41.4	33.2
Corresponding TSS	60.0	48.0	60.1	47.2
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

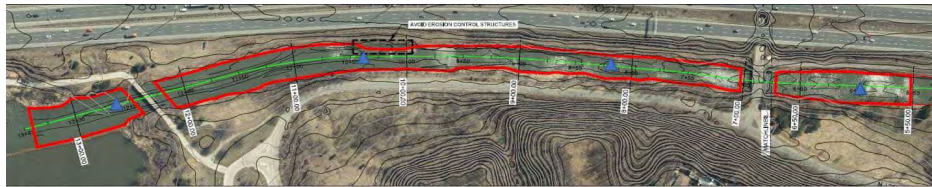
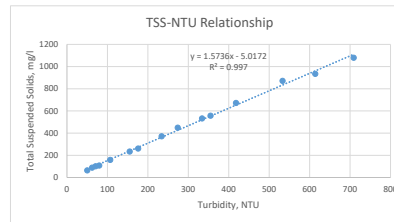


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 08/28/23 to 09/03/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
28-Aug-23	8:00am	5:30pm	N	N	-
29-Aug-23	9:00am	6:00pm	N	N	-
30-Aug-23	8:00am	11:00am	N	N	Booster pump broke
31-Aug-23	-	-	-	-	No dredging
1-Sep-23	-	-	-	-	No dredging
2-Sep-23	-	-	-	-	No dredging
3-Sep-23	-	-	-	-	No dredging

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
28-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:40 AM	7:48 AM	7:54 AM	8:02 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	43.0	38.2	37.5	35.1
NTU Increase Limit (10%)	47.3	42.0	41.3	38.6
Corresponding TSS	62.6	55.1	54.0	50.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	87.6	80.1	79.0	75.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	67.6	60.1	59.0	55.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:45 PM	12:50 PM	4:24 PM	4:31 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	34.1	32.8	36.4	37.2
Corresponding TSS	48.6	46.6	52.3	53.5
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

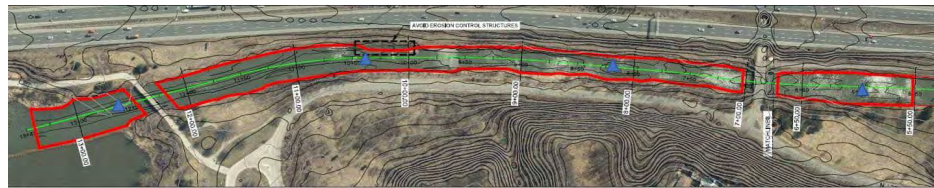
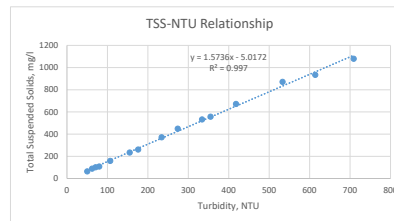


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
29-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:10 AM	8:28 AM	8:21 AM	8:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	34.5	34.9	33.8	33.3
NTU Increase Limit (10%)	38.0	38.4	37.2	36.6
Corresponding TSS	49.3	49.9	48.2	47.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	74.3	74.9	73.2	72.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	54.3	54.9	53.2	52.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:25 PM	2:30 PM	4:30 PM	4:40 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	36.2	36.0	35.1	35.6
Corresponding TSS	51.9	51.6	50.2	51.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

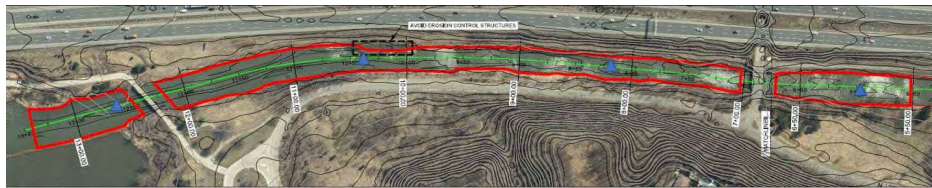
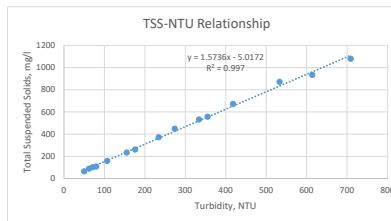


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
30-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:38 AM	7:46 AM	7:53 AM	8:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	37.3	37.5	30.6	31.2
NTU Increase Limit (10%)	41.0	41.3	33.7	34.3
Corresponding TSS	53.7	54.0	43.1	44.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	78.7	79.0	68.1	69.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	58.7	59.0	48.1	49.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	-	-	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	-	-	-	-
Corresponding TSS	-	-	-	-
Exceedance (Y/N)	-	-	-	-
Exceedance contributed to Dredging Activities (Y/N)	-	-	-	-
Comments (if applicable)	Booster pump broke down, no dredging	Booster pump broke down, no dredging	Booster pump broke down, no dredging	Booster pump broke down, no dredging

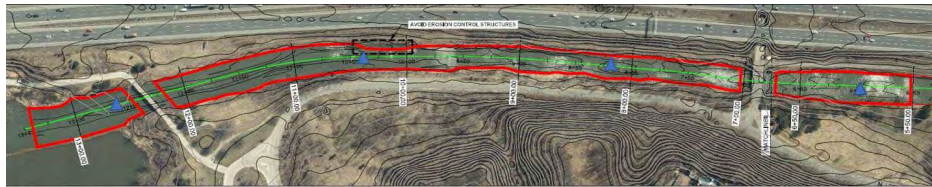
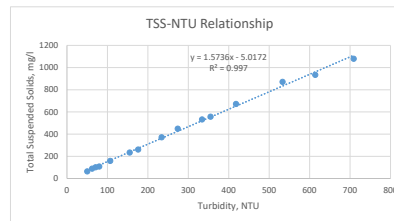


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 09/04/23 to 09/10/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
4-Sep-23	-	-	-	-	No Dredging
5-Sep-23	2:00pm	6:00pm	N	N	New 6" Booster pump arrived
6-Sep-23	8:30am	6:00pm	N	N	-
7-Sep-23	7:45am	6:00pm	N	N	Heavy rain night prior
8-Sep-23	1:15pm	4:00pm	N	N	Implementation of rock box, minimal dredging performed
9-Sep-23	8:00am	6:00pm	N	N	Implementation of rock box, minimal dredging performed
10-Sep-23	8:00am	6:00pm	N	N	Removal of rock box system, low production due to clogs

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	5-Sep-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:45 AM	8:50 AM	8:55 AM	9:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	35.4	30.2	27.3	21.9
NTU Increase Limit (10%)	38.9	33.2	30.0	24.1
Corresponding TSS	50.7	42.5	37.9	29.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	75.7	67.5	62.9	54.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	55.7	47.5	42.9	34.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	3:30 PM	3:39 PM	5:35 PM	5:40 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	31.4	28.2	32.7	32.1
Corresponding TSS	44.4	39.4	46.4	45.5
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

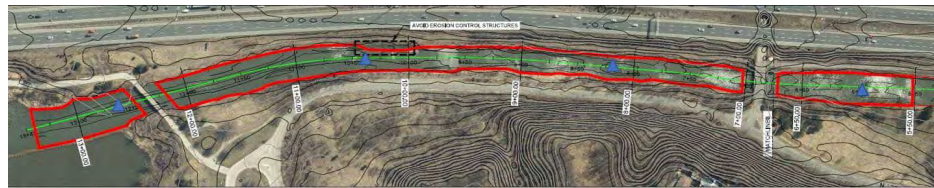
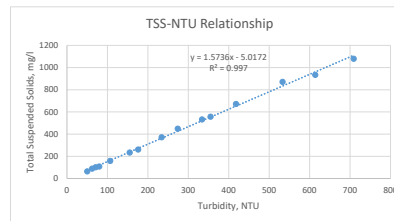


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	6-Sep-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:36 AM	7:42 AM	7:48 AM	7:54 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	29.7	32.1	27.4	25.3
NTU Increase Limit (10%)	32.7	35.3	30.1	27.8
Corresponding TSS	41.7	45.5	38.1	34.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	66.7	70.5	63.1	59.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	46.7	50.5	43.1	39.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:54 PM	1:12 PM	4:34 PM	4:40 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	33.3	26.4	33.8	30.4
Corresponding TSS	47.4	36.5	48.2	42.8
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

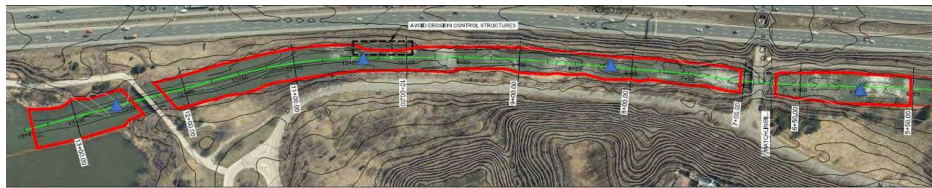
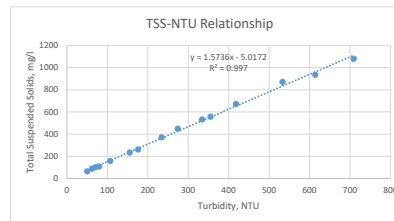


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor		7-Sep-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4	
Time (hh:mm)	6:15 AM	6:21 AM	6:30 AM	6:40 AM	
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m	
NTU	254.0	233.0	210.0	173.0	
NTU Increase Limit (10%)	279.4	256.3	231.0	190.3	
Corresponding TSS	394.7	361.6	325.4	267.2	
TSS Increase Limit (25 mg/L - 24 Hour Period)	419.7	386.6	350.4	292.2	
TSS Increase Limit (5 mg/L - 1 to 30 days)	399.7	366.6	330.4	272.2	
Comments (if applicable)	Heavy rain night prior caused high turbidity	Heavy rain night prior caused high turbidity	Heavy rain night prior caused high turbidity	Heavy rain night prior caused high turbidity	

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:38 PM	2:47 PM	5:54 PM	6:00 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	95.2	114.0	80.4	90.9
Corresponding TSS	144.8	174.4	121.5	138.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

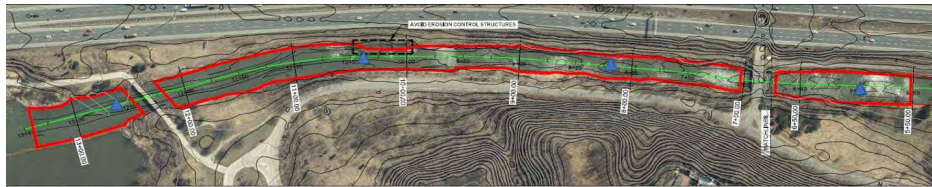
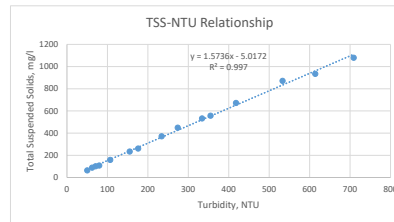


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 Correlating TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor		8-Sep-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4	
Time (hh:mm)	9:10 AM	9:16 AM	9:21 AM	9:27 AM	
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m	
NTU	79.2	68.1	59.1	53.4	
NTU Increase Limit (10%)	87.1	74.9	65.0	58.7	
Corresponding TSS	119.6	102.1	88.0	79.0	
TSS Increase Limit (25 mg/L - 24 Hour Period)	144.6	127.1	113.0	104.0	
TSS Increase Limit (5 mg/L - 1 to 30 days)	124.6	107.1	93.0	84.0	
Comments (if applicable)	Implementation of rock box, minimal dredging performed	Implementation of rock box, minimal dredging performed	Implementation of rock box, minimal dredging performed	Implementation of rock box, minimal dredging performed	

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	-	-	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	-	-	-	-
Corresponding TSS	-	-	-	-
Exceedance (Y/N)	-	-	-	-
Exceedance contributed to Dredging Activities (Y/N)	-	-	-	-
Comments (if applicable)	-	-	-	-

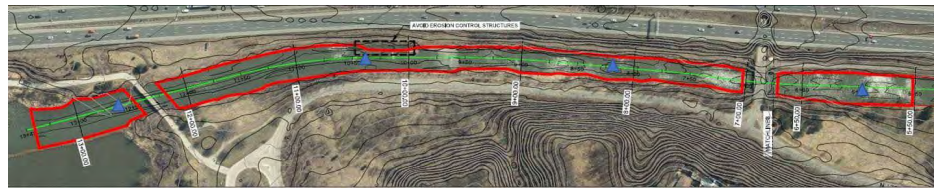
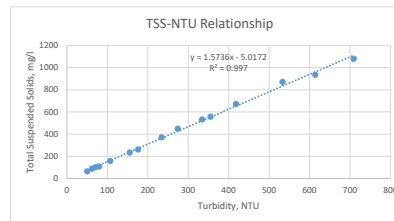


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor		9-Sep-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4	
Time (hh:mm)	7:39 AM	7:46 AM	7:53 AM	7:59 AM	
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m	
NTU	68.5	61.2	41.8	38.7	
NTU Increase Limit (10%)	75.4	67.3	46.0	42.6	
Corresponding TSS	102.8	91.3	60.8	55.9	
TSS Increase Limit (25 mg/L - 24 Hour Period)	127.8	116.3	85.8	80.9	
TSS Increase Limit (5 mg/L - 1 to 30 days)	107.8	96.3	65.8	60.9	
Comments (if applicable)	Implementation of rock box, minimal dredging performed	Implementation of rock box, minimal dredging performed	Implementation of rock box, minimal dredging performed	Implementation of rock box, minimal dredging performed	

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	-	-	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	-	-	-	-
Corresponding TSS	-	-	-	-
Exceedance (Y/N)	-	-	-	-
Exceedance contributed to Dredging Activities (Y/N)	-	-	-	-
Comments (if applicable)	-	-	-	-

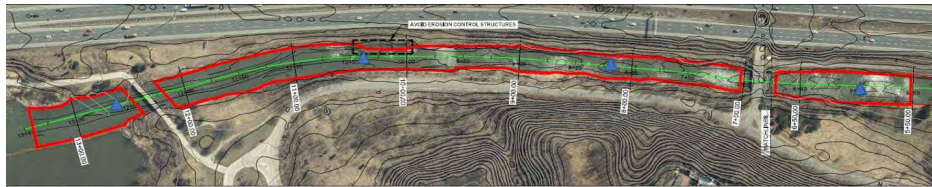
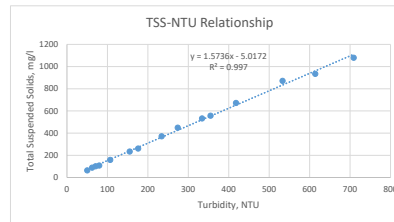


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

10-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:28 AM	7:35 AM	7:41 AM	7:46 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	48.0	31.8	29.3	33.7
NTU Increase Limit (10%)	52.8	35.0	32.2	37.1
Corresponding TSS	70.5	45.0	41.1	48.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	95.5	70.0	66.1	73.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	75.5	50.0	46.1	53.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:00 PM	1:07 PM	4:10 PM	4:20 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	34.3	34.8	33.5	35.7
Corresponding TSS	49.0	49.7	47.7	51.2
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

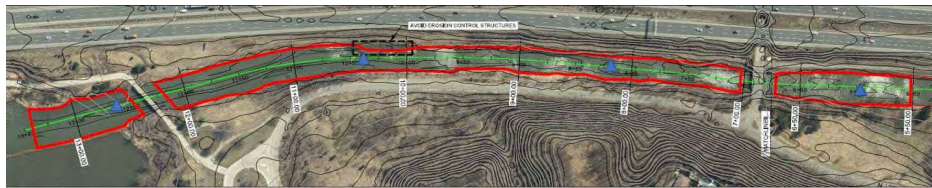
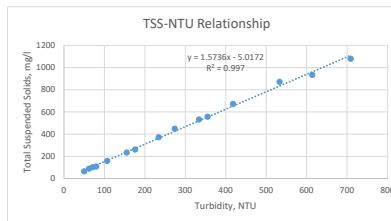


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 09/11/23 to 09/17/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
11-Sep-23	8:00am	6:00pm	N	N	-
12-Sep-23	1:00pm	6:00pm	N	N	Setting up 12" pump
13-Sep-23	8:00am	6:00pm	N	N	-
14-Sep-23	8:00am	6:00pm	N	N	-
15-Sep-23	8:00am	6:00pm	N	N	-
16-Sep-23	8:00am	6:00pm	N	N	-
17-Sep-23	8:00am	10:00am	-	-	Geobags filled, only background taken

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor		11-Sep-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4	
Time (hh:mm)	7:21 AM	7:26 AM	7:32 AM	7:39 AM	
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m	
NTU	37.6	34.6	31.7	34.7	
NTU Increase Limit (10%)	41.4	38.1	34.9	38.2	
Corresponding TSS	54.2	49.4	44.9	49.6	
TSS Increase Limit (25 mg/L - 24 Hour Period)	79.2	74.4	69.9	74.6	
TSS Increase Limit (5 mg/L - 1 to 30 days)	59.2	54.4	49.9	54.6	
Comments (if applicable)	-	-	-	-	

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:47 PM	1:55 PM	5:15 PM	5:23 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	36.7	35.2	34.9	36.4
Corresponding TSS	52.7	50.4	49.9	52.3
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

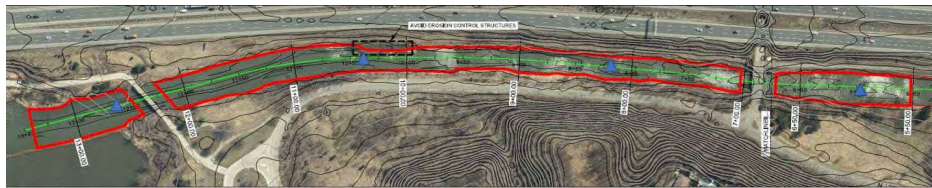
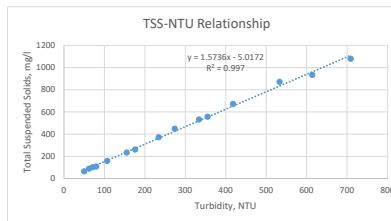


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
12-Sep-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:35 AM	7:40 AM	7:45 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	40.1	38.3	35.4	32.5
NTU Increase Limit (10%)	44.1	42.1	38.9	35.8
Corresponding TSS	58.1	55.3	50.7	46.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	83.1	80.3	75.7	71.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	63.1	60.3	55.7	51.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:36 PM	2:40 PM	5:30 PM	5:40 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	38.0	33.8	38.7	30.4
Corresponding TSS	54.8	48.2	55.9	42.8
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

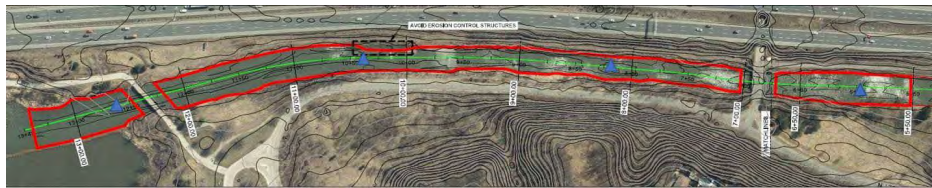
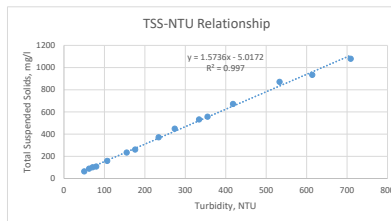


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

13-Sep-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:44 AM	7:50 AM	8:00 AM	8:04 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	65.5	43.0	44.6	30.3
NTU Increase Limit (10%)	72.1	47.3	49.1	33.3
Corresponding TSS	98.1	62.6	65.2	42.7
TSS Increase Limit (25 mg/L - 24 Hour Period)	123.1	87.6	90.2	67.7
TSS Increase Limit (5 mg/L - 1 to 30 days)	103.1	67.6	70.2	47.7
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:48 AM	2:52 AM	5:27 PM	5:33 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	46.7	35.0	47.2	38.7
Corresponding TSS	68.5	50.1	69.3	55.9
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

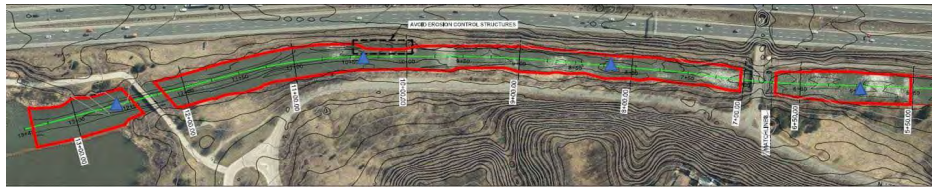
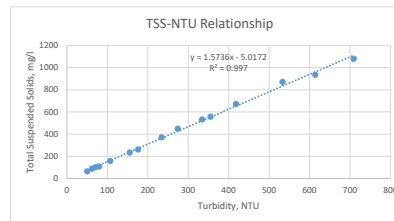


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

14-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:44 AM	7:48 AM	7:52 AM	7:56 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	70.2	47.5	40.0	51.9
NTU Increase Limit (10%)	77.2	52.3	44.0	57.1
Corresponding TSS	105.4	69.7	57.9	76.7
TSS Increase Limit (25 mg/L - 24 Hour Period)	130.4	94.7	82.9	101.7
TSS Increase Limit (5 mg/L - 1 to 30 days)	110.4	74.7	62.9	81.7
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	11:30 AM	11:49 AM	4:11 PM	4:20 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	53.7	40.0	36.5	32.6
Corresponding TSS	79.5	57.9	52.4	46.3
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

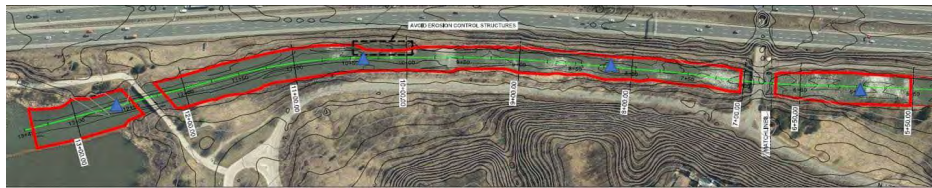
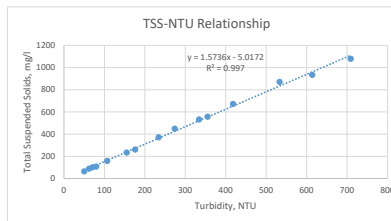


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

15-Sep-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:35 AM	7:45 AM	7:50 AM	7:55 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	54.2	54.8	44.8	32.9
NTU Increase Limit (10%)	59.6	60.3	49.3	36.2
Corresponding TSS	80.3	81.2	65.5	46.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	105.3	106.2	90.5	71.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	85.3	86.2	70.5	51.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	3:12 PM	3:18 PM	5:03 PM	5:09 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	37.7	44.4	42.0	48.4
Corresponding TSS	54.3	64.9	61.1	71.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

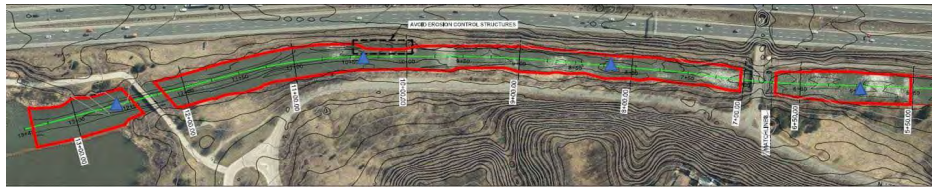
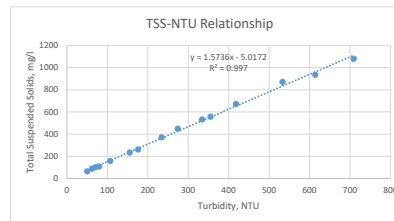


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
16-Sep-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:29 AM	7:35 AM	7:42 AM	7:46 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	54.7	45.1	44.2	32.8
NTU Increase Limit (10%)	60.2	49.6	48.6	36.1
Corresponding TSS	81.1	66.0	64.5	46.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	106.1	91.0	89.5	71.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	86.1	71.0	69.5	51.6
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:22 PM	12:33 PM	4:45 PM	4:52 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	30.7	43.8	34.8	33.1
Corresponding TSS	43.3	63.9	49.7	47.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

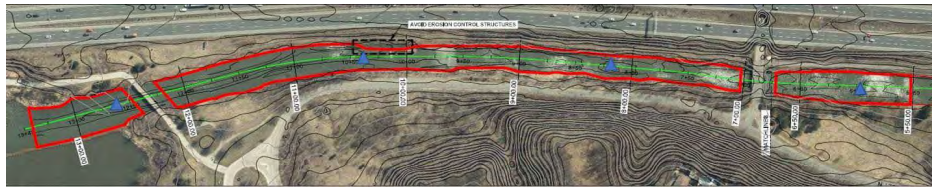
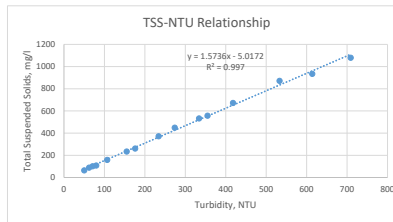


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	17-Sep-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:36 AM	7:47 AM	7:51 AM	7:55 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	39.4	35.5	33.5	40.8
NTU Increase Limit (10%)	43.3	39.1	36.9	44.9
Corresponding TSS	57.0	50.8	47.7	59.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	82.0	75.8	72.7	84.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	62.0	55.8	52.7	64.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	-	-	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	-	-	-	-
Corresponding TSS	-	-	-	-
Exceedance (Y/N)	-	-	-	-
Exceedance contributed to Dredging Activities (Y/N)	-	-	-	-
Comments (if applicable)	Geobags full, dredging stopped	Geobags full, dredging stopped	Geobags full, dredging stopped	Geobags full, dredging stopped

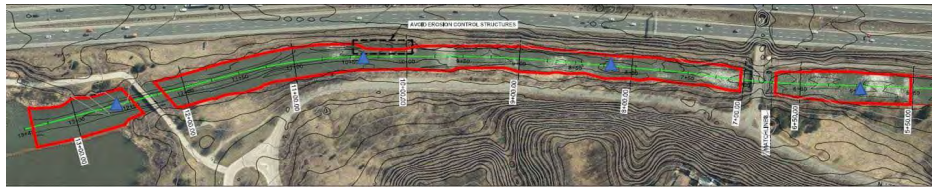
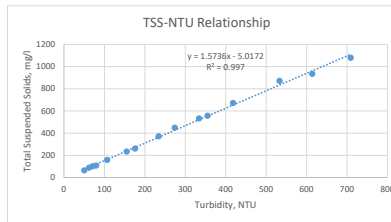


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 09/18/23 to 09/24/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
18-Sep-23	-	-	-	-	Deploying geobags, no dredging
19-Sep-23	8:30am	6:15pm	N	N	-
20-Sep-23	10:30am	6:00pm	N	N	-
21-Sep-23	8:30am	6:00pm	N	N	-
22-Sep-23	8:00am	6:00pm	N	N	-
23-Sep-23	8:00am	6:00pm	N	N	-
24-Sep-23	8:00am	6:00pm	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

19-Aug-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:34 AM	7:42 AM	7:47 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	48.6	43.6	50.1	45.5
NTU Increase Limit (10%)	53.5	48.0	55.1	50.1
Corresponding TSS	71.5	63.6	73.8	66.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	96.5	88.6	98.8	91.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	76.5	68.6	78.8	71.6
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:30 PM	2:36 PM	5:17 PM	5:25 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	38.1	39.0	36.3	36.7
Corresponding TSS	54.9	56.4	52.1	52.7
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

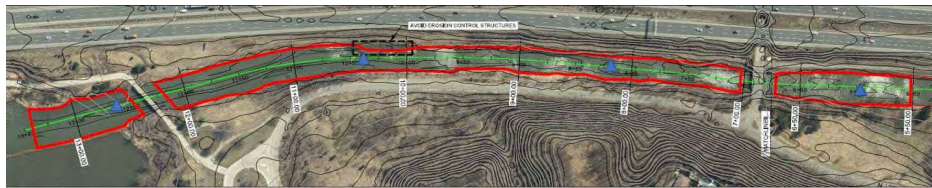
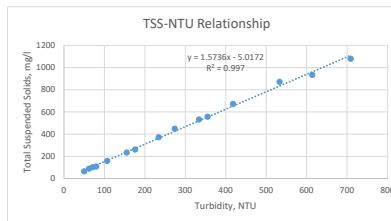


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
20-Sep-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:17 AM	7:23 AM	7:28 AM	7:34 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	74.2	51.1	45.9	34.4
NTU Increase Limit (10%)	81.6	56.2	50.5	37.8
Corresponding TSS	111.7	75.4	67.2	49.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	136.7	100.4	92.2	74.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	116.7	80.4	72.2	54.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:43 PM	1:50 PM	4:48 PM	4:55 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	44.3	44.8	30.1	30.8
Corresponding TSS	64.7	65.5	42.3	43.4
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

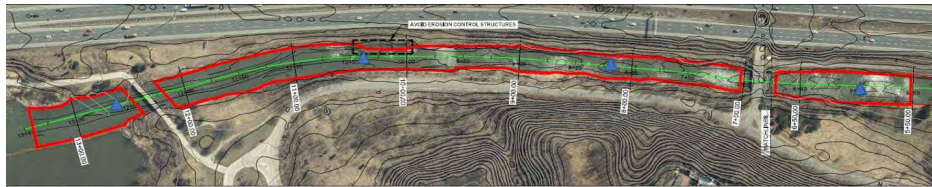
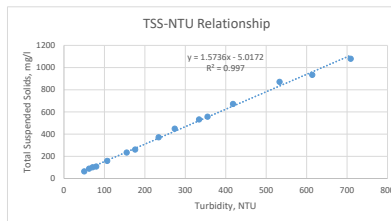


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

21-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:17 AM	7:23 AM	7:28 AM	7:34 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	53.9	48.3	36.4	31.4
NTU Increase Limit (10%)	59.3	53.1	40.0	34.5
Corresponding TSS	79.8	71.0	52.3	44.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	104.8	96.0	77.3	69.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	84.8	76.0	57.3	49.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:43 PM	1:50 PM	4:48 PM	4:55 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	40.9	30.5	38.9	27.5
Corresponding TSS	59.3	43.0	56.2	38.3
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

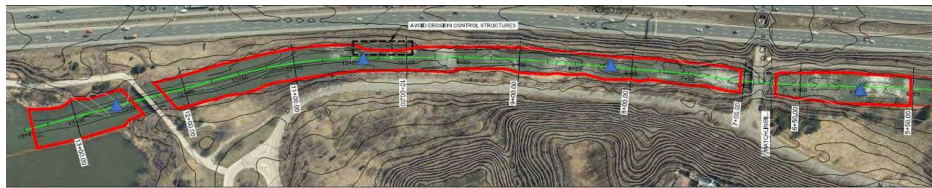
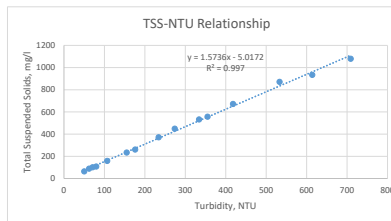


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

22-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:17 AM	7:23 AM	7:28 AM	7:34 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.9	33.5	32.4	29.4
NTU Increase Limit (10%)	52.7	36.9	35.6	32.3
Corresponding TSS	70.4	47.7	46.0	41.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	95.4	72.7	71.0	66.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	75.4	52.7	51.0	46.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:43 PM	1:50 PM	4:48 PM	4:55 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	40.9	31.5	50.2	31.8
Corresponding TSS	59.3	44.6	74.0	45.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

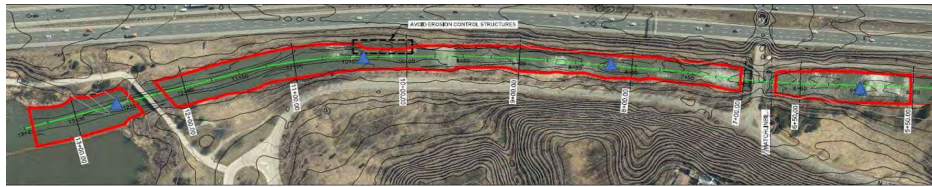
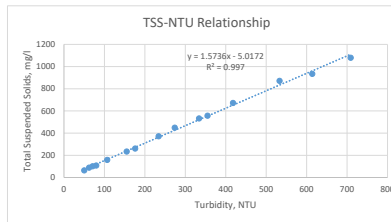


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

23-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:23 AM	7:30 AM	7:36 AM	7:40 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	57.4	40.8	34.9	47.5
NTU Increase Limit (10%)	63.1	44.9	38.4	52.3
Corresponding TSS	85.3	59.2	49.9	69.7
TSS Increase Limit (25 mg/L - 24 Hour Period)	110.3	84.2	74.9	94.7
TSS Increase Limit (5 mg/L - 1 to 30 days)	90.3	64.2	54.9	74.7
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:27 PM	1:34 PM	5:07 PM	5:15 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	44.3	38.5	37.8	36.7
Corresponding TSS	64.7	55.6	54.5	52.7
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

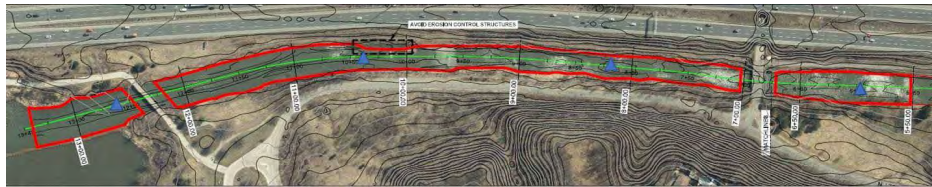
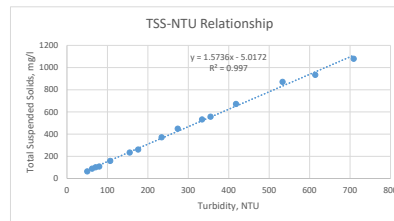


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

24-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:31 AM	7:37 AM	7:44 AM	7:51 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	48.3	41.6	34.6	30.0
NTU Increase Limit (10%)	53.1	45.8	38.1	33.0
Corresponding TSS	71.0	60.4	49.4	42.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	96.0	85.4	74.4	67.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	76.0	65.4	54.4	47.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:30 PM	1:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	43.4	46.5	44.4	45.8
Corresponding TSS	63.3	68.2	64.9	67.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

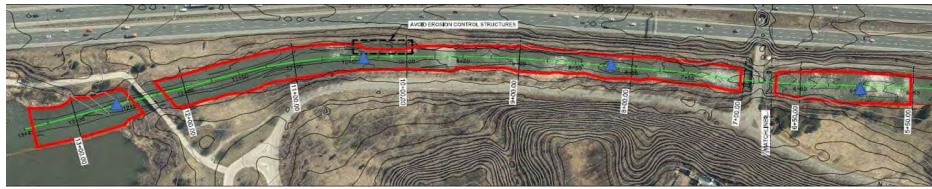
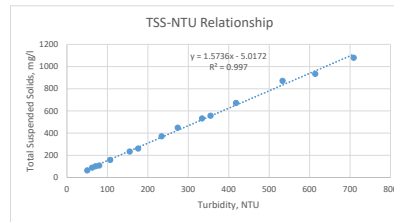


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 09/25/23 to 10/1/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
25-Sep-23	4:30pm	6:00pm	N	N	Dredge Mechanical issues
26-Sep-23	8:00am	6:15pm	N	N	-
27-Sep-23	8:00am	10:30am	N	N	Booster pump issues
28-Sep-23	8:00am	6:00pm	N	N	-
29-Sep-23	8:00am	10:30am	N	N	Moving dredge
30-Sep-23	8:00am	6:00pm	N	N	-
1-Oct-23	8:00am	6:00pm	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

25-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:35 AM	7:40 AM	7:45 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	53.8	42.3	33.2	28.0
NTU Increase Limit (10%)	59.2	46.5	36.5	30.8
Corresponding TSS	79.6	61.5	47.2	39.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	104.6	86.5	72.2	64.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	84.6	66.5	52.2	44.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:16 PM	1:32 PM	5:01 PM	5:08 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	39.9	36.1	42.0	35.8
Corresponding TSS	57.8	51.8	61.1	51.3
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

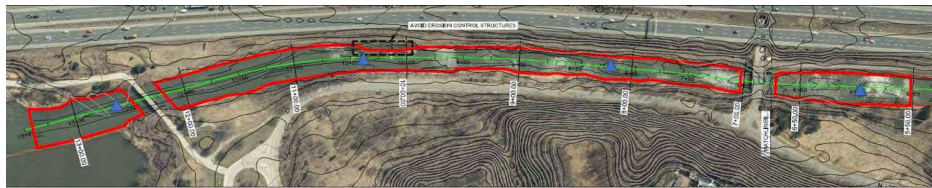
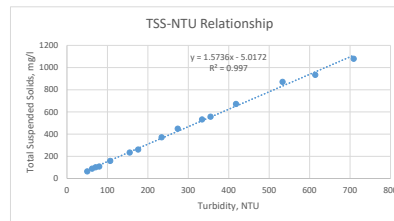


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

26-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:35 AM	7:41 AM	7:44 AM	7:50 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	48.7	37.3	36.1	31.4
NTU Increase Limit (10%)	53.6	41.0	39.7	34.5
Corresponding TSS	71.6	53.7	51.8	44.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	96.6	78.7	76.8	69.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	76.6	58.7	56.8	49.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:16 PM	1:21 PM	4:20 PM	4:26 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	39.4	30.4	36.5	31.9
Corresponding TSS	57.0	42.8	52.4	45.2
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

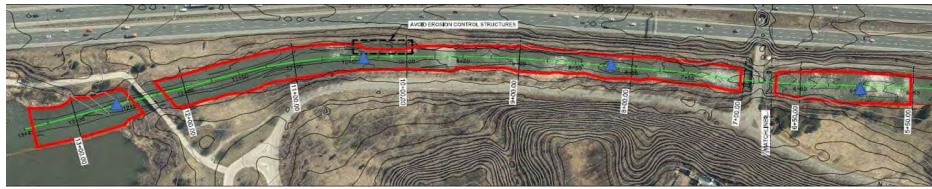
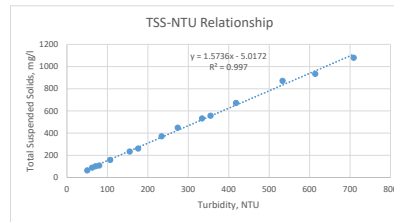


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
27-Sep-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:32 AM	7:37 AM	7:42 AM	7:47 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.2	33.4	31.0	32.9
NTU Increase Limit (10%)	51.9	36.7	34.1	36.2
Corresponding TSS	69.3	47.5	43.8	46.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	94.3	72.5	68.8	71.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	74.3	52.5	48.8	51.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	3:03 PM	3:10 PM	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	34.9	26.1	-	-
Corresponding TSS	49.9	36.1	-	-
Exceedance (Y/N)	N	N	-	-
Exceedance contributed to Dredging Activities (Y/N)	N	N	-	-
Comments (if applicable)	-	-	Booster pump problems, no dredging	Booster pump problems, no dredging

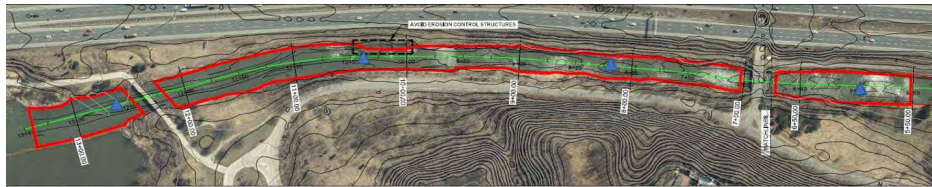
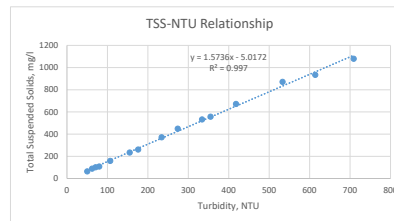


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

28-Sep-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:34 AM	7:39 AM	7:43 AM	7:47 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	57.9	53.7	35.8	34.2
NTU Increase Limit (10%)	63.7	59.1	39.4	37.6
Corresponding TSS	86.1	79.5	51.3	48.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	111.1	104.5	76.3	73.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	91.1	84.5	56.3	53.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:47 PM	12:54 PM	4:45 PM	4:51 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	35.2	34.8	49.2	34.0
Corresponding TSS	50.4	49.7	72.4	48.5
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

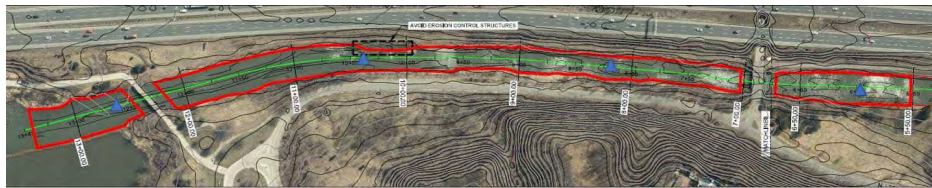
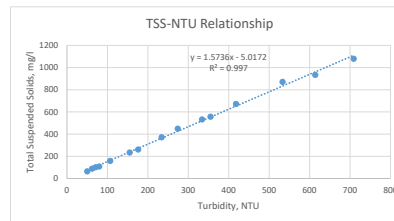


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

29-Sep-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:15 AM	7:22 AM	7:27 AM	7:30 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	54.4	34.8	42.6	36.8
NTU Increase Limit (10%)	59.8	38.3	46.9	40.5
Corresponding TSS	80.6	49.7	62.0	52.9
TSS Increase Limit (25 mg/L - 24 Hour Period)	105.6	74.7	87.0	77.9
TSS Increase Limit (5 mg/L - 1 to 30 days)	85.6	54.7	67.0	57.9
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:07 PM	1:13 PM	4:47 PM	4:55 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	46.5	40.1	45.7	42.5
Corresponding TSS	68.2	58.1	66.9	61.9
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

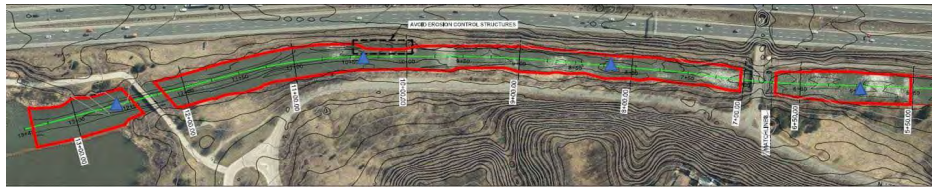
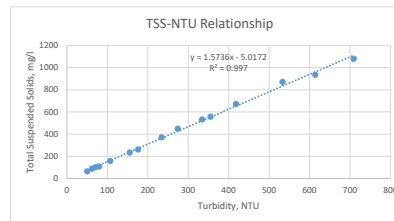


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
30-Sep-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:11 AM	8:16 AM	8:21 AM	8:26 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.5	35.9	31.2	31.2
NTU Increase Limit (10%)	52.3	39.5	34.3	34.3
Corresponding TSS	69.7	51.5	44.1	44.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	94.7	76.5	69.1	69.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	74.7	56.5	49.1	49.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:45 PM	2:50 PM	5:00 PM	5:06 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	44.2	31.8	45.0	30.9
Corresponding TSS	64.5	45.0	65.8	43.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

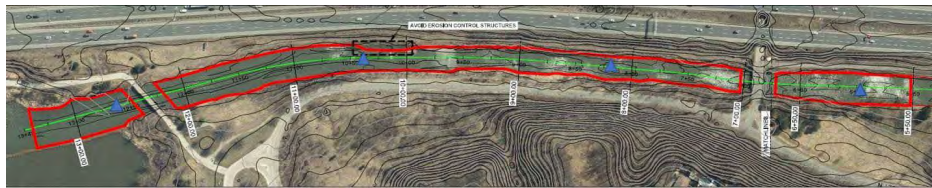
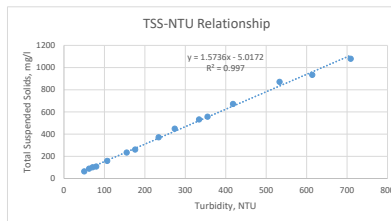


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
1-Oct-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:07 AM	7:13 AM	7:18 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	46.2	34.5	35.3	30.4
NTU Increase Limit (10%)	50.8	38.0	38.8	33.4
Corresponding TSS	67.7	49.3	50.5	42.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	92.7	74.3	75.5	67.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	72.7	54.3	55.5	47.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:00 PM	2:07 PM	5:33 PM	5:38 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	40.1	34.1	42.3	39.1
Corresponding TSS	58.1	48.6	61.5	56.5
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

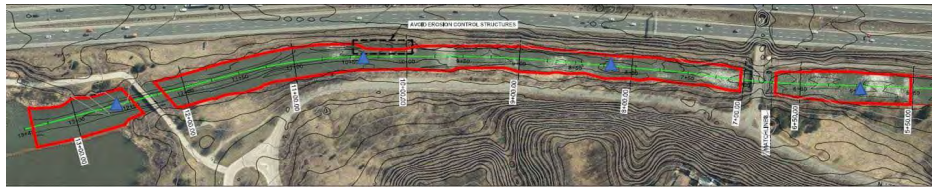
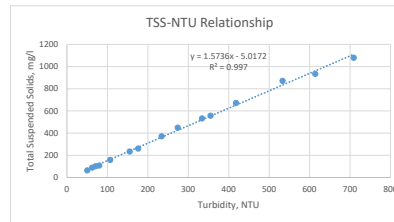


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 10/02/23 to 10/08/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
2-Oct-23	8:00am	6:00pm	N	N	-
3-Oct-23	8:00am	6:00pm	N	N	-
4-Oct-23	8:00am	6:00pm	N	N	-
5-Oct-23	8:00am	6:00pm	N	N	-
6-Oct-23	8:00am	6:00pm	N	N	Rain causing high turbidity
7-Oct-23	8:00am	6:00pm	N	N	Rain causing high turbidity
8-Oct-23	8:00am	11:00am	N	N	Moved dredge under bridge

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

2-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:14 AM	7:21 AM	7:27 AM	7:33 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	58.1	40.6	36.0	33.2
NTU Increase Limit (10%)	63.9	44.7	39.6	36.5
Corresponding TSS	86.4	58.9	51.6	47.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	111.4	83.9	76.6	72.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	91.4	63.9	56.6	52.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:58 PM	2:04 PM	4:58 PM	5:11 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	55.4	24.9	47.8	27.0
Corresponding TSS	82.2	34.2	70.2	37.5
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

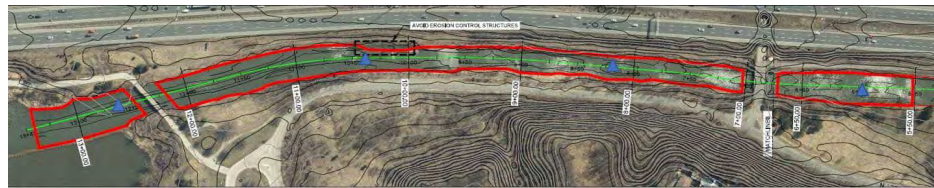
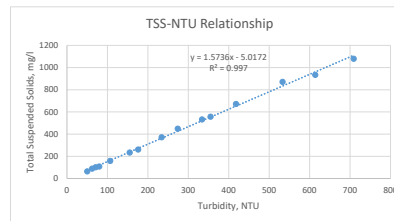


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
3-Oct-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:28 AM	7:32 AM	7:34 AM	7:37 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	30.7	50.3	33.2	36.1
NTU Increase Limit (10%)	33.8	55.3	36.5	39.7
Corresponding TSS	43.3	74.1	47.2	51.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	68.3	99.1	72.2	76.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	48.3	79.1	52.2	56.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:53 PM	1:59 PM	5:14 PM	5:20 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	42.1	30.7	28.1	28.6
Corresponding TSS	61.2	43.3	39.2	40.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

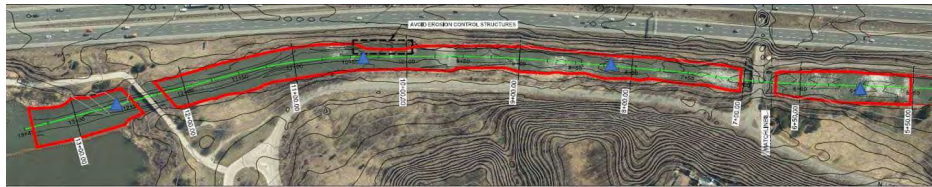
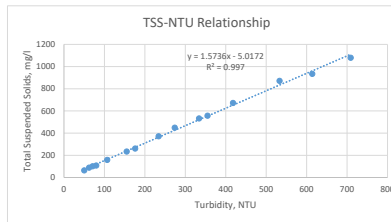


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

4-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:26 AM	7:29 AM	7:35 AM	7:40 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	39.9	48.9	33.4	28.0
NTU Increase Limit (10%)	43.9	53.8	36.7	30.8
Corresponding TSS	57.8	71.9	47.5	39.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	82.8	96.9	72.5	64.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	62.8	76.9	52.5	44.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:33 PM	12:39 PM	4:13 PM	4:20 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	37.6	29.5	36.1	29.2
Corresponding TSS	54.2	41.4	51.8	40.9
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

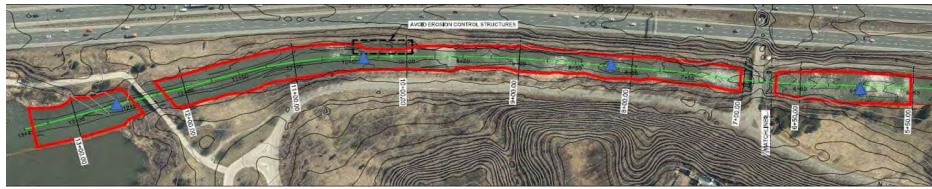
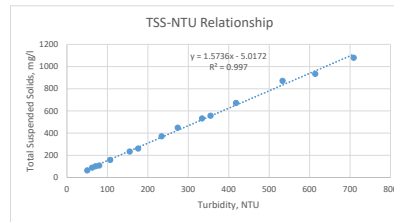


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

5-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:27 AM	7:31 AM	7:51 AM	7:54 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	36.6	49.0	35.1	30.2
NTU Increase Limit (10%)	40.3	53.9	38.6	33.2
Corresponding TSS	52.6	72.1	50.2	42.5
TSS Increase Limit (25 mg/L - 24 Hour Period)	77.6	97.1	75.2	67.5
TSS Increase Limit (5 mg/L - 1 to 30 days)	57.6	77.1	55.2	47.5
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:51 PM	2:01 PM	5:15 PM	5:20 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	33.0	35.9	31.6	46.9
Corresponding TSS	46.9	51.5	44.7	68.8
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

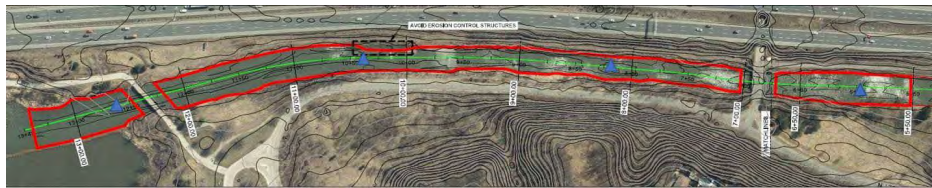
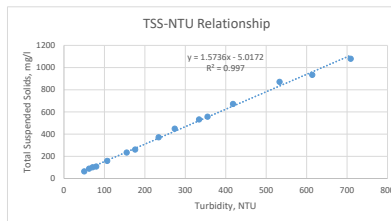


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	6-Oct-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:35 AM	7:40 AM	7:45 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	83.5	124.0	103.0	79.2
NTU Increase Limit (10%)	91.9	136.4	113.3	87.1
Corresponding TSS	126.4	190.1	157.1	115.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	151.4	215.1	182.1	144.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	131.4	195.1	162.1	124.6
Comments (if applicable)	Rain night prior causing high turbidity	Rain night prior causing high turbidity	Rain night prior causing high turbidity	Rain night prior causing high turbidity

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	4:30 PM	4:35 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	116.0	66.0	109.0	58.0
Corresponding TSS	177.5	98.8	166.5	86.3
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

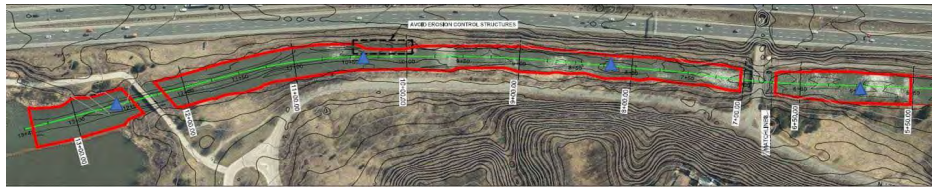
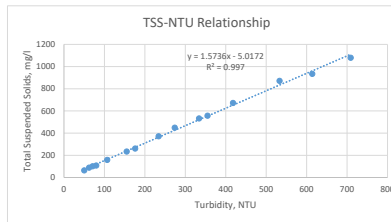


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

7-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:47 AM	7:53 AM	7:58 AM	8:02 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	216.0	184.0	91.6	128.0
NTU Increase Limit (10%)	237.6	202.4	100.8	140.8
Corresponding TSS	334.9	284.5	139.1	196.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	359.9	309.5	164.1	221.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	339.9	289.5	144.1	201.4
Comments (if applicable)	Heavy rain causing high turbidity	Heavy rain causing high turbidity	Heavy rain causing high turbidity	Heavy rain causing high turbidity

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:26 PM	12:30 PM	4:40 PM	4:50 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	131.0	88.6	121.0	87.0
Corresponding TSS	201.1	134.4	185.4	131.9
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

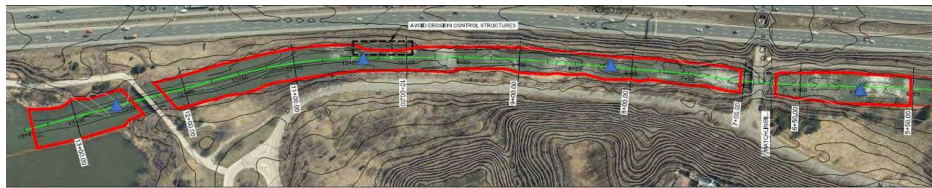
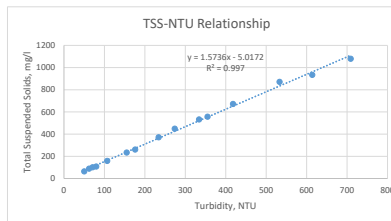


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

8-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:20 AM	7:26 AM	7:31 AM	7:38 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	84.2	72.9	48.3	35.6
NTU Increase Limit (10%)	92.6	80.2	53.1	39.2
Corresponding TSS	127.5	109.7	71.0	51.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	152.5	134.7	96.0	76.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	132.5	114.7	76.0	56.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:13 PM	1:18 PM	5:04 PM	5:11 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	77.2	47.2	77.9	47.4
Corresponding TSS	116.5	69.3	117.6	69.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

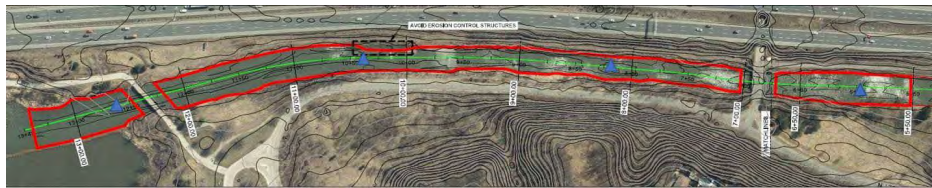
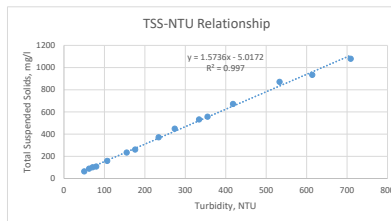


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 10/9/23 to 10/15/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
9-Oct-23	9:30am	6:15pm	N	N	-
10-Oct-23	7:30am	6:15pm	N	N	-
11-Oct-23	7:45am	6:15pm	N	N	-
12-Oct-23	7:25am	6:00pm	N	N	-
13-Oct-23	7:25am	6:00pm	N	N	-
14-Oct-23	7:30am	2:30pm	N	N	Rain stopped dredging for the day
15-Oct-23	7:30am	6:00pm	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek

***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

9-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:15 AM	7:22 AM	7:27 AM	7:32 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	90.8	95.2	84.1	78.3
NTU Increase Limit (10%)	99.9	104.7	92.5	86.1
Corresponding TSS	137.9	144.8	127.3	118.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	162.9	169.8	152.3	143.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	142.9	149.8	132.3	123.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:14 PM	1:21 PM	5:05 PM	5:10 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	94.1	83.1	95.8	84.9
Corresponding TSS	143.1	125.7	145.7	128.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

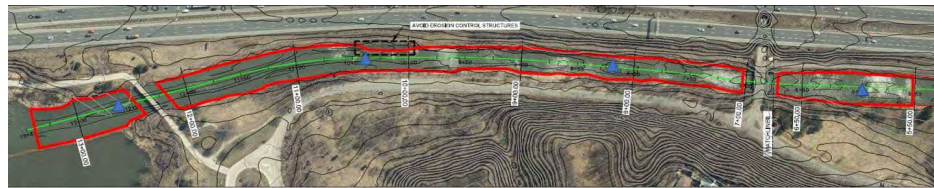
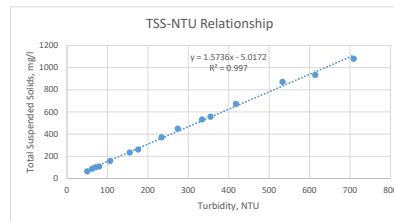


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

10-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:40 AM	6:45 AM	6:50 AM	6:55 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	65.1	98.2	82.4	74.1
NTU Increase Limit (10%)	71.6	108.0	90.6	81.5
Corresponding TSS	97.4	149.5	124.6	111.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	122.4	174.5	149.6	136.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	102.4	154.5	129.6	116.6
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:10 PM	1:15 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	66.2	80.1	68.8	81.5
Corresponding TSS	99.2	121.0	103.2	123.2
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

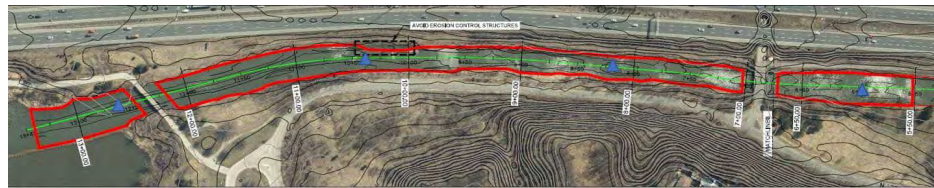
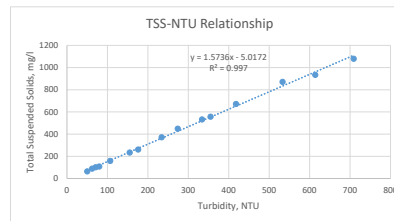


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

11-Oct-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:20 AM	7:25 AM	7:30 AM	7:35 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	70.1	71.2	72.1	69.2
NTU Increase Limit (10%)	77.1	78.3	79.3	76.1
Corresponding TSS	105.3	107.0	108.4	103.9
TSS Increase Limit (25 mg/L - 24 Hour Period)	130.3	132.0	133.4	128.9
TSS Increase Limit (5 mg/L - 1 to 30 days)	110.3	112.0	113.4	108.9
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:14 PM	1:20 PM	5:11 PM	5:19 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	71.1	67.9	70.9	68.1
Corresponding TSS	106.9	101.8	106.6	102.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

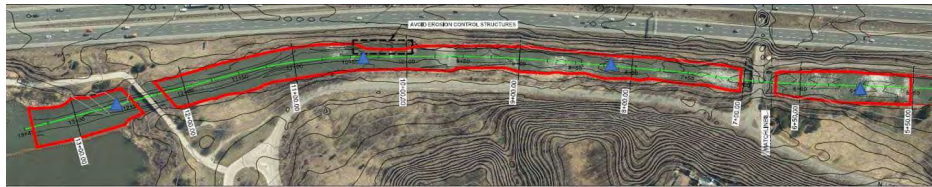
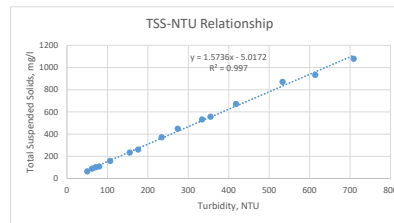


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

12-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:36 AM	7:43 AM	7:52 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	43.1	44.6	38.9	37.6
NTU Increase Limit (10%)	47.4	49.1	42.8	41.4
Corresponding TSS	62.8	65.2	56.2	54.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	87.8	90.2	81.2	79.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	67.8	70.2	61.2	59.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:12 PM	1:17 PM	4:10 PM	4:20 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	40.8	40.1	42.4	43.6
Corresponding TSS	59.2	58.1	61.7	63.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

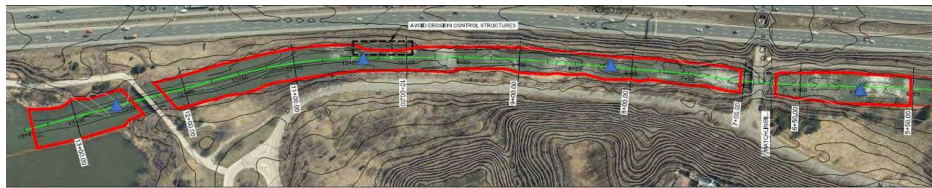
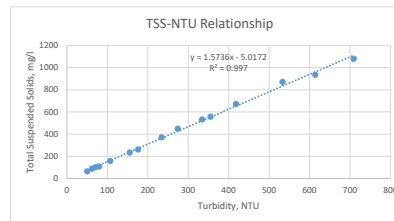


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

13-Oct-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:33 AM	7:42 AM	7:47 AM	7:54 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	27.1	60.4	54.1	44.3
NTU Increase Limit (10%)	29.8	66.4	59.5	48.7
Corresponding TSS	37.6	90.0	80.1	64.7
TSS Increase Limit (25 mg/L - 24 Hour Period)	62.6	115.0	105.1	89.7
TSS Increase Limit (5 mg/L - 1 to 30 days)	42.6	95.0	85.1	69.7
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:15 PM	2:20 PM	5:47 PM	5:54 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	37.6	30.7	36.8	32.6
Corresponding TSS	54.2	43.3	52.9	46.3
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

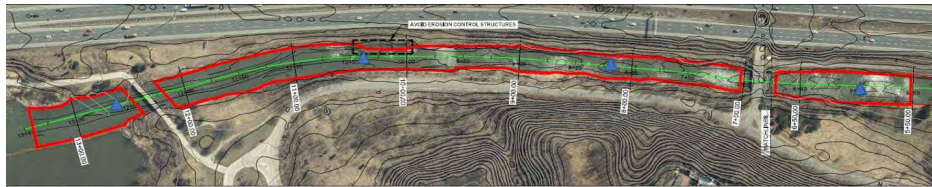
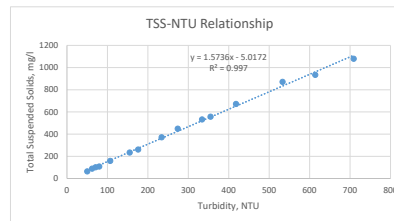


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

14-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:20 AM	7:26 AM	7:31 AM	7:37 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	36.7	50.2	44.6	44.5
NTU Increase Limit (10%)	40.4	55.2	49.1	49.0
Corresponding TSS	52.7	74.0	65.2	65.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	77.7	99.0	90.2	90.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	57.7	79.0	70.2	70.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:35 PM	1:40 PM	5:05 PM	5:10 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	44.8	42.2	40.4	41.5
Corresponding TSS	65.5	61.4	58.6	60.3
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

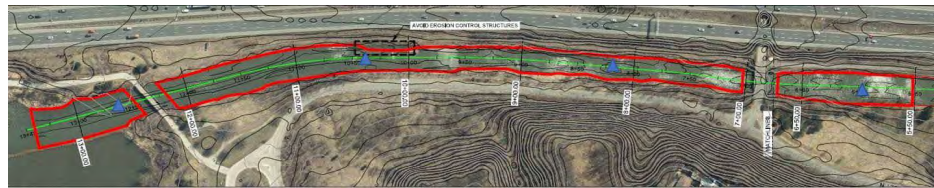
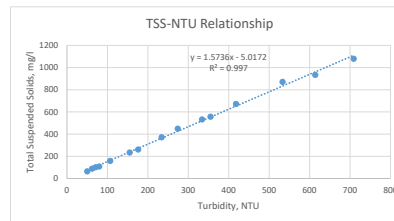


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

15-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:35 AM	7:40 AM	7:45 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	50.5	53.1	46.9	43.8
NTU Increase Limit (10%)	55.6	58.4	51.6	48.2
Corresponding TSS	74.4	78.5	68.8	63.9
TSS Increase Limit (25 mg/L - 24 Hour Period)	99.4	103.5	93.8	88.9
TSS Increase Limit (5 mg/L - 1 to 30 days)	79.4	83.5	73.8	68.9
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:25 PM	1:30 PM	5:30 PM	5:35 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	40.8	44.6	34.5	35.7
Corresponding TSS	59.2	65.2	49.3	51.2
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

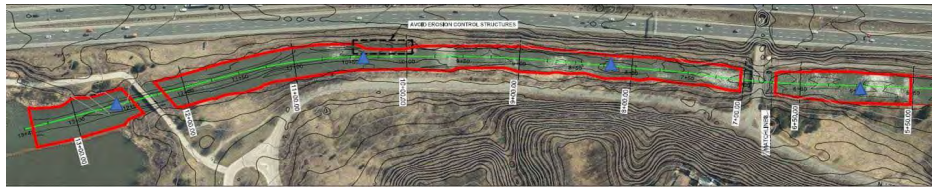
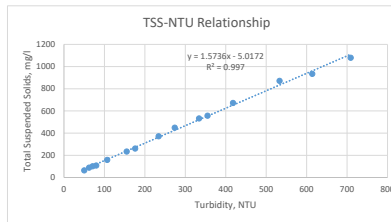


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 10/16/23 to 10/22/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
16-Oct-23	7:20am	6:20pm	N	N	-
17-Oct-23	7:20am	6:20pm	N	N	-
18-Oct-23	8:00am	6:20pm	N	N	-
19-Oct-23	8:00am	6:20pm	N	N	-
20-Oct-23	8:00am	6:20pm	N	N	-
21-Oct-23	7:25am	6:00pm	N	N	-
22-Oct-23	7:20am	6:20pm	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

16-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	45.1	51.3	42.1	40.8
NTU Increase Limit (10%)	49.6	56.4	46.3	44.9
Corresponding TSS	66.0	75.7	61.2	59.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	91.0	100.7	86.2	84.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	71.0	80.7	66.2	64.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:40 PM	5:00 PM	5:07 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	41.2	40.7	43.1	41.4
Corresponding TSS	59.8	59.0	62.8	60.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

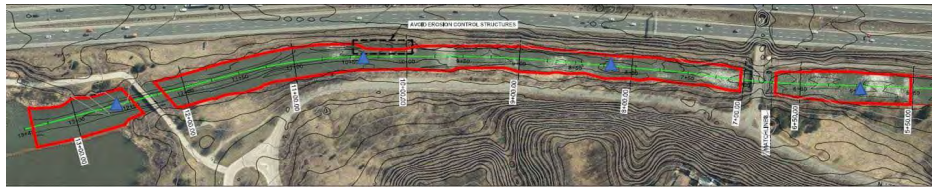
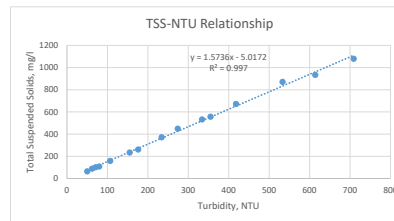


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

17-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:03 AM	7:06 AM	7:10 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	51.1	52.1	48.8	42.6
NTU Increase Limit (10%)	56.2	57.3	53.7	46.9
Corresponding TSS	75.4	77.0	71.8	62.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	100.4	102.0	96.8	87.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	80.4	82.0	76.8	67.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.8	41.4	47.4	41.4
Corresponding TSS	70.2	60.1	69.6	60.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

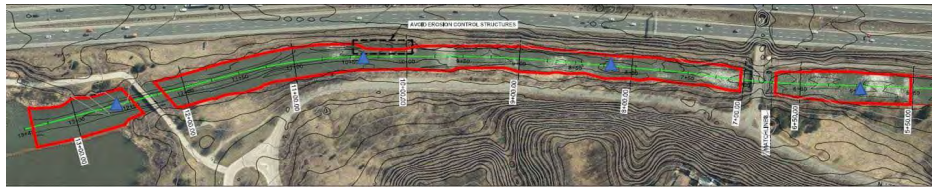
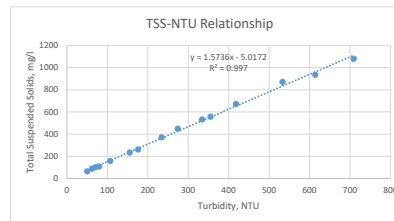


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

18-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:30 AM	6:35 AM	6:40 AM	6:45 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	45.1	52.4	44.6	42.2
NTU Increase Limit (10%)	49.6	57.6	49.1	46.4
Corresponding TSS	66.0	77.4	65.2	61.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	91.0	102.4	90.2	86.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	71.0	82.4	70.2	66.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	44.9	42.3	45.1	42.5
Corresponding TSS	65.6	61.5	66.0	61.9
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

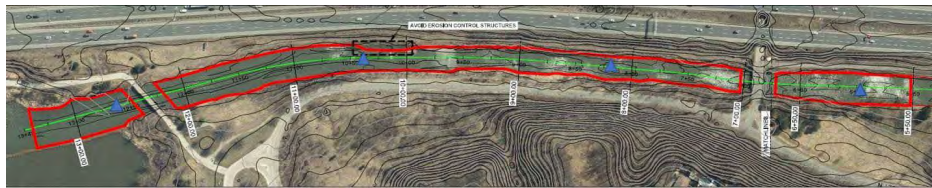
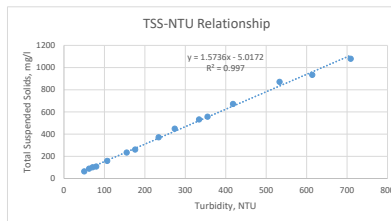


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
19-Oct-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:00 AM	8:05 AM	8:10 AM	8:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.6	53.9	46.7	41.9
NTU Increase Limit (10%)	52.4	59.3	51.4	46.1
Corresponding TSS	69.9	79.8	68.5	60.9
TSS Increase Limit (25 mg/L - 24 Hour Period)	94.9	104.8	93.5	85.9
TSS Increase Limit (5 mg/L - 1 to 30 days)	74.9	84.8	73.5	65.9
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:10 PM	2:20 PM	5:45 PM	5:50 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	44.6	38.5	53.0	53.7
Corresponding TSS	65.2	55.6	78.4	79.5
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

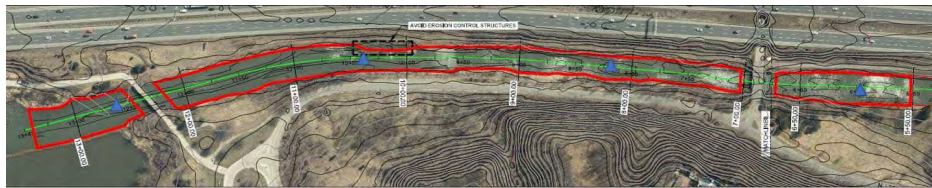
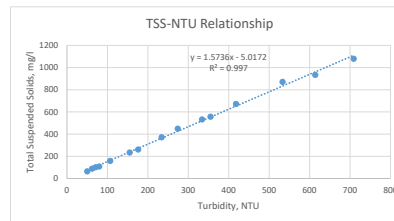


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

20-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:00 AM	8:06 AM	8:10 AM	8:16 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	46.8	45.6	29.1	38.2
NTU Increase Limit (10%)	51.5	50.2	32.0	42.0
Corresponding TSS	68.6	66.7	40.8	55.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	93.6	91.7	65.8	80.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	73.6	71.7	45.8	60.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:00 PM	2:05 PM	5:08 PM	5:13 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	49.4	45.5	44.4	45.0
Corresponding TSS	72.7	66.6	64.9	65.8
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

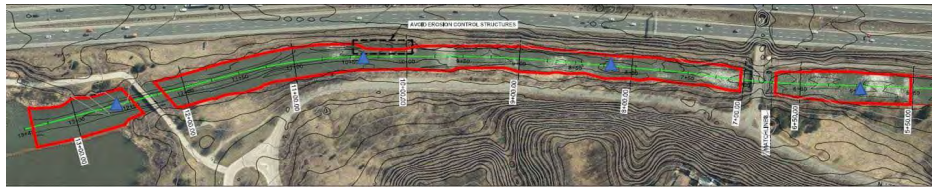
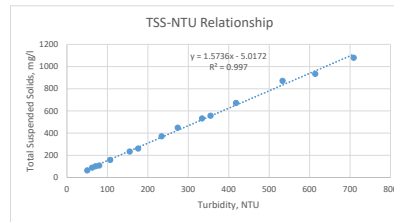


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

21-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	51.8	53.3	49.5	43.3
NTU Increase Limit (10%)	57.0	58.6	54.5	47.6
Corresponding TSS	76.5	78.9	72.9	63.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	101.5	103.9	97.9	88.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	81.5	83.9	77.9	68.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:40 PM	5:00 PM	5:08 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	49.5	48.1	47.6	47.9
Corresponding TSS	72.9	70.7	69.9	70.4
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

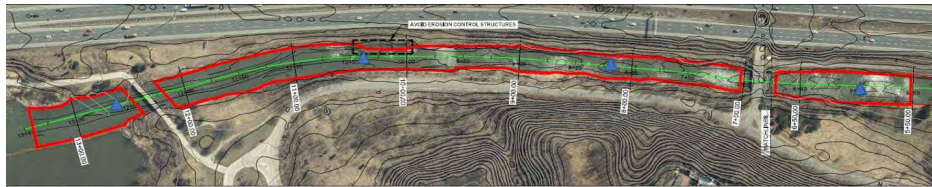
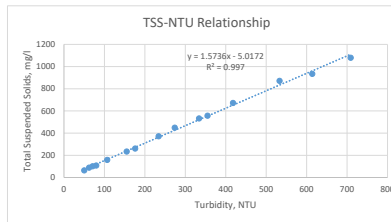


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

22-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:10 AM	7:14 AM	7:20 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.3	49.7	44.2	42.6
NTU Increase Limit (10%)	52.0	54.7	48.6	46.9
Corresponding TSS	69.4	73.2	64.5	62.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	94.4	98.2	89.5	87.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	74.4	78.2	69.5	67.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:35 PM	1:41 PM	5:30 PM	5:37 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	49.2	49.1	49.5	46.8
Corresponding TSS	72.4	72.2	72.9	68.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

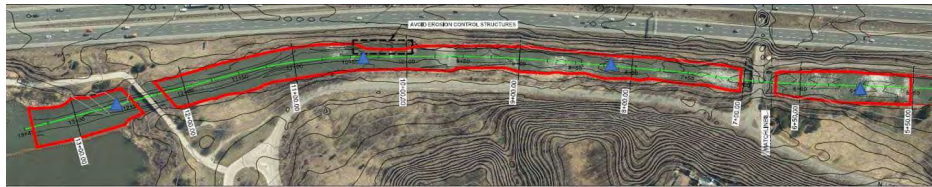
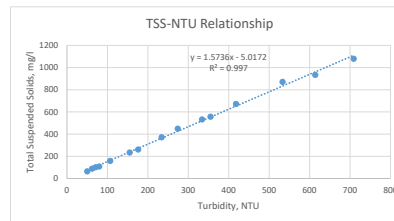


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 10/23/23 to 10/29/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
23-Oct-23	7:45am	5:30pm	N	N	-
24-Oct-23	7:30am	6:40pm	N	N	-
25-Oct-23	7:30am	6:30pm	N	N	-
26-Oct-23	-	-	-	-	Moving dredge under bridge, no dredging
27-Oct-23	7:30am	6:30pm	N	N	Heavy rain caused turbidity increase
28-Oct-23	7:30am	6:30pm	N	N	Heavy rain caused turbidity increase
29-Oct-23	7:30am	5:00pm	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

23-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:45 AM	6:50 AM	6:55 AM	7:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	51.1	55.7	46.8	45.4
NTU Increase Limit (10%)	56.2	61.3	51.5	49.9
Corresponding TSS	75.4	82.6	68.6	66.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	100.4	107.6	93.6	91.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	80.4	87.6	73.6	71.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	46.9	44.1	46.6	45.2
Corresponding TSS	68.8	64.4	68.3	66.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

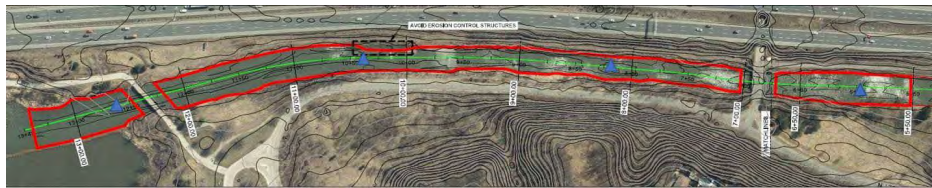
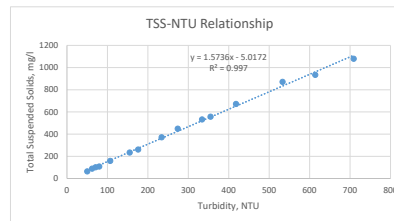


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

24-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:35 AM	6:40 AM	6:45 AM	6:50 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	56.3	56.6	47.2	45.4
NTU Increase Limit (10%)	61.9	62.3	51.9	49.9
Corresponding TSS	83.6	84.0	69.3	66.4
TSS Increase Limit (25 mg/L - 24 Hour Period)	108.6	109.0	94.3	91.4
TSS Increase Limit (5 mg/L - 1 to 30 days)	88.6	89.0	74.3	71.4
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:00 PM	12:05 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.1	44.2	46.9	44.3
Corresponding TSS	69.1	64.5	68.8	64.7
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

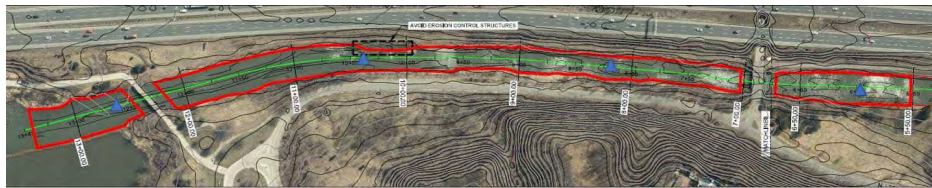
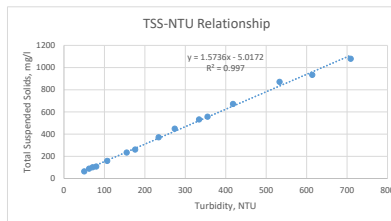


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

25-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:45 AM	6:50 AM	6:55 AM	7:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	52.2	55.1	46.0	45.1
NTU Increase Limit (10%)	57.4	60.6	50.6	49.6
Corresponding TSS	77.1	81.7	67.4	66.0
TSS Increase Limit (25 mg/L - 24 Hour Period)	102.1	106.7	92.4	91.0
TSS Increase Limit (5 mg/L - 1 to 30 days)	82.1	86.7	72.4	71.0
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	46.2	45.0	46.3	44.9
Corresponding TSS	67.7	65.8	67.8	65.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

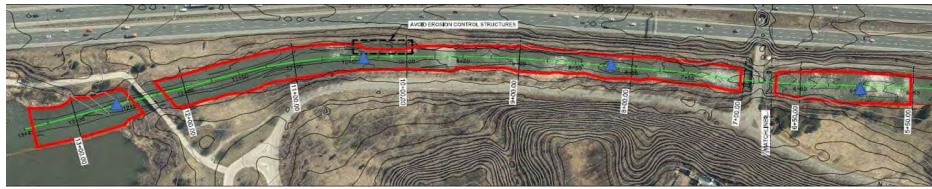
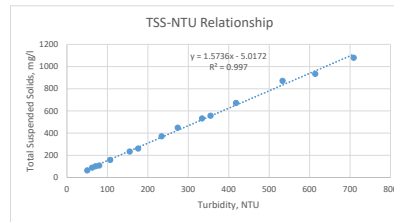


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

27-Oct-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:50 AM	7:55 AM	8:00 AM	8:05 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	138.0	129.0	94.6	86.0
NTU Increase Limit (10%)	151.8	141.9	104.1	94.6
Corresponding TSS	212.1	198.0	143.8	130.3
TSS Increase Limit (25 mg/L - 24 Hour Period)	237.1	223.0	168.8	155.3
TSS Increase Limit (5 mg/L - 1 to 30 days)	217.1	203.0	148.8	135.3
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:30 PM	1:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	112.4	99.7	109.8	95.1
Corresponding TSS	171.9	151.9	167.8	144.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

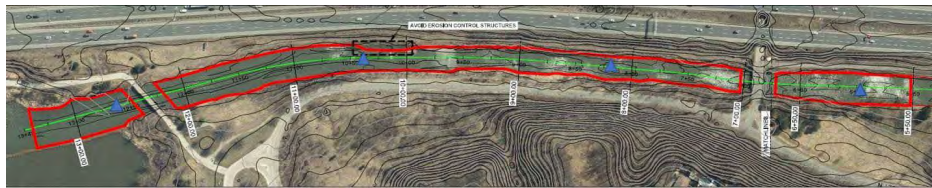
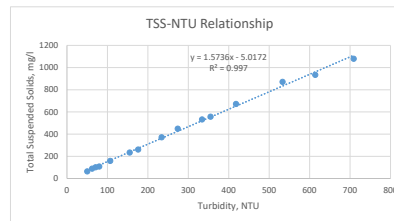


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

28-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:35 AM	7:40 AM	7:45 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	141.0	137.0	120.0	127.0
NTU Increase Limit (10%)	155.1	150.7	132.0	139.7
Corresponding TSS	216.9	210.6	183.8	194.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	241.9	235.6	208.8	219.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	221.9	215.6	188.8	199.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:45 PM	2:50 PM	5:35 PM	5:40 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	89.1	124.0	96.8	134.0
Corresponding TSS	135.2	190.1	147.3	205.8
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

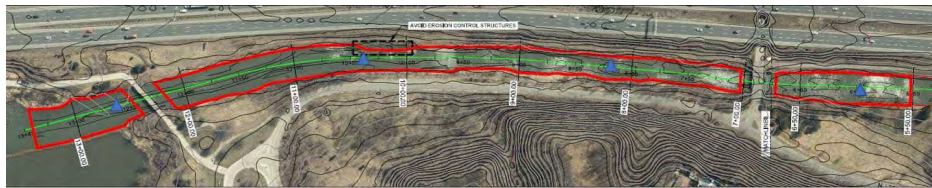
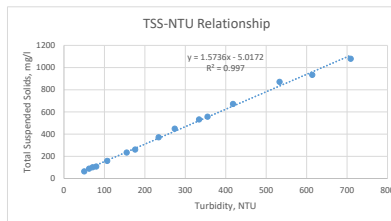


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

29-Oct-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:40 AM	7:45 AM	7:50 AM	8:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	68.5	61.2	41.9	38.7
NTU Increase Limit (10%)	75.4	67.3	46.1	42.6
Corresponding TSS	102.8	91.3	60.9	55.9
TSS Increase Limit (25 mg/L - 24 Hour Period)	127.8	116.3	85.9	80.9
TSS Increase Limit (5 mg/L - 1 to 30 days)	107.8	96.3	65.9	60.9
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:00 PM	1:10 PM	4:20 PM	4:30 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	34.3	34.8	66.6	31.8
Corresponding TSS	49.0	49.7	99.8	45.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

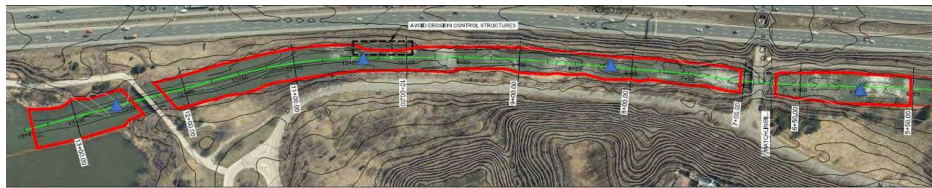
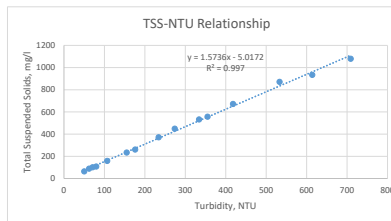


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 10/30/23 to 11/5/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
30-Oct-23	7:30am	12:30pm	N	N	Booster pump down
31-Oct-23	-	-	-	-	Booster pump down
1-Nov-23	1:30pm	6:30pm	N	N	Booster pump set up
2-Nov-23	7:30am	6:00pm	N	N	-
3-Nov-23	7:30am	6:30pm	N	N	-
4-Nov-23	7:20am	6:30pm	N	N	-
5-Nov-23	7:30am	6:30pm	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

30-Oct-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:45 AM	6:50 AM	6:55 AM	7:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	75.2	82.7	64.6	55.5
NTU Increase Limit (10%)	82.7	91.0	71.1	61.1
Corresponding TSS	113.3	125.1	96.6	82.3
TSS Increase Limit (25 mg/L - 24 Hour Period)	138.3	150.1	121.6	107.3
TSS Increase Limit (5 mg/L - 1 to 30 days)	118.3	130.1	101.6	87.3
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	-	-
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	63.8	54.8	-	-
Corresponding TSS	95.4	81.2	-	-
Exceedance (Y/N)	N	N	-	-
Exceedance contributed to Dredging Activities (Y/N)	N	N	-	-
Comments (if applicable)	-	-	Booster pump down, no dredging	Booster pump down, no dredging

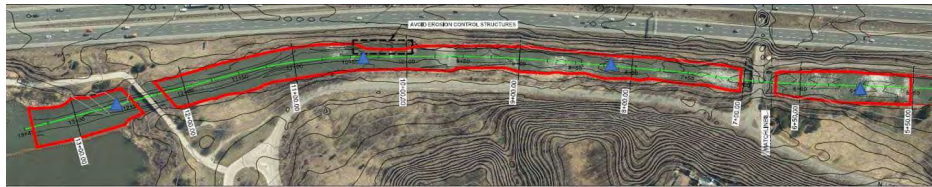
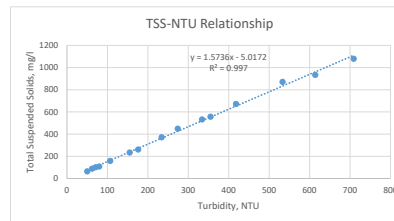


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek

Corresponding TSS
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
1-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	55.2	61.6	50.4	48.8
NTU Increase Limit (10%)	60.7	67.8	55.4	53.7
Corresponding TSS	81.8	91.9	74.3	71.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	106.8	116.9	99.3	96.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	86.8	96.9	79.3	76.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:00 PM	12:05 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	49.3	47.2	51.1	47.8
Corresponding TSS	72.6	69.3	75.4	70.2
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

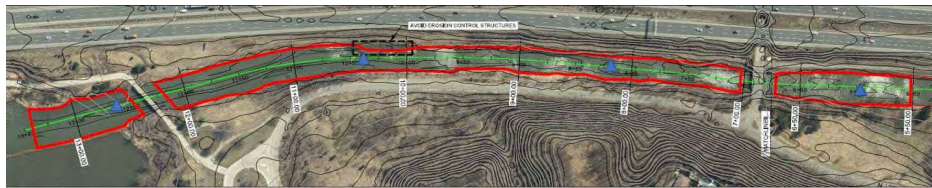
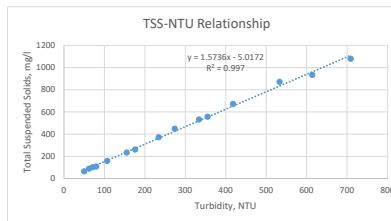


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

2-Nov-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:00 AM	8:05 AM	8:10 AM	8:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	88.5	67.6	53.0	84.6
NTU Increase Limit (10%)	97.4	74.4	58.3	93.1
Corresponding TSS	134.2	101.4	78.4	128.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	159.2	126.4	103.4	153.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	139.2	106.4	83.4	133.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	1:30 PM	1:35 PM	5:30 PM	5:35 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	81.8	59.1	81.7	59.6
Corresponding TSS	123.7	88.0	123.5	88.8
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

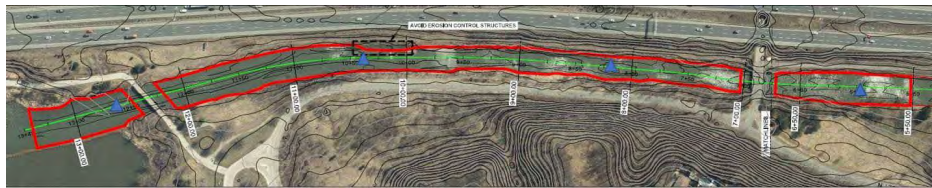
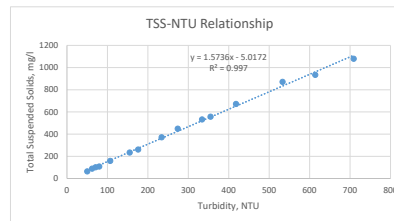


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
3-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:00 AM	8:05 AM	8:10 AM	8:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	85.7	71.5	67.8	79.2
NTU Increase Limit (10%)	94.3	78.7	74.6	87.1
Corresponding TSS	129.8	107.5	101.7	115.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	154.8	132.5	126.7	144.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	134.8	112.5	106.7	124.6
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:00 PM	2:05 PM	5:30 PM	5:35 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	80.9	67.7	81.4	69.9
Corresponding TSS	122.3	101.5	123.1	105.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

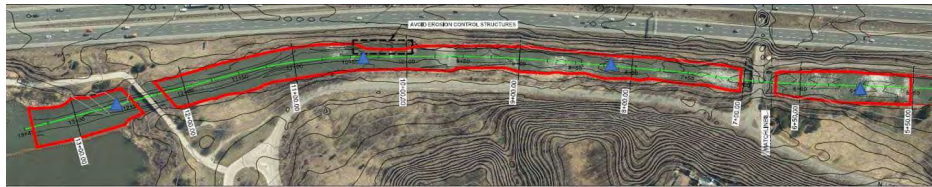
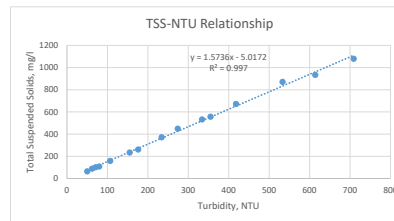


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

4-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:11 AM	8:16	8:21 AM	8:26 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.5	35.9	31.2	31.2
NTU Increase Limit (10%)	52.3	39.5	34.3	34.3
Corresponding TSS	69.7	51.5	44.1	44.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	94.7	76.5	69.1	69.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	74.7	56.5	49.1	49.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:18 PM	2:23 PM	4:20 PM	4:27 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.5	46.3	32.7	31.8
Corresponding TSS	69.7	67.8	46.4	45.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

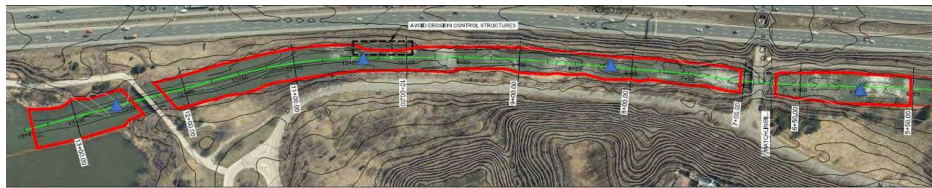
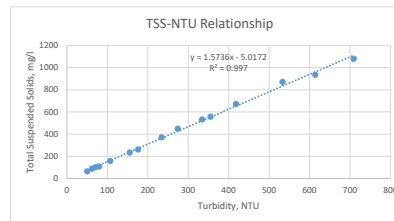


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

5-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:11 AM	8:16 AM	8:21 AM	8:26 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	47.5	35.9	31.2	20.4
NTU Increase Limit (10%)	52.3	39.5	34.3	22.4
Corresponding TSS	69.7	51.5	44.1	27.1
TSS Increase Limit (25 mg/L - 24 Hour Period)	94.7	76.5	69.1	52.1
TSS Increase Limit (5 mg/L - 1 to 30 days)	74.7	56.5	49.1	32.1
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:11 PM	2:17 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	46.6	49.9	46.6	31.8
Corresponding TSS	68.3	73.5	68.3	45.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

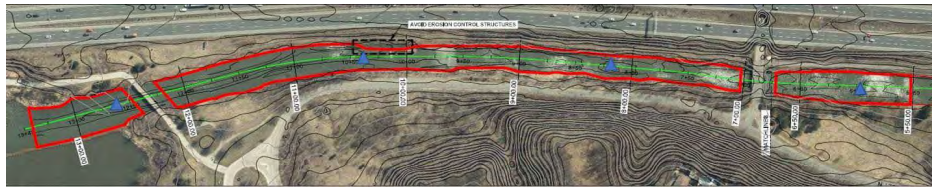
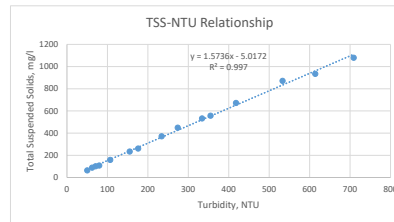


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 11/6/23 to 11/12/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
6-Nov-23	7:15	6:30	N	N	-
7-Nov-23	7:40	6:30	N	N	-
8-Nov-23	8:20	6:30	N	N	-
9-Nov-23	7:30	5:00	N	N	-
10-Nov-23	7:20	6:30	N	N	-
11-Nov-23	7:30	6:30	N	N	-
12-Nov-23	7:30	6:30	N	N	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	6-Nov-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	49.5	89.7	43.8	42.1
NTU Increase Limit (10%)	54.5	98.7	48.2	46.3
Corresponding TSS	72.9	136.1	63.9	61.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	97.9	161.1	88.9	86.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	77.9	141.1	68.9	66.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:00 PM	12:05 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	76.3	70.2	71.3	69.0
Corresponding TSS	115.0	105.4	107.2	103.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

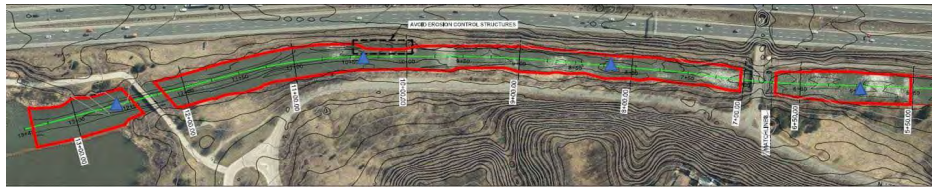
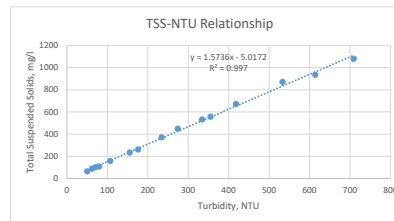


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

7-Nov-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	88.7	102.6	77.4	65.6
NTU Increase Limit (10%)	97.6	112.9	85.1	72.2
Corresponding TSS	134.6	156.4	116.8	98.2
TSS Increase Limit (25 mg/L - 24 Hour Period)	159.6	181.4	141.8	123.2
TSS Increase Limit (5 mg/L - 1 to 30 days)	139.6	161.4	121.8	103.2
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	76.1	64.8	76.4	65.2
Corresponding TSS	114.7	97.0	115.2	97.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

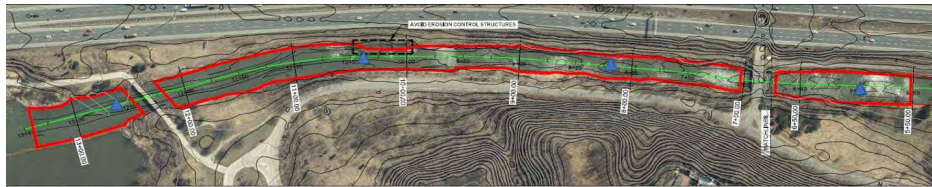
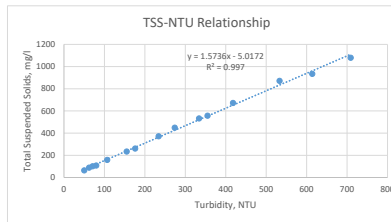


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

8-Nov-23				
Hoskin Scientific TN400 Handheld Turbidity Monitor				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	64.7	60.6	51.2	48.7
NTU Increase Limit (10%)	71.2	66.7	56.3	53.6
Corresponding TSS	96.8	90.3	75.6	71.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	121.8	115.3	100.6	96.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	101.8	95.3	80.6	76.6
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:00 PM	12:05 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	61.2	63.0	58.9	60.0
Corresponding TSS	91.3	94.1	87.7	89.4
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

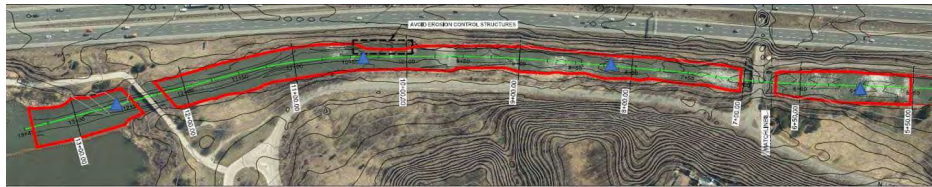
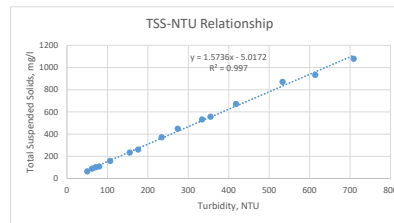


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

9-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	133.0	131.0	127.0	125.0
NTU Increase Limit (10%)	146.3	144.1	139.7	137.5
Corresponding TSS	204.3	201.1	194.8	191.7
TSS Increase Limit (25 mg/L - 24 Hour Period)	229.3	226.1	219.8	216.7
TSS Increase Limit (5 mg/L - 1 to 30 days)	209.3	206.1	199.8	196.7
Comments (if applicable)	Heavy rain night prior	Heavy rain night prior	Heavy rain night prior	Heavy rain night prior

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:00 PM	2:05 PM	5:30 PM	5:35 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	113.0	80.4	105.0	72.4
Corresponding TSS	172.8	121.5	160.2	108.9
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

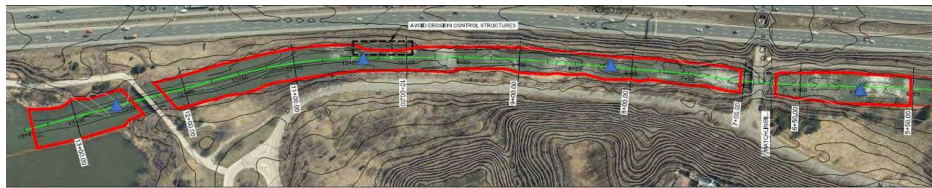
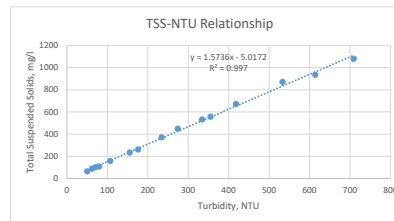


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
10-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	68.9	69.5	72.4	50.7
NTU Increase Limit (10%)	75.8	76.5	79.6	55.8
Corresponding TSS	103.4	104.3	108.9	74.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	128.4	129.3	133.9	99.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	108.4	109.3	113.9	79.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	58.6	50.1	55.5	52.1
Corresponding TSS	87.2	73.8	82.3	77.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

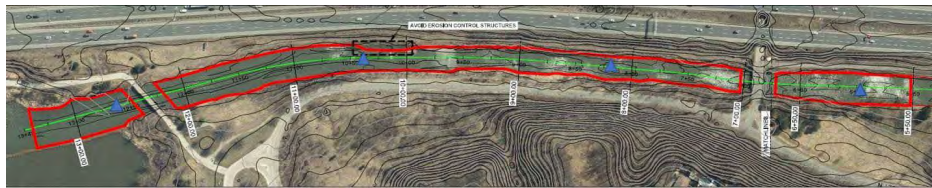
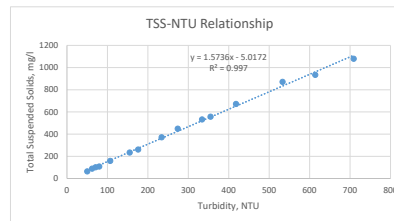


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor	11-Nov-23			
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	8:00 AM	8:05 AM	8:10 AM	8:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	73.5	77.8	87.6	55.7
NTU Increase Limit (10%)	80.9	85.6	96.4	61.3
Corresponding TSS	110.6	117.4	132.8	82.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	135.6	142.4	157.8	107.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	115.6	122.4	137.8	87.6
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:00 PM	2:05 PM	5:30 PM	5:35 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	50.8	47.9	56.7	50.1
Corresponding TSS	74.9	70.4	84.2	73.8
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

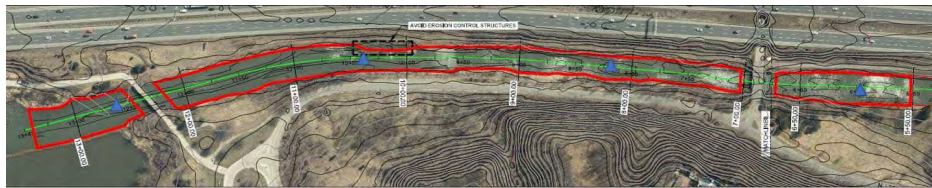
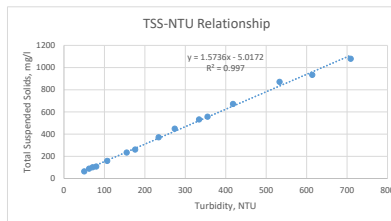


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

12-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:00 AM	7:05 AM	7:10 AM	7:15 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	89.1	66.9	67.6	50.7
NTU Increase Limit (10%)	98.0	73.6	74.4	55.8
Corresponding TSS	135.2	100.3	101.4	74.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	160.2	125.3	126.4	99.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	140.2	105.3	106.4	79.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	2:00 PM	2:05 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	66.7	45.1	60.5	40.1
Corresponding TSS	99.9	66.0	90.2	58.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

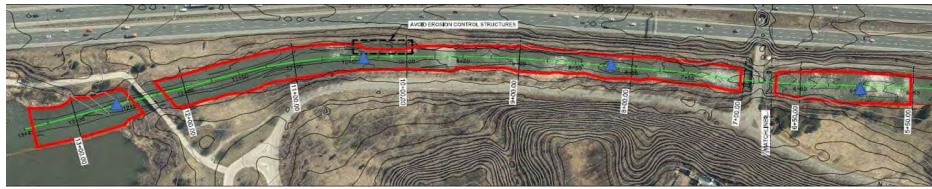
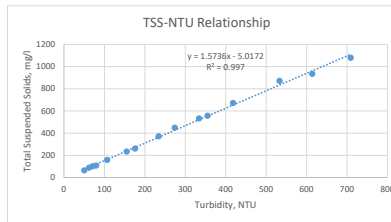


Figure 1: Monitoring Locations 1 through 4 (North to South)





Targeted Dredging of Chedoke Creek

Turbidity Monitoring Report

DATE DURATION: 11/13/23 to 11/19/23

Weekly Summary

DATE	START OF DREDGING ACTIVITIES*	END OF DREDGING ACTIVITIES*	EXCEEDANCE (Y/N)	EXCEEDANCE CONTRIBUTED TO DREDGING ACTIVITIES (Y/N)	COMMENTS
13-Nov-23	10:00 AM	6:30 PM	N	N	-
14-Nov-23	8:30 AM	6:30 PM	N	N	-
15-Nov-23	9:00 AM	6:30 PM	N	N	-
16-Nov-23	2:00 PM	6:30 PM	N	N	-
17-Nov-23	8:00 AM	6:30 PM	N	N	Final day of Dredging
18-Nov-23	NA	NA	NA	NA	-
19-Nov-23	NA	NA	NA	NA	-

*Does not include downtime.

Please refer to the attached Daily Monitoring Reports for full details.

Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
13-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	7:30 AM	7:35 AM	7:40 AM	7:45 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	52.8	64.6	49.9	48.7
NTU Increase Limit (10%)	58.1	71.1	54.9	53.6
Corresponding TSS	78.1	96.6	73.5	71.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	103.1	121.6	98.5	96.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	83.1	101.6	78.5	76.6
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:30 PM	5:35 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	50.2	49.4	50.8	49.6
Corresponding TSS	74.0	72.7	74.9	73.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

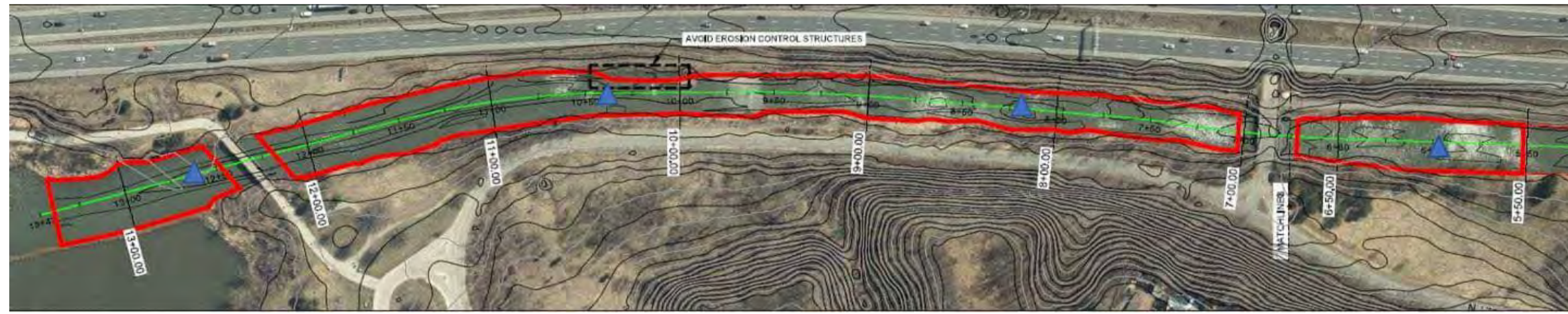
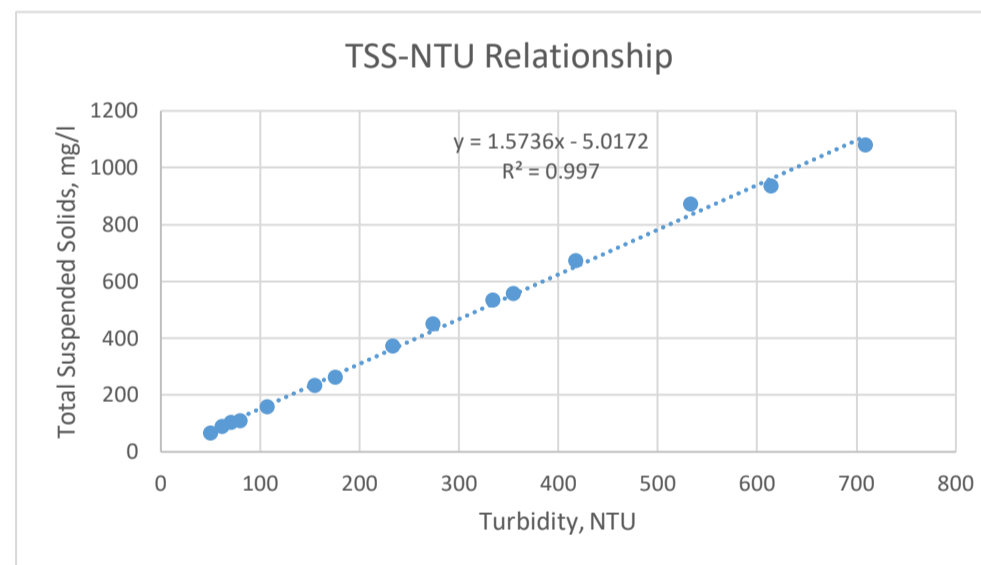


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
14-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:45 AM	6:50 AM	6:55 AM	7:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	51.3	56.1	50.5	49.8
NTU Increase Limit (10%)	56.4	61.7	55.6	54.8
Corresponding TSS	75.7	83.3	74.4	73.3
TSS Increase Limit (25 mg/L - 24 Hour Period)	100.7	108.3	99.4	98.3
TSS Increase Limit (5 mg/L - 1 to 30 days)	80.7	88.3	79.4	78.3
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	50.9	49.4	51.6	50.2
Corresponding TSS	75.1	72.7	76.2	74.0
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

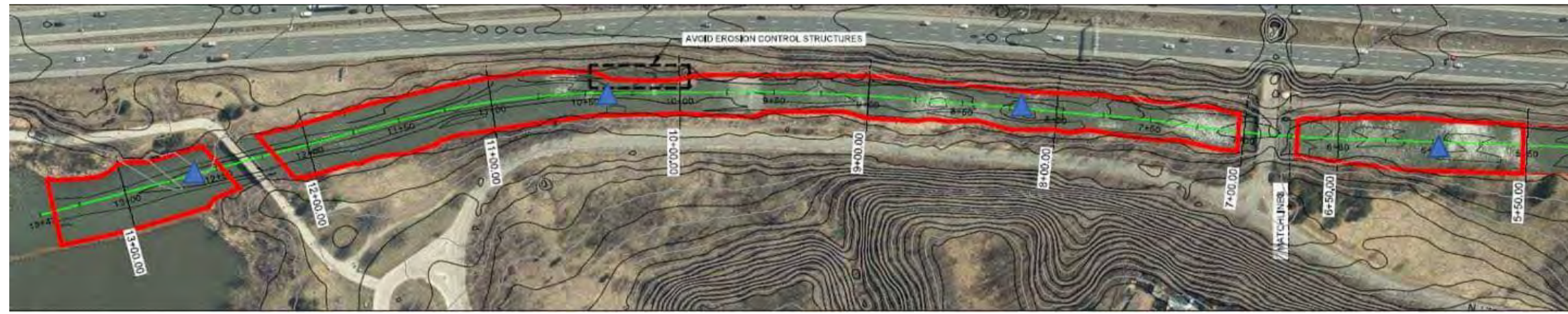
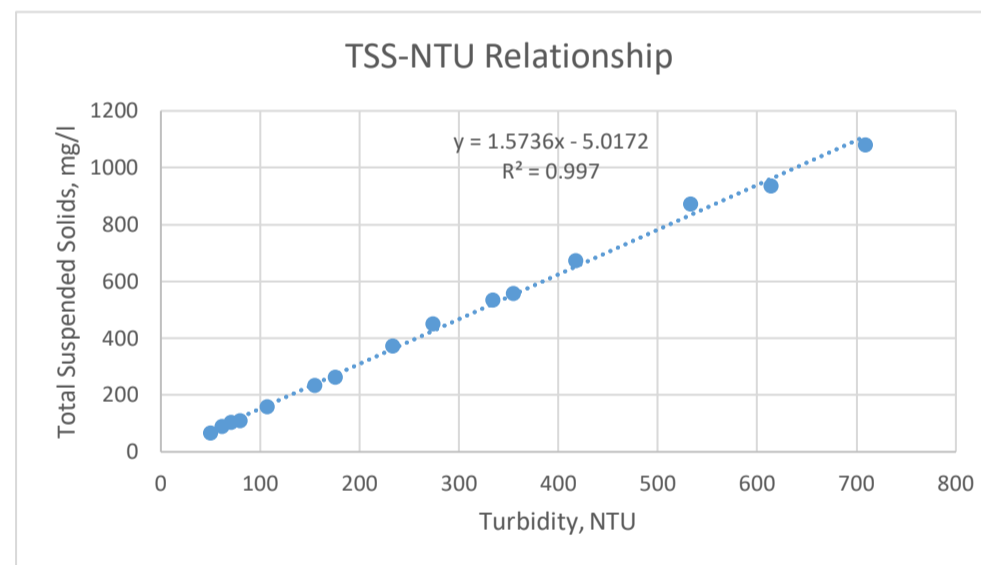


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
15-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:45 AM	6:50 AM	6:55 AM	7:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	42.5	49.2	39.1	27.1
NTU Increase Limit (10%)	46.8	54.1	43.0	29.8
Corresponding TSS	61.9	72.4	56.5	37.6
TSS Increase Limit (25 mg/L - 24 Hour Period)	86.9	97.4	81.5	62.6
TSS Increase Limit (5 mg/L - 1 to 30 days)	66.9	77.4	61.5	42.6
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	36.2	43.7	39.8	48.7
Corresponding TSS	51.9	63.7	57.6	71.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

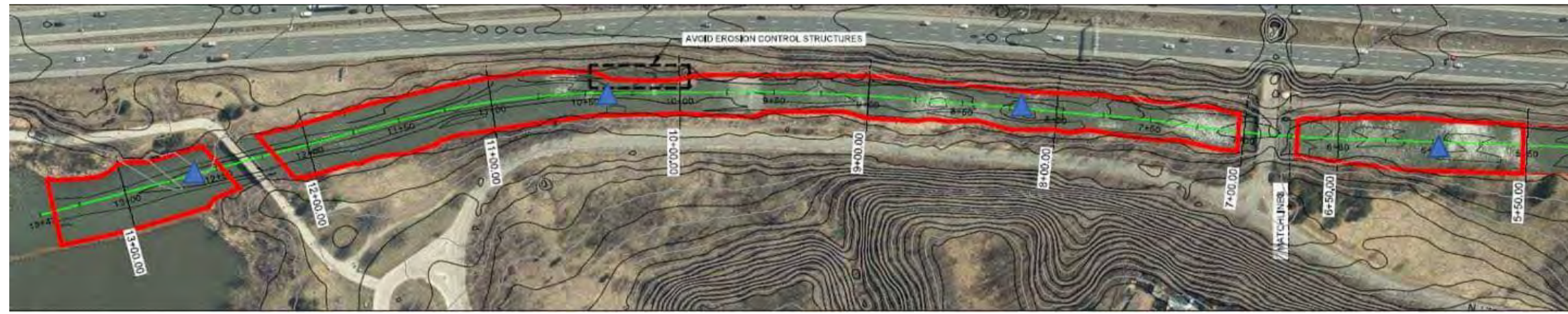
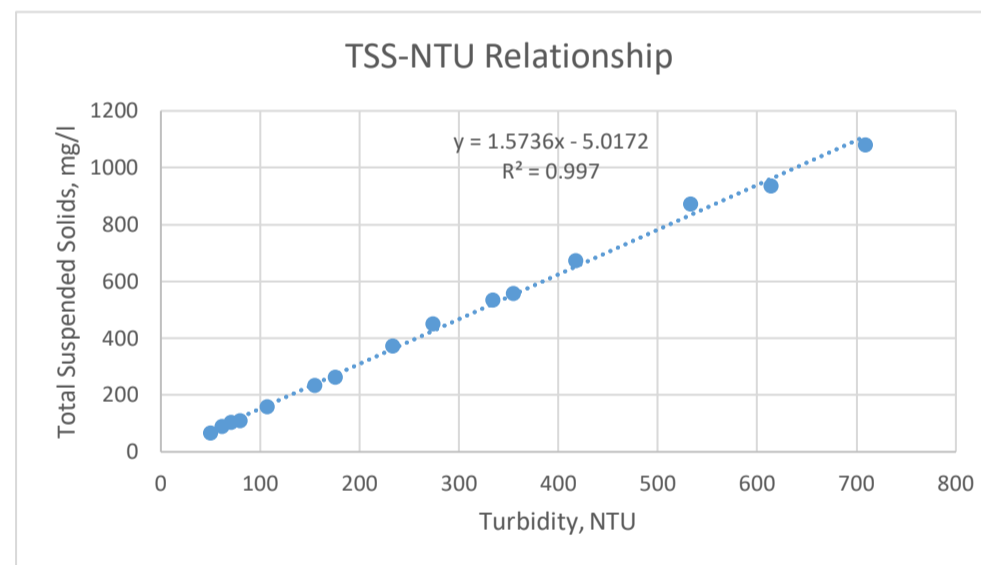


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
16-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:45 AM	6:50 AM	6:55 AM	7:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	38.5	48.8	40.7	43.1
NTU Increase Limit (10%)	42.4	53.7	44.8	47.4
Corresponding TSS	55.6	71.8	59.0	62.8
TSS Increase Limit (25 mg/L - 24 Hour Period)	80.6	96.8	84.0	87.8
TSS Increase Limit (5 mg/L - 1 to 30 days)	60.6	76.8	64.0	67.8
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	32.0	47.7	38.5	32.5
Corresponding TSS	45.3	70.0	55.6	46.1
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

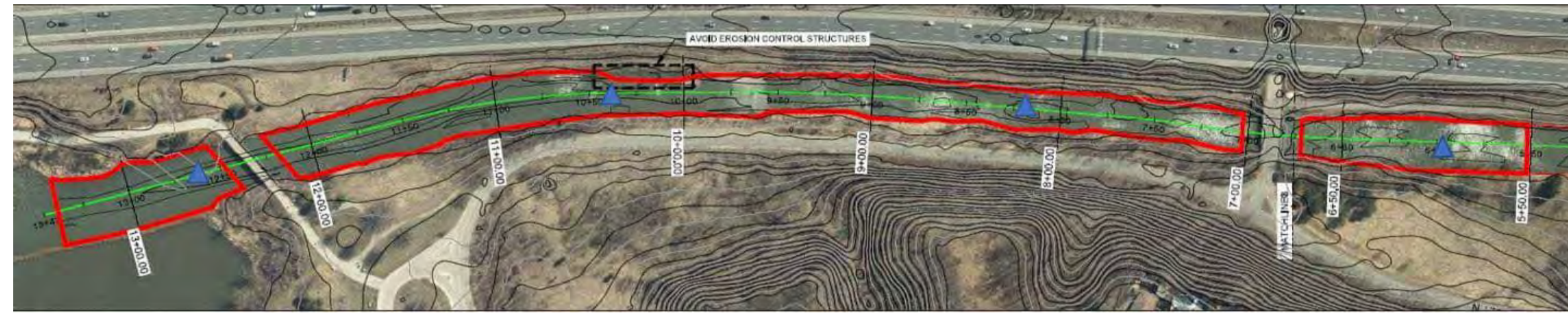
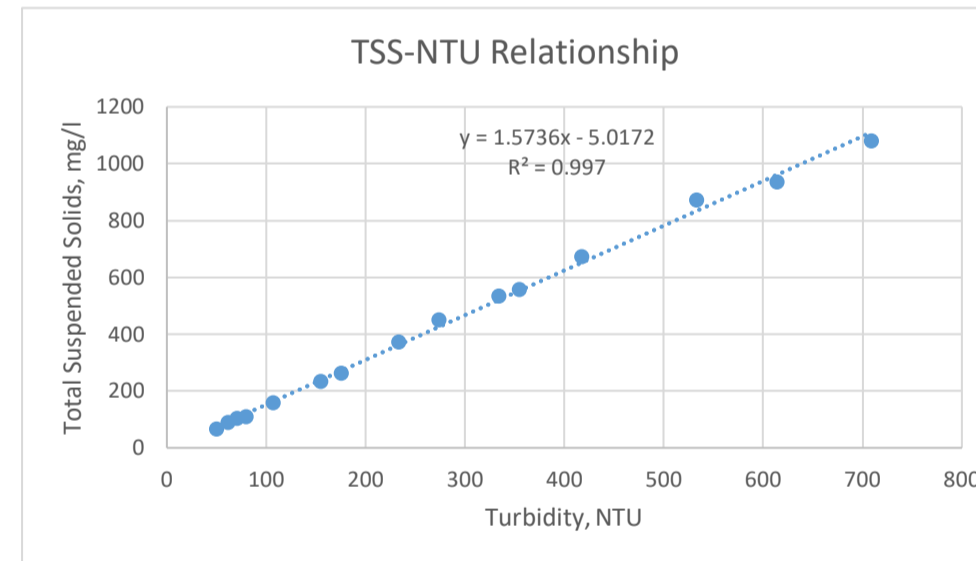


Figure 1: Monitoring Locations 1 through 4 (North to South)



Targeted Dredging of Chedoke Creek
 ***Turbidity is in excess if any monitor detects a 10% increase from background levels.
 ***Suspended solids are in excess if an increase of 25mg/L from background is detected for any 24-hour period, or if a maximum average of 5mg/L increase is detected for a period between 1 to 30 days.

Hoskin Scientific TN400 Handheld Turbidity Monitor				
17-Nov-23				
Background (taken during non-operating dredging hours)	Monitoring Location #1	Monitoring Location #2	Monitoring Location #3	Monitoring Location #4
Time (hh:mm)	6:45 AM	6:50 AM	6:55 AM	7:00 AM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	36.5	48.3	36.9	38.6
NTU Increase Limit (10%)	40.2	53.1	40.6	42.5
Corresponding TSS	52.4	71.0	53.0	55.7
TSS Increase Limit (25 mg/L - 24 Hour Period)	77.4	96.0	78.0	80.7
TSS Increase Limit (5 mg/L - 1 to 30 days)	57.4	76.0	58.0	60.7
Comments (if applicable)	-	-	-	-

Daily Check	North of Dredge Work Area	South of Dredge Work Area	North of Dredge Work Area	South of Dredge Work Area
Time (hh:mm)	12:30 PM	12:35 PM	5:00 PM	5:05 PM
Depth below water surface (meters)	0.75 m	0.50 m	0.75 m	0.50 m
NTU	39.2	44.0	36.7	39.8
Corresponding TSS	56.7	64.2	52.7	57.6
Exceedance (Y/N)	N	N	N	N
Exceedance contributed to Dredging Activities (Y/N)	N	N	N	N
Comments (if applicable)	-	-	-	-

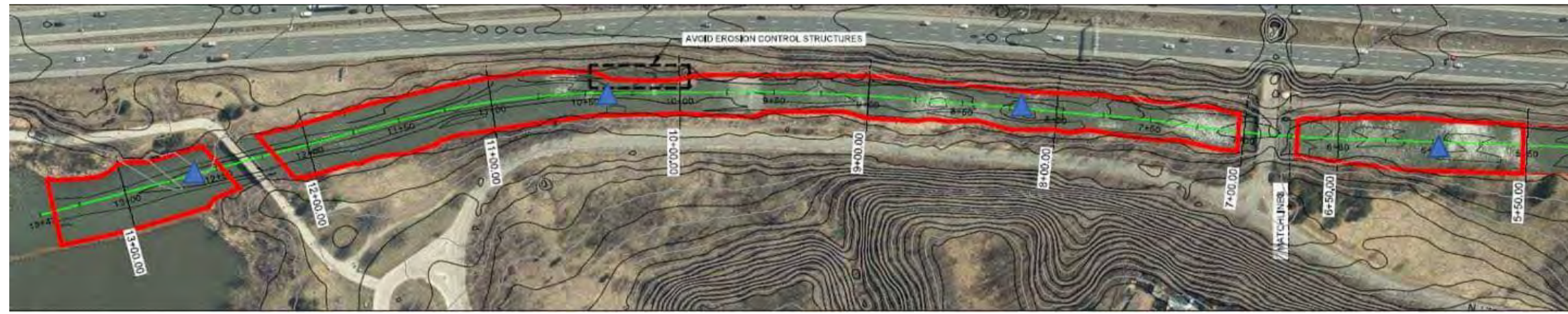
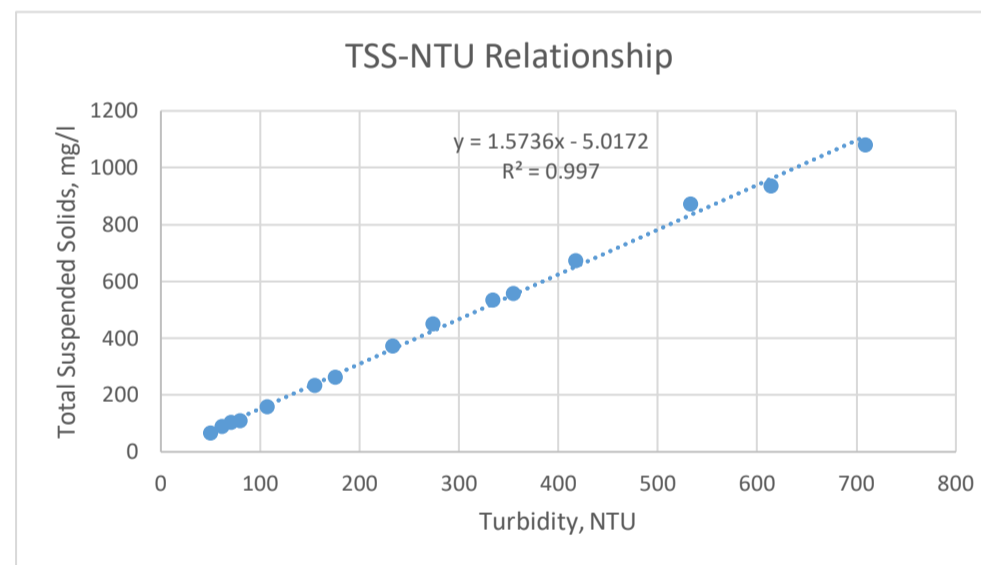


Figure 1: Monitoring Locations 1 through 4 (North to South)



APPENDIX

G: PERMIT TO TAKE WATER



Chedoke Creek Dredging - Reporting and Submission Tracking

Water Taking Summary

Days of Op	Date	Active Dredging Day	Total (m3/day)	Total (L/day)	Active Pumping (hrs/day)	Avg. Rate (litres/min)
1	25-Jul	1	544	544,000	5	1,813
2	26-Jul	1	780	780,000	4	3,250
3	27-Jul					
4	28-Jul	1	626	626,000	7.5	1,391
5	29-Jul					
6	30-Jul					
7	31-Jul	1	1,033	1,033,000	4.5	3,826
8	1-Aug	1	931	931,000	3	5,172
9	2-Aug	1	620	620,000	2	5,167
10	3-Aug	1	1,861	1,861,000	5.5	5,639
11	4-Aug	1	1,835	1,835,000	7	4,369
12	5-Aug	1	1,110	1,110,000	3.5	5,286
13	6-Aug	1	1,685	1,685,000	8	3,510
14	7-Aug					
15	8-Aug	1	1,864	1,864,000	7.5	4,142
16	9-Aug	1	1,251	1,251,000	4.5	4,633
17	10-Aug					
18	11-Aug	1	1,610	1,610,000	7	3,833
19	12-Aug	1	252	252,000	1	4,200
20	13-Aug	1	985	985,000	4.5	3,648
21	14-Aug	1	1,693	1,693,000	8	3,527
22	15-Aug	1	374	374,000	1.5	4,156
23	16-Aug					
24	17-Aug	1	799	799,000	3	4,439
25	18-Aug	1	1,127	1,127,000	5	3,757
26	19-Aug	1	1,080	1,080,000	5.5	3,273
27	20-Aug	1	1,600	1,600,000	8.5	3,137
28	21-Aug					
29	22-Aug	1	1,720	1,720,000	8	3,583
30	23-Aug	1	845	845,000	3	4,694
31	24-Aug	1	1,076	1,076,000	5	3,587
32	25-Aug					
33	26-Aug	1	1,300	1,300,000	5	4,333
34	27-Aug	1	1,428	1,428,000	5.4	4,407
35	28-Aug	1	989	989,000	3.5	4,710
36	29-Aug	1	1,532	1,532,000	5	5,107
37	30-Aug	1	543	543,000	2	4,525
38	31-Aug					
39	1-Sep	1	182	182,000	1	3,033
40	2-Sep					
41	3-Sep					
42	4-Sep					
43	5-Sep	1	720	720,000	3.5	3,429
44	6-Sep	1	1,467	1,467,000	5	4,890
45	7-Sep	1	1,000	1,000,000	3	5,556
46	8-Sep	1	728	728,000	4	3,033
47	9-Sep	1	543	543,000	3	3,017
48	10-Sep	1	2,263	2,263,000	7	5,388
49	11-Sep	1	1,261	1,261,000	4	5,254
50	12-Sep	1	1,155	1,155,000	5	3,850
51	13-Sep	1	1,445	1,445,000	8	3,010
52	14-Sep	1	1,821	1,821,000	8	3,794
53	15-Sep	1	1,893	1,893,000	8	3,944
54	16-Sep	1	1,627	1,627,000	5.5	4,930
55	17-Sep	1	817	817,000	2.5	5,447

Days of Op	Date	Active Dredging Day	Total (m3/day)	Total (L/day)	Active Pumping (hrs/day)	Avg. Rate (litres/min)
56	18-Sep					
57	19-Sep	1	1,536	1,536,000	5	5,120
58	20-Sep	1	1,941	1,941,000	7.5	4,313
59	21-Sep	1	1,406	1,406,000	5	4,687
60	22-Sep	1	1,275	1,275,000	5	4,250
61	23-Sep	1	1,334	1,334,000	8	2,779
62	24-Sep	1	1,600	1,600,000	8	3,333
63	25-Sep	1	321	321,000	2	2,675
64	26-Sep	1	834	834,000	5	2,780
65	27-Sep	1	310	310,000	2	2,583
66	28-Sep	1	1,396	1,396,000	7	3,324
67	29-Sep	1	404	404,000	1.5	4,489
68	30-Sep	1	1,505	1,505,000	7	3,583
69	1-Oct	1	1,658	1,658,000	7	3,948
70	2-Oct	1	2,033	2,033,000	8	4,235
71	3-Oct	1	1,619	1,619,000	7	3,855
72	4-Oct	1	1,713	1,713,000	10	2,855
73	5-Oct	1	1,638	1,638,000	8	3,413
74	6-Oct	1	1,745	1,745,000	7	4,155
75	7-Oct	1	1,680	1,680,000	6.5	4,308
76	8-Oct	1	801	801,000	3	4,450
77	9-Oct	1	1,249	1,249,000	6	3,469
78	10-Oct	1	1,285	1,285,000	7	3,060
79	11-Oct	1	1,346	1,346,000	10	2,243
80	12-Oct	1	1,549	1,549,000	8	3,227
81	13-Oct	1	1,735	1,735,000	9	3,213
82	14-Oct	1	1,368	1,368,000	7	3,257
83	15-Oct	1	1,759	1,759,000	9	3,257
84	16-Oct	1	1,878	1,878,000	10.5	2,981
85	17-Oct	1	1,974	1,974,000	10.5	3,133
86	18-Oct	1	1,347	1,347,000	8	2,806
87	19-Oct	1	1,586	1,586,000	10	2,643
88	20-Oct	1	1,307	1,307,000	10	2,178
89	21-Oct	1	1,119	1,119,000	7.5	2,487
90	22-Oct	1	1,544	1,544,000	10	2,573
91	23-Oct	1	1,302	1,302,000	8.5	2,553
92	24-Oct	1	1,534	1,534,000	8.5	3,008
93	25-Oct	1	1,520	1,520,000	10	2,533
94	26-Oct	1	270	270,000	2	2,250
95	27-Oct	1	1,809	1,809,000	9.5	3,174
96	28-Oct	1	2,153	2,153,000	10	3,588
97	29-Oct	1	1,333	1,333,000	7	3,174
98	30-Oct	1	959	959,000	5	3,197
99	31-Oct					
100	1-Nov	1	997	997,000	4.5	3,693
101	2-Nov	1	2,113	2,113,000	10.5	3,354
102	3-Nov	1	2,013	2,013,000	9.5	3,532
103	4-Nov	1	1,724	1,724,000	8.5	3,380
104	5-Nov	1	1,844	1,844,000	10	3,073
105	6-Nov	1	1,711	1,711,000	9	3,169
106	7-Nov	1	1,406	1,406,000	8	2,929
107	8-Nov	1	2,000	2,000,000	11	3,030
108	9-Nov	1	1,694	1,694,000	11	2,567
109	10-Nov	1	1,693	1,693,000	9	3,135
110	11-Nov	1	1,684	1,684,000	9	3,119
111	12-Nov	1	1,841	1,841,000	8.5	3,610
112	13-Nov	1	1,235	1,235,000	11	1,871
113	14-Nov	1	1,710	1,710,000	8.5	3,353
114	15-Nov	1	1,471	1,471,000	8.25	2,972
115	16-Nov	1	820	820,000	4	3,417

Days of Op	Date	Active Dredging Day	Total (m3/day)	Total (L/day)	Active Pumping (hrs/day)	Avg. Rate (litres/min)
116	17-Nov	1	1,863	1,863,000	7	4,436
Totals		102	136,509.00	136,509,000.00	660	
		Minimum	182,000	182,000	1	1,391
		Maximum	2,263,000	2,263,000	11	5,639
		Median	1,417,000	1,417,000	7	3,449

APPENDIX

H: CONSTRUCTION DEWATERING SEWER DISCHARGE PERMIT RESULTS

H.1

Laboratory Reports



Sewer Bylaw Quality Laboratory
Report August 3, 2023

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2324053</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone : ----</p> <p>Project : 01220228</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : CLIENT</p> <p>Site : ----</p> <p>Quote number : TSS & Hamilton Sanitary</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 12</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Emily Hansen</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 03-Aug-2023 17:30</p> <p>Issue Date : 11-Aug-2023 17:16</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Organochlorine Pesticides	QC-MRG2-1071262 002	----	Aldrin	309-00-2	E660F	156 % LCS-H	50.0-150%	Recovery greater than upper control limit
Organochlorine Pesticides	QC-MRG2-1071262 002	----	Mirex	2385-85-5	E660F	158 % LCS-H	50.0-150%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT-4d] CCDW-07	E555	03-Aug-2023	----	----	----		04-Aug-2023	4 days	1 days	✔
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-07	E567SG	03-Aug-2023	09-Aug-2023	28 days	6 days	✔	09-Aug-2023	40 days	0 days	✔
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-07	E567	03-Aug-2023	09-Aug-2023	28 days	6 days	✔	09-Aug-2023	40 days	0 days	✔
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] CCDW-07	E562	03-Aug-2023	10-Aug-2023	28 days	7 days	✔	10-Aug-2023	28 days	7 days	✔
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] CCDW-07	E235.Cl	03-Aug-2023	08-Aug-2023	28 days	5 days	✔	09-Aug-2023	28 days	6 days	✔
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP] CCDW-07	E235.F	03-Aug-2023	08-Aug-2023	28 days	5 days	✔	09-Aug-2023	28 days	6 days	✔
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] CCDW-07	E235.SO4	03-Aug-2023	08-Aug-2023	28 days	5 days	✔	09-Aug-2023	28 days	6 days	✔



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)											
Amber glass total (sulfuric acid) [ON MECP] CCDW-07	E318	03-Aug-2023	10-Aug-2023	28 days	7 days	✓	11-Aug-2023	28 days	8 days	✓	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass total (sulfuric acid) [ON MECP] CCDW-07	E372-U	03-Aug-2023	10-Aug-2023	28 days	7 days	✓	11-Aug-2023	28 days	8 days	✓	
Chlorinated Phenolics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-07	E655F	03-Aug-2023	09-Aug-2023	14 days	6 days	✓	10-Aug-2023	40 days	1 days	✓	
Cyanides : Total Cyanide											
UV-inhibited HDPE - total (sodium hydroxide) CCDW-07	E333	03-Aug-2023	04-Aug-2023	14 days	1 days	✓	04-Aug-2023	14 days	1 days	✓	
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-07	E660F	03-Aug-2023	04-Aug-2023	14 days	1 days	✓	09-Aug-2023	40 days	5 days	✓	
Phthalate Esters : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-07	E655F	03-Aug-2023	09-Aug-2023	14 days	6 days	✓	10-Aug-2023	40 days	1 days	✓	
Physical Tests : pH by Meter											
HDPE [ON MECP] CCDW-07	E108	03-Aug-2023	08-Aug-2023	14 days	5 days	✓	09-Aug-2023	14 days	6 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE [ON MECP] CCDW-07	E160	03-Aug-2023	----	----	----		04-Aug-2023	7 days	1 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-07	E687	03-Aug-2023	04-Aug-2023	14 days	1 days	✓	08-Aug-2023	40 days	4 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs (ON Special List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-07	E642D	03-Aug-2023	09-Aug-2023	14 days	6 days	✔	10-Aug-2023	40 days	2 days	✔
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS (Low Level)										
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] CCDW-07	E641A-L	03-Aug-2023	04-Aug-2023	14 days	1 days	✔	08-Aug-2023	40 days	4 days	✔
Semi-Volatile Organics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-07	E655F	03-Aug-2023	09-Aug-2023	14 days	6 days	✔	10-Aug-2023	40 days	1 days	✔
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) [ON MECP] CCDW-07	E508	03-Aug-2023	04-Aug-2023	28 days	1 days	✔	04-Aug-2023	28 days	1 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) CCDW-07	E420	03-Aug-2023	04-Aug-2023	180 days	1 days	✔	04-Aug-2023	180 days	1 days	✔
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) CCDW-07	E611D	03-Aug-2023	08-Aug-2023	14 days	5 days	✔	08-Aug-2023	14 days	5 days	✔

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1071443	1	20	5.0	5.0	✔
Chloride in Water by IC	E235.Cl	1075307	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	1075308	1	13	7.6	5.0	✔
pH by Meter	E108	1075303	1	18	5.5	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1078405	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1075306	1	14	7.1	5.0	✔
Total Cyanide	E333	1072292	1	15	6.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1078404	1	19	5.2	5.0	✔
Total Mercury in Water by CVAAS	E508	1071871	1	20	5.0	5.0	✔
Total metals in Water by CRC ICPMS	E420	1071243	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1078403	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1071908	1	19	5.2	4.7	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1075101	1	19	5.2	5.0	✔
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1071443	1	20	5.0	5.0	✔
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1076056	1	3	33.3	5.0	✔
Chloride in Water by IC	E235.Cl	1075307	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	1075308	1	13	7.6	5.0	✔
Mineral Oil & Grease by Gravimetry	E567SG	1071258	1	9	11.1	5.0	✔
OCP Analysis by GC-MS-MS or GC-MS	E660F	1071263	1	1	100.0	5.0	✔
Oil & Grease by Gravimetry	E567	1071257	1	9	11.1	5.0	✔
PAHs (ON Special List) by GC-MS	E642D	1076062	1	2	50.0	5.0	✔
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1071252	1	1	100.0	5.0	✔
PCB Aroclors by GC-MS	E687	1071262	1	10	10.0	4.7	✔
pH by Meter	E108	1075303	1	18	5.5	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1078405	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1075306	1	14	7.1	5.0	✔
Total Cyanide	E333	1072292	1	15	6.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1078404	1	19	5.2	5.0	✔
Total Mercury in Water by CVAAS	E508	1071871	1	20	5.0	5.0	✔
Total metals in Water by CRC ICPMS	E420	1071243	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1078403	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1071908	1	19	5.2	4.7	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1075101	1	19	5.2	5.0	✔
Method Blanks (MB)							



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Method Blanks (MB) - Continued							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1071443	1	20	5.0	5.0	✔
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1076056	1	3	33.3	5.0	✔
Chloride in Water by IC	E235.Cl	1075307	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	1075308	1	13	7.6	5.0	✔
Mineral Oil & Grease by Gravimetry	E567SG	1071258	1	9	11.1	5.0	✔
OCP Analysis by GC-MS-MS or GC-MS	E660F	1071263	1	1	100.0	5.0	✔
Oil & Grease by Gravimetry	E567	1071257	1	9	11.1	5.0	✔
PAHs (ON Special List) by GC-MS	E642D	1076062	1	2	50.0	5.0	✔
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1071252	1	1	100.0	5.0	✔
PCB Aroclors by GC-MS	E687	1071262	1	10	10.0	4.7	✔
Phenols (4AAP) in Water by Colorimetry	E562	1078405	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1075306	1	14	7.1	5.0	✔
Total Cyanide	E333	1072292	1	15	6.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1078404	1	19	5.2	5.0	✔
Total Mercury in Water by CVAAS	E508	1071871	1	20	5.0	5.0	✔
Total metals in Water by CRC ICPMS	E420	1071243	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1078403	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1071908	1	19	5.2	4.7	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1075101	1	19	5.2	5.0	✔
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	1075307	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	1075308	1	13	7.6	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1078405	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1075306	1	14	7.1	5.0	✔
Total Cyanide	E333	1072292	1	15	6.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1078404	1	19	5.2	5.0	✔
Total Mercury in Water by CVAAS	E508	1071871	1	20	5.0	5.0	✔
Total metals in Water by CRC ICPMS	E420	1071243	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1078403	1	20	5.0	5.0	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1075101	1	19	5.2	5.0	✔



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 ALS Environmental - Waterloo	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Waterloo	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.Cl ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Waterloo	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508 ALS Environmental - Waterloo	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555 ALS Environmental - Waterloo	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Nitrification inhibitor is added to samples to prevent nitrogenous compounds from consuming oxygen resulting in only carbonaceous oxygen demand being reported by this method. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Waterloo	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K ₃ Fe(CN) ₆) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
Oil & Grease by Gravimetry	E567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry	E567SG ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
PAHs (ON Special List) by GC-MS	E642D ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	BNA are analyzed by GC-MS.
OCP Analysis by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS or GC-MS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG ALS Environmental - Waterloo	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
Total PAH (Ontario Sewer Use Extended List)	EC640A ALS Environmental - Waterloo	Water	Calculation (Sum of the Squares)	Total PAH (Ontario Sewer Use) is the sum of the following PAHs: anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b+j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, pyrene, benzo(e)pyrene, perylene, 3-methylcholanthrene, 1,3-dinitropyrene, 1,6-dinitropyrene, 1,8-dinitropyrene, 7H-dibenzo(c,g)carbazole, dibenzo(a,i)pyrene, dibenz(a,j)acridine, and dibenz(a,h)acridine. When the PAH is less than LOR, zero is used for calculation.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 ALS Environmental - Waterloo	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Oil & Grease Extraction for Gravimetry	EP567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
PAHs DCM Extraction	EP642 ALS Environmental - Waterloo	Water	EPA 3510C (mod)	PAH are extracted from aqueous sample using DCM liquid-liquid extraction.
BNA Extraction	EP655	Water	EPA 3510C (mod)	SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.

Page : 12 of 12
Work Order : WT2324053
Client : Milestone Environmental Contracting Inc.
Project : 01220228



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Waterloo			
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

QUALITY CONTROL REPORT

<p>Work Order : WT2324053</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone :</p> <p>Project : 01220228</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : CLIENT ----</p> <p>Site : ----</p> <p>Quote number : TSS & Hamilton Sanitary</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 14</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Emily Hansen</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 03-Aug-2023 17:30</p> <p>Date Analysis Commenced : 04-Aug-2023</p> <p>Issue Date : 11-Aug-2023 17:14</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Hannah Lewis	Inorganics Analyst	Waterloo Inorganics, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Manuel TaveraTello	Supervisor - Semi-Volatile Extractions	Waterloo Organics, Waterloo, Ontario

Page : 2 of 14
Work Order : WT2324053
Client : Milestone Environmental Contracting Inc.
Project : 01220228



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1071908)											
WT2323972-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1075303)											
WT2323986-002	Anonymous	pH	----	E108	0.10	pH units	7.77	7.68	1.16%	4%	----
Anions and Nutrients (QC Lot: 1075306)											
WT2324221-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	24.1	24.0	0.147%	20%	----
Anions and Nutrients (QC Lot: 1075307)											
WT2324221-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	28.5	28.6	0.141%	20%	----
Anions and Nutrients (QC Lot: 1075308)											
WT2324221-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.555	0.556	0.190%	20%	----
Anions and Nutrients (QC Lot: 1078403)											
WT2324116-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	1.97	1.98	0.678%	20%	----
Anions and Nutrients (QC Lot: 1078404)											
WT2324053-001	CCDW-07	Kjeldahl nitrogen, total [TKN]	----	E318	0.100	mg/L	6.34	6.10	3.81%	20%	----
Cyanides (QC Lot: 1072292)											
FC2302115-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1071243)											
HA2300472-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0125	0.0123	0.0002	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	0.00018	0.000008	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000088	0.0000072	0.0000016	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00012	0.00011	0.000010	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00622	0.00621	0.267%	20%	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.374	0.344	8.41%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0224	0.0222	0.681%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000943	0.000875	7.50%	20%	----
Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00059	0.00056	0.00003	Diff <2x LOR	----		



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 1071243) - continued											
HA2300472-001	Anonymous	Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.000030	mg/L	<0.000030	<0.000030	0	Diff <2x LOR	----
		Vanadium, total	7440-62-2	E420	0.000050	mg/L	0.00593	0.00596	0.528%	20%	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0060	0.0063	0.0004	Diff <2x LOR	----
Total Metals (QC Lot: 1071871)											
BF2300185-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1071443)											
WT2323991-001	Anonymous	Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2.0	mg/L	2.3	2.3	0.0%	30%	----
Aggregate Organics (QC Lot: 1078405)											
TY2307610-005	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1075101)											
WT2324236-001	Anonymous	Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1071908)						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
Anions and Nutrients (QCLot: 1075306)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
Anions and Nutrients (QCLot: 1075307)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	---
Anions and Nutrients (QCLot: 1075308)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
Anions and Nutrients (QCLot: 1078403)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
Anions and Nutrients (QCLot: 1078404)						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
Cyanides (QCLot: 1072292)						
Cyanide, strong acid dissociable (Total)	---	E333	0.002	mg/L	<0.0020	---
Total Metals (QCLot: 1071243)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	---
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1071243) - continued						
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 1071871)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1071257)						
Oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1071258)						
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1071443)						
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 1078405)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1075101)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1071252)						
Anthracene	120-12-7	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)anthracene	56-55-3	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	<0.010	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A-L	0.01	µg/L	<0.010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1071252) - continued						
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	<0.010	----
Perylene	198-55-0	E641A-L	0.01	µg/L	<0.010	----
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	<0.010	----
Pyrene	129-00-0	E641A-L	0.01	µg/L	<0.010	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1076062)						
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	<0.050	----
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	<0.050	----
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	<0.050	----
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	<0.050	----
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	<1.0	----
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	<1.0	----
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	<1.0	----
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	<0.050	----
Phthalate Esters (QCLot: 1076056)						
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	<2.0	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	<1.0	----
Semi-Volatile Organics (QCLot: 1076056)						
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	<0.40	----
Chlorinated Phenolics (QCLot: 1076056)						
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	<0.50	----
Polychlorinated Biphenyls (QCLot: 1071262)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----
Organochlorine Pesticides (QCLot: 1071263)						
Aldrin	309-00-2	E660F	0.008	µg/L	<0.0080	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	<0.0080	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
Organochlorine Pesticides (QCLot: 1071263) - continued						
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	<0.0080	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	<0.0040	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	<0.0040	----
Dieldrin	60-57-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	<0.0080	----
Mirex	2385-85-5	E660F	0.008	µg/L	<0.0080	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1071908)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	97.2	85.0	115	----
Physical Tests (QCLot: 1075303)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 1075306)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 1075307)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 1075308)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1078403)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.393 mg/L	97.2	80.0	120	----
Anions and Nutrients (QCLot: 1078404)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
Cyanides (QCLot: 1072292)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	86.5	80.0	120	----
Total Metals (QCLot: 1071243)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	96.2	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	102	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	105	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	100	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	101	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.0125 mg/L	102	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	101	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	104	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	103	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	102	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	102	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	99.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1071243) - continued									
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	98.6	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	104	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	102	80.0	120	----
Total Metals (QCLot: 1071871)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.8	80.0	120	----
Aggregate Organics (QCLot: 1071257)									
Oil & grease (gravimetric)	----	E567	5	mg/L	200 mg/L	93.8	70.0	130	----
Aggregate Organics (QCLot: 1071258)									
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	100 mg/L	87.1	70.0	130	----
Aggregate Organics (QCLot: 1071443)									
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	198 mg/L	100	85.0	115	----
Aggregate Organics (QCLot: 1078405)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	96.3	85.0	115	----
Volatile Organic Compounds (QCLot: 1075101)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	90.9	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	99.6	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	94.5	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	95.1	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	95.4	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	101	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	83.7	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	92.6	70.0	130	----
Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	94.2	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	94.6	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	85.2	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	94.8	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	89.4	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1071252)									
Anthracene	120-12-7	E641A-L	0.01	µg/L	0.5263 µg/L	92.0	50.0	140	----
Benz(a)anthracene	56-55-3	E641A-L	0.01	µg/L	0.5263 µg/L	99.5	50.0	140	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1071252) - continued									
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	0.5263 µg/L	95.7	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	0.5263 µg/L	89.4	50.0	140	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	0.5263 µg/L	95.4	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	0.5263 µg/L	114	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	0.5263 µg/L	95.9	50.0	140	----
Chrysene	218-01-9	E641A-L	0.01	µg/L	0.5263 µg/L	104	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	0.5263 µg/L	98.1	50.0	140	----
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	0.5263 µg/L	101	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	0.5263 µg/L	113	50.0	140	----
Perylene	198-55-0	E641A-L	0.01	µg/L	0.5263 µg/L	96.1	50.0	140	----
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	0.5263 µg/L	100	50.0	140	----
Pyrene	129-00-0	E641A-L	0.01	µg/L	0.5263 µg/L	99.6	50.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1076062)									
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	1.6 µg/L	87.8	60.0	130	----
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	1.6 µg/L	91.4	60.0	130	----
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	1.6 µg/L	87.7	60.0	130	----
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	1.6 µg/L	95.1	60.0	130	----
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	1.6 µg/L	126	60.0	130	----
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	1.6 µg/L	91.2	60.0	130	----
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	1.6 µg/L	116	60.0	130	----
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	1.6 µg/L	95.4	60.0	130	----
Phthalate Esters (QCLot: 1076056)									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	6.4 µg/L	131	50.0	140	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	6.4 µg/L	104	50.0	140	----
Semi-Volatile Organics (QCLot: 1076056)									
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	1.6 µg/L	50.8	50.0	140	----
Chlorinated Phenolics (QCLot: 1076056)									
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	4.8 µg/L	101	50.0	140	----
Polychlorinated Biphenyls (QCLot: 1071262)									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	114	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	114	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	114	60.0	140	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polychlorinated Biphenyls (QCLot: 1071262) - continued									
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	114	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	121	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	110	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	130	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	130	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	130	60.0	140	----
Organochlorine Pesticides (QCLot: 1071263)									
Aldrin	309-00-2	E660F	0.008	µg/L	0.2 µg/L	# 156	50.0	150	LCS-H
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	0.2 µg/L	143	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	0.2 µg/L	147	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	0.2 µg/L	138	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	0.2 µg/L	137	50.0	150	----
Dieldrin	60-57-1	E660F	0.008	µg/L	0.2 µg/L	125	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	0.2 µg/L	112	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	0.2 µg/L	114	50.0	150	----
Mirex	2385-85-5	E660F	0.008	µg/L	0.2 µg/L	# 158	50.0	150	LCS-H

Qualifiers

Qualifier Description

LCS-H Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1075306)										
WT2324221-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	97.2 mg/L	100 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 1075307)										
WT2324221-001	Anonymous	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1075308)										
WT2324221-001	Anonymous	Fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1078403)										
WT2324116-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.1 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1078404)										
WT2324053-001	CCDW-07	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
Cyanides (QCLot: 1072292)										
FC2302115-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.220 mg/L	0.25 mg/L	87.9	75.0	125	----
Total Metals (QCLot: 1071243)										
HA2300472-002	Anonymous	Aluminum, total	7429-90-5	E420	0.0987 mg/L	0.1 mg/L	98.7	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0516 mg/L	0.05 mg/L	103	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0522 mg/L	0.05 mg/L	104	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0455 mg/L	0.05 mg/L	91.0	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00490 mg/L	0.005 mg/L	98.0	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0127 mg/L	0.0125 mg/L	102	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0125 mg/L	0.0125 mg/L	99.8	70.0	130	----
		Copper, total	7440-50-8	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	0.05 mg/L	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0236 mg/L	0.025 mg/L	94.6	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0131 mg/L	0.0125 mg/L	104	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0240 mg/L	0.025 mg/L	96.2	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0482 mg/L	0.05 mg/L	96.4	70.0	130	----
		Silver, total	7440-22-4	E420	0.00476 mg/L	0.005 mg/L	95.2	70.0	130	----
		Tin, total	7440-31-5	E420	0.0255 mg/L	0.025 mg/L	102	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0122 mg/L	0.0125 mg/L	97.5	70.0	130	----
		Vanadium, total	7440-62-2	E420	ND mg/L	0.025 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1071243) - continued										
HA2300472-002	Anonymous	Zinc, total	7440-66-6	E420	ND mg/L	0.025 mg/L	ND	70.0	130	----
Total Metals (QCLot: 1071871)										
BF2300185-002	Anonymous	Mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Aggregate Organics (QCLot: 1078405)										
TY2307610-005	Anonymous	Phenols, total (4AAP)	----	E562	0.0185 mg/L	0.02 mg/L	92.3	75.0	125	----
Volatile Organic Compounds (QCLot: 1075101)										
WT2324236-001	Anonymous	Benzene	71-43-2	E611D	93.6 µg/L	100 µg/L	93.6	60.0	140	----
		Chloroform	67-66-3	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	96.4 µg/L	100 µg/L	96.4	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	97.9 µg/L	100 µg/L	97.9	60.0	140	----
		Dichloromethane	75-09-2	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	82.4 µg/L	100 µg/L	82.4	60.0	140	----
		Ethylbenzene	100-41-4	E611D	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	83.7 µg/L	100 µg/L	83.7	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	99.0 µg/L	100 µg/L	99.0	60.0	140	----
		Toluene	108-88-3	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Trichloroethylene	79-01-6	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	194 µg/L	200 µg/L	97.0	60.0	140	----
Xylene, o-	95-47-6	E611D	92.7 µg/L	100 µg/L	92.7	60.0	140	----		



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20

Page

Environmental Division
Waterloo
Work Order Reference
WT2324053



Telephone : +1 519 886 6910

Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company: Milestone Environmental Contracting Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		<input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply	
Contact: Lance Lemon		Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		<input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone: 905-925-1383		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		<input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum	
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street: 1550 Lapemiere Ave, Unit 200		Email 1 or Fax: lance@milestoneenv.ca		<input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province: Ottawa, ON		Email 2: samson.w@milestoneenv.ca		<input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional may apply to rush requests on weekends, statutory holidays and non-routine	
Postal Code: K1Z 7T2		Email 3: matt@milestoneenv.ca		Date and Time Required for all E&P TATs:	
Invoice To		Invoice Recipients		For all tests with rush TATs requested, please contact your AM to confirm availability.	
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Analysis Request	
Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Email 1 or Fax: accounting@milestoneenv.ca		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
Company: Milestone Environmental Contracting		Email 2: lance@milestoneenv.ca		NUMBER OF CONTAINERS	
Contact: Lance Lemon		Oil and Gas Required Fields (client use)		PH, TSS, chl, Flu, Sul, TKN, TP, Phenols, VAP, Total Cyanide, Total Metals, Total Mercury, C-BOD, VOCs, OC pesticides, PCBs, SVOCs, Oil and Grease, PAHs	
Project Information		AFE/Cost Center:		SAMPLES ON HOLD	
ALS Account # / Quote #:		Major/Minor Code:		EXTENDED STORAGE REQUIRED	
Job #: 01220228		Routing Code:		SUSPECTED HAZARD (see notes)	
PO / AFE:		Requisitioner:			
LSD:		Location:			
ALS Lab Work Order # (ALS use only): WT2324053		ALS Contact:			
		Sampler:			
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	
	CCDW-07	03-08-23	11:45	Water	17
Drinking Water (DW) Samples¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Cooling Method: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> ICE <input checked="" type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO	
				Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A	
				INITIAL COOLER TEMPERATURES °C: 14.9	
				FINAL COOLER TEMPERATURES °C:	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)	
Released by: Samson Walkom	Date: Aug 3rd, 2023	Time: 5:30	Received by:	Date: Aug 3/23	Time: 5:30pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.
1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

OS-657 VW-118 B-907
OR-977 MM-343 N-087 E
DGG-786 GC-448 CN-242

Sewer Bylaw Quality Laboratory
Report August 30, 2023

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2327725</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone : ----</p> <p>Project : 01220228</p> <p>PO : ----</p> <p>C-O-C number : 20-1043590</p> <p>Sampler : CLIENT</p> <p>Site : ----</p> <p>Quote number : TSS & Hamilton Sanitary</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 12</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Emily Hansen</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 30-Aug-2023 15:15</p> <p>Issue Date : 07-Sep-2023 13:22</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Test sample Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Polycyclic Aromatic Hydrocarbons	QC-1115728-002	----	Dinitropyrene, 1,3-	75321-20-9	E642D	139 % LCS-H	60.0-130%	Recovery greater than upper control limit
Semi-Volatile Organics	QC-MRG4-1115834 002	----	Dichlorobenzidine, 3,3'-	91-94-1	E655F	26.4 % RRQC	50.0-140%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
RRQC	Refer to report comments for information regarding this QC result.

Regular Sample Surrogates

Sub-Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Organochlorine Pesticides Surrogates	WT2327725-001	CCDW-08	Decachlorobiphenyl	2051-24-3	151 %	50.0-130 %	Recovery greater than upper data quality objective



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT-4d] CCDW-08	E555	30-Aug-2023	----	----	----		31-Aug-2023	4 days	1 days	✔
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-08	E567SG	30-Aug-2023	05-Sep-2023	28 days	7 days	✔	05-Sep-2023	40 days	0 days	✔
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-08	E567	30-Aug-2023	05-Sep-2023	28 days	7 days	✔	05-Sep-2023	40 days	0 days	✔
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] CCDW-08	E562	30-Aug-2023	01-Sep-2023	28 days	2 days	✔	01-Sep-2023	28 days	3 days	✔
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] CCDW-08	E235.Cl	30-Aug-2023	01-Sep-2023	28 days	3 days	✔	01-Sep-2023	28 days	3 days	✔
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP] CCDW-08	E235.F	30-Aug-2023	01-Sep-2023	28 days	3 days	✔	01-Sep-2023	28 days	3 days	✔
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] CCDW-08	E235.SO4	30-Aug-2023	01-Sep-2023	28 days	3 days	✔	01-Sep-2023	28 days	3 days	✔



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] CCDW-08	E318	30-Aug-2023	01-Sep-2023	28 days	3 days	✓	01-Sep-2023	28 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP] CCDW-08	E372-U	30-Aug-2023	01-Sep-2023	28 days	3 days	✓	05-Sep-2023	28 days	6 days	✓
Chlorinated Phenolics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-08	E655F	30-Aug-2023	01-Sep-2023	14 days	3 days	✓	05-Sep-2023	40 days	4 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CCDW-08	E333	30-Aug-2023	31-Aug-2023	14 days	2 days	✓	31-Aug-2023	14 days	2 days	✓
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-08	E660F	30-Aug-2023	31-Aug-2023	14 days	2 days	✓	01-Sep-2023	40 days	1 days	✓
Phthalate Esters : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-08	E655F	30-Aug-2023	01-Sep-2023	14 days	3 days	✓	05-Sep-2023	40 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] CCDW-08	E108	30-Aug-2023	01-Sep-2023	14 days	3 days	✓	05-Sep-2023	14 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] CCDW-08	E160	30-Aug-2023	----	----	----		04-Sep-2023	7 days	5 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-08	E687	30-Aug-2023	31-Aug-2023	14 days	2 days	✓	05-Sep-2023	40 days	4 days	✓



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polycyclic Aromatic Hydrocarbons : PAHs (ON Special List) by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-08	E642D	30-Aug-2023	01-Sep-2023	14 days	3 days	✓	06-Sep-2023	40 days	5 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS (Low Level)											
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] CCDW-08	E641A-L	30-Aug-2023	31-Aug-2023	14 days	2 days	✓	05-Sep-2023	40 days	5 days	✓	
Semi-Volatile Organics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-08	E655F	30-Aug-2023	01-Sep-2023	14 days	3 days	✓	05-Sep-2023	40 days	4 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) [ON MECP] CCDW-08	E508	30-Aug-2023	01-Sep-2023	28 days	2 days	✓	01-Sep-2023	28 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) CCDW-08	E420	30-Aug-2023	31-Aug-2023	180 days	2 days	✓	31-Aug-2023	180 days	2 days	✓	
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)											
HDPE total (zinc acetate+sodium hydroxide) CCDW-08	E395-H	30-Aug-2023	----	----	----		05-Sep-2023	7 days	6 days	✓	
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS											
Glass vial (sodium bisulfate) CCDW-08	E611D	30-Aug-2023	01-Sep-2023	14 days	3 days	✓	01-Sep-2023	14 days	3 days	✓	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1113673	1	12	8.3	5.0	✔
Chloride in Water by IC	E235.Cl	1115868	1	18	5.5	5.0	✔
Fluoride in Water by IC	E235.F	1115869	1	8	12.5	5.0	✔
pH by Meter	E108	1115872	1	9	11.1	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1114795	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1115867	1	7	14.2	5.0	✔
Total Cyanide	E333	1113941	1	15	6.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1114793	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1114108	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1114126	1	14	7.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1114794	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1118605	1	15	6.6	5.0	✔
TSS by Gravimetry	E160	1117957	1	20	5.0	4.7	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1115646	1	18	5.5	5.0	✔
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1113673	1	12	8.3	5.0	✔
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1115834	1	4	25.0	5.0	✔
Chloride in Water by IC	E235.Cl	1115868	1	18	5.5	5.0	✔
Fluoride in Water by IC	E235.F	1115869	1	8	12.5	5.0	✔
Mineral Oil & Grease by Gravimetry	E567SG	1114812	1	17	5.8	5.0	✔
OCP Analysis by GC-MS-MS or GC-MS	E660F	1114458	1	4	25.0	5.0	✔
Oil & Grease by Gravimetry	E567	1114811	1	20	5.0	5.0	✔
PAHs (ON Special List) by GC-MS	E642D	1115728	1	3	33.3	5.0	✔
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1113800	1	5	20.0	5.0	✔
PCB Aroclors by GC-MS	E687	1114457	1	20	5.0	4.7	✔
pH by Meter	E108	1115872	1	9	11.1	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1114795	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1115867	1	7	14.2	5.0	✔
Total Cyanide	E333	1113941	1	15	6.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1114793	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1114108	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1114126	1	14	7.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1114794	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1118605	1	15	6.6	5.0	✔
TSS by Gravimetry	E160	1117957	1	20	5.0	4.7	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1115646	1	18	5.5	5.0	✔



Matrix: **Water**

Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Method Blanks (MB)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1113673	1	12	8.3	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1115834	1	4	25.0	5.0	✓
Chloride in Water by IC	E235.Cl	1115868	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	1115869	1	8	12.5	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	1114812	1	17	5.8	5.0	✓
OCP Analysis by GC-MS-MS or GC-MS	E660F	1114458	1	4	25.0	5.0	✓
Oil & Grease by Gravimetry	E567	1114811	1	20	5.0	5.0	✓
PAHs (ON Special List) by GC-MS	E642D	1115728	1	3	33.3	5.0	✓
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1113800	1	5	20.0	5.0	✓
PCB Aroclors by GC-MS	E687	1114457	1	20	5.0	4.7	✓
Phenols (4AAP) in Water by Colorimetry	E562	1114795	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1115867	1	7	14.2	5.0	✓
Total Cyanide	E333	1113941	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1114793	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1114108	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1114126	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1114794	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1118605	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	1117957	1	20	5.0	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1115646	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	1115868	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	1115869	1	8	12.5	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1114795	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1115867	1	7	14.2	5.0	✓
Total Cyanide	E333	1113941	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1114793	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1114108	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1114126	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1114794	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1118605	1	15	6.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1115646	1	18	5.5	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 ALS Environmental - Waterloo	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Waterloo	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.Cl ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Waterloo	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395-H ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Waterloo	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555 ALS Environmental - Waterloo	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Nitrification inhibitor is added to samples to prevent nitrogenous compounds from consuming oxygen resulting in only carbonaceous oxygen demand being reported by this method. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Waterloo	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K ₃ Fe(CN) ₆) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
Oil & Grease by Gravimetry	E567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry	E567SG ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
PAHs (ON Special List) by GC-MS	E642D ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	BNA are analyzed by GC-MS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
OCP Analysis by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS or GC-MS
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG ALS Environmental - Waterloo	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
Total PAH (Ontario Sewer Use Extended List)	EC640A ALS Environmental - Waterloo	Water	Calculation (Sum of the Squares)	Total PAH (Ontario Sewer Use) is the sum of the following PAHs: anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b+j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, pyrene, benzo(e)pyrene, perylene, 3-methylcholanthrene, 1,3-dinitropyrene, 1,6-dinitropyrene, 1,8-dinitropyrene, 7H-dibenzo(c,g)carbazole, dibenzo(a,i)pyrene, dibenz(a,j)acridine, and dibenz(a,h)acridine. When the PAH is less than LOR, zero is used for calculation.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 ALS Environmental - Waterloo	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Oil & Grease Extraction for Gravimetry	EP567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
PAHs DCM Extraction	EP642	Water	EPA 3510C (mod)	PAH are extracted from aqueous sample using DCM liquid-liquid extraction.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Waterloo			
BNA Extraction	EP655 ALS Environmental - Waterloo	Water	EPA 3510C (mod)	SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: WT2327725	Page	: 1 of 14
Client	: Milestone Environmental Contracting Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Lance Lemon	Account Manager	: Emily Hansen
Address	: 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 01220228	Date Samples Received	: 30-Aug-2023 15:15
PO	: ----	Date Analysis Commenced	: 31-Aug-2023
C-O-C number	: 20-1043590	Issue Date	: 07-Sep-2023 13:26
Sampler	: CLIENT ----		
Site	: ----		
Quote number	: TSS & Hamilton Sanitary		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Rachel Cameron	Supervisor - Semi-Volatile Extractions	Waterloo Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

Page : 2 of 14
Work Order : WT2327725
Client : Milestone Environmental Contracting Inc.
Project : 01220228



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1115872)											
WT2327710-001	Anonymous	pH	----	E108	0.10	pH units	7.81	7.86	0.638%	4%	----
Physical Tests (QC Lot: 1117957)											
HA2300637-009	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	6.2	6.8	0.6	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1114793)											
WT2327043-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	1.08	1.11	2.91%	20%	----
Anions and Nutrients (QC Lot: 1114794)											
WT2327050-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0045	0.0050	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1115867)											
WT2327698-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	3.00	mg/L	48.0	43.3	10.4%	20%	----
Anions and Nutrients (QC Lot: 1115868)											
WT2327698-001	Anonymous	Chloride	16887-00-6	E235.Cl	5.00	mg/L	2510	2480	1.24%	20%	----
Anions and Nutrients (QC Lot: 1115869)											
WT2327698-001	Anonymous	Fluoride	16984-48-8	E235.F	0.200	mg/L	0.449	0.402	0.048	Diff <2x LOR	----
Cyanides (QC Lot: 1113941)											
WT2327050-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
Total Sulfides (QC Lot: 1118605)											
FJ2302204-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395-H	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Total Metals (QC Lot: 1114108)											
WT2327632-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 1114126)											
WT2327665-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0300	mg/L	0.0576	0.0542	0.0034	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00100	mg/L	0.00148	0.00162	0.00014	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00090	mg/L	0.00208	0.00201	0.00007	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.100	mg/L	16.1	16.5	2.65%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 1114126) - continued											
WT2327665-001	Anonymous	Lead, total	7439-92-1	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00100	mg/L	1.58	1.63	3.40%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000500	mg/L	0.000759	0.000752	0.000007	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00300	mg/L	<0.00300	<0.00300	0	Diff <2x LOR	----
		Vanadium, total	7440-62-2	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0300	mg/L	<0.0300	<0.0300	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1113673)											
WT2327105-002	Anonymous	Carbonaceous biochemical oxygen demand [CBOD]	----	E555	3.0	mg/L	<3.0	<3.0	0.0%	30%	----
Aggregate Organics (QC Lot: 1114795)											
WT2327131-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1115646)											
WT2327730-001	Anonymous	Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	1.05	1.07	0.02	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1117957)						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
Anions and Nutrients (QCLot: 1114793)						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
Anions and Nutrients (QCLot: 1114794)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
Anions and Nutrients (QCLot: 1115867)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
Anions and Nutrients (QCLot: 1115868)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	---
Anions and Nutrients (QCLot: 1115869)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
Cyanides (QCLot: 1113941)						
Cyanide, strong acid dissociable (Total)	---	E333	0.002	mg/L	<0.0020	---
Total Sulfides (QCLot: 1118605)						
Sulfide, total (as S)	18496-25-8	E395-H	0.01	mg/L	<0.010	---
Total Metals (QCLot: 1114108)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Total Metals (QCLot: 1114126)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	---
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1114126) - continued						
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Aggregate Organics (QCLot: 1113673)						
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 1114795)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Aggregate Organics (QCLot: 1114811)						
Oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1114812)						
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	<5.0	----
Volatile Organic Compounds (QCLot: 1115646)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1113800)						
Anthracene	120-12-7	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)anthracene	56-55-3	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	<0.010	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	<0.010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1113800) - continued						
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A-L	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	<0.010	----
Perylene	198-55-0	E641A-L	0.01	µg/L	<0.010	----
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	<0.010	----
Pyrene	129-00-0	E641A-L	0.01	µg/L	<0.010	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1115728)						
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	<0.050	----
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	<0.050	----
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	<0.050	----
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	<0.050	----
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	<1.0	----
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	<1.0	----
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	<1.0	----
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	<0.050	----
Phthalate Esters (QCLot: 1115834)						
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	<2.0	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	<1.0	----
Semi-Volatile Organics (QCLot: 1115834)						
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	<0.40	----
Chlorinated Phenolics (QCLot: 1115834)						
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	<0.50	----
Polychlorinated Biphenyls (QCLot: 1114457)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----
Organochlorine Pesticides (QCLot: 1114458)						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1114458) - continued						
Aldrin	309-00-2	E660F	0.008	µg/L	<0.0080	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	<0.0080	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	<0.0080	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	<0.0040	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	<0.0040	----
Dieldrin	60-57-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	<0.0080	----
Mirex	2385-85-5	E660F	0.008	µg/L	<0.0080	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1115872)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1117957)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 1114793)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 1114794)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.393 mg/L	84.0	80.0	120	----
Anions and Nutrients (QCLot: 1115867)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1115868)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1115869)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.4	90.0	110	----
Cyanides (QCLot: 1113941)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	94.0	80.0	120	----
Total Sulfides (QCLot: 1118605)									
Sulfide, total (as H2S)	7783-06-4	E395-H	----	mg/L	0.085 mg/L	110	80.0	120	----
Sulfide, total (as S)	18496-25-8	E395-H	0.01	mg/L	0.08 mg/L	111	80.0	120	----
Total Metals (QCLot: 1114108)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.7	80.0	120	----
Total Metals (QCLot: 1114126)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	104	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	105	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	109	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	107	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	106	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.0125 mg/L	109	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	106	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1114126) - continued									
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	118	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	109	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	107	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	105	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	100	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	102	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	106	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	98.0	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	108	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	99.8	80.0	120	----
Aggregate Organics (QCLot: 1113673)									
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	198 mg/L	99.7	85.0	115	----
Aggregate Organics (QCLot: 1114795)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	104	85.0	115	----
Aggregate Organics (QCLot: 1114811)									
Oil & grease (gravimetric)	----	E567	5	mg/L	200 mg/L	92.1	70.0	130	----
Aggregate Organics (QCLot: 1114812)									
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	100 mg/L	88.8	70.0	130	----
Volatile Organic Compounds (QCLot: 1115646)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	112	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	108	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	97.7	70.0	130	----
Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	97.5	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	97.4	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	98.0	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	99.2	70.0	130	----



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Polycyclic Aromatic Hydrocarbons (QCLot: 1113800)									
Anthracene	120-12-7	E641A-L	0.01	µg/L	0.5263 µg/L	110	50.0	140	----
Benz(a)anthracene	56-55-3	E641A-L	0.01	µg/L	0.5263 µg/L	113	50.0	140	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	0.5263 µg/L	97.6	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	0.5263 µg/L	87.8	50.0	140	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	0.5263 µg/L	91.2	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	0.5263 µg/L	100	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	0.5263 µg/L	98.4	50.0	140	----
Chrysene	218-01-9	E641A-L	0.01	µg/L	0.5263 µg/L	109	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	0.5263 µg/L	90.2	50.0	140	----
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	0.5263 µg/L	99.0	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	0.5263 µg/L	113	50.0	140	----
Perylene	198-55-0	E641A-L	0.01	µg/L	0.5263 µg/L	97.9	50.0	140	----
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	0.5263 µg/L	107	50.0	140	----
Pyrene	129-00-0	E641A-L	0.01	µg/L	0.5263 µg/L	101	50.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1115728)									
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	1.6 µg/L	90.9	60.0	130	----
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	1.6 µg/L	92.5	60.0	130	----
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	1.6 µg/L	93.6	60.0	130	----
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	1.6 µg/L	101	60.0	130	----
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	1.6 µg/L	# 139	60.0	130	LCS-H
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	1.6 µg/L	94.9	60.0	130	----
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	1.6 µg/L	124	60.0	130	----
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	1.6 µg/L	92.2	60.0	130	----
Phthalate Esters (QCLot: 1115834)									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	6.4 µg/L	123	50.0	140	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	6.4 µg/L	110	50.0	140	----
Semi-Volatile Organics (QCLot: 1115834)									
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	1.6 µg/L	# 26.4	50.0	140	RRQC
Chlorinated Phenolics (QCLot: 1115834)									
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	4.8 µg/L	108	50.0	140	----
Polychlorinated Biphenyls (QCLot: 1114457)									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polychlorinated Biphenyls (QCLot: 1114457) - continued									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	96.0	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	96.0	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	96.0	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	96.0	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	95.8	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	86.4	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	98.3	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	98.3	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	98.3	60.0	140	----
Organochlorine Pesticides (QCLot: 1114458)									
Aldrin	309-00-2	E660F	0.008	µg/L	0.2 µg/L	80.5	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	0.2 µg/L	81.7	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	0.2 µg/L	72.4	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	0.2 µg/L	91.2	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	0.2 µg/L	127	50.0	150	----
Dieldrin	60-57-1	E660F	0.008	µg/L	0.2 µg/L	86.0	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	0.2 µg/L	76.2	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	0.2 µg/L	83.7	50.0	150	----
Mirex	2385-85-5	E660F	0.008	µg/L	0.2 µg/L	113	50.0	150	----

Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
RRQC	Refer to report comments for information regarding this QC result.



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1114793)										
WT2327043-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.80 mg/L	2.5 mg/L	112	70.0	130	----
Anions and Nutrients (QCLot: 1114794)										
WT2327050-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0856 mg/L	0.1 mg/L	85.6	70.0	130	----
Anions and Nutrients (QCLot: 1115867)										
WT2327698-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	966 mg/L	1000 mg/L	96.6	75.0	125	----
Anions and Nutrients (QCLot: 1115868)										
WT2327698-001	Anonymous	Chloride	16887-00-6	E235.Cl	ND mg/L	1000 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 1115869)										
WT2327698-001	Anonymous	Fluoride	16984-48-8	E235.F	10.0 mg/L	10 mg/L	100	75.0	125	----
Cyanides (QCLot: 1113941)										
WT2327050-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.238 mg/L	0.25 mg/L	95.2	75.0	125	----
Total Sulfides (QCLot: 1118605)										
FJ2302204-002	Anonymous	Sulfide, total (as S)	18496-25-8	E395-H	ND mg/L	1 mg/L	ND	75.0	125	----
Total Metals (QCLot: 1114108)										
WT2327725-001	CCDW-08	Mercury, total	7439-97-6	E508	0.0000940 mg/L	0.0001 mg/L	94.0	70.0	130	----
Total Metals (QCLot: 1114126)										
WT2327665-001	Anonymous	Aluminum, total	7429-90-5	E420	0.930 mg/L	1 mg/L	93.0	70.0	130	----
		Antimony, total	7440-36-0	E420	0.503 mg/L	0.5 mg/L	101	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.523 mg/L	0.5 mg/L	104	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.462 mg/L	0.5 mg/L	92.3	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.0480 mg/L	0.05 mg/L	95.9	70.0	130	----
		Chromium, total	7440-47-3	E420	0.124 mg/L	0.125 mg/L	99.0	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.121 mg/L	0.125 mg/L	97.2	70.0	130	----
		Copper, total	7440-50-8	E420	0.119 mg/L	0.125 mg/L	95.1	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	0.5 mg/L	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.237 mg/L	0.25 mg/L	94.6	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.125 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.126 mg/L	0.125 mg/L	100	70.0	130	----
		Nickel, total	7440-02-0	E420	0.238 mg/L	0.25 mg/L	95.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1114126) - continued										
WT2327665-001	Anonymous	Selenium, total	7782-49-2	E420	0.503 mg/L	0.5 mg/L	101	70.0	130	----
		Silver, total	7440-22-4	E420	0.0464 mg/L	0.05 mg/L	92.8	70.0	130	----
		Tin, total	7440-31-5	E420	0.249 mg/L	0.25 mg/L	99.7	70.0	130	----
		Titanium, total	7440-32-6	E420	0.124 mg/L	0.125 mg/L	99.2	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.256 mg/L	0.25 mg/L	102	70.0	130	----
		Zinc, total	7440-66-6	E420	0.241 mg/L	0.25 mg/L	96.5	70.0	130	----
Aggregate Organics (QCLot: 1114795)										
WT2327131-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0208 mg/L	0.02 mg/L	104	75.0	125	----
Volatile Organic Compounds (QCLot: 1115646)										
WT2327730-001	Anonymous	Benzene	71-43-2	E611D	98.6 µg/L	100 µg/L	98.6	60.0	140	----
		Chloroform	67-66-3	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	99.6 µg/L	100 µg/L	99.6	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	95.3 µg/L	100 µg/L	95.3	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichloromethane	75-09-2	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Ethylbenzene	100-41-4	E611D	96.0 µg/L	100 µg/L	96.0	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	109 µg/L	100 µg/L	109	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	96.2 µg/L	100 µg/L	96.2	60.0	140	----
		Toluene	108-88-3	E611D	95.1 µg/L	100 µg/L	95.1	60.0	140	----
		Trichloroethylene	79-01-6	E611D	97.2 µg/L	100 µg/L	97.2	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	193 µg/L	200 µg/L	96.3	60.0	140	----
		Xylene, o-	95-47-6	E611D	97.9 µg/L	100 µg/L	97.9	60.0	140	----



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1043590

Page 1 of 1

MT

Environmental Division
Waterloo
Work Order Reference
WT2327725



Telephone : +1 519 886 9910

Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company:	Milestone Environmental Contracting	Select Report Format:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)	<input type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fee may apply to rush requests on weekends, statutory holidays and non-routine tests	
Contact:	Lance Lemon	Merge QC/QCI Reports with COA	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		
Phone:	905-925-1383	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		
Street:	1550 Laperriere Ave, Unit 200	Email 1 or Fax:	lance.l@milestoneenv.ca		
City/Province:	Ottawa, ON	Email 2:	Samsonw@milestoneenv.ca		
Postal Code:	K1Z 7T2	Email 3:	matts@milestoneenv.ca		
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Invoice Recipients		Date and Time Required for all E&P TATs:	
	Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	For all tests with rush TATs requested, please contact your account manager.	
Company:	Milestone Environmental Contracting	Email 1 or Fax:	accounting@milestoneenv.ca	Analysis Request	
Contact:	Lance Lemon	Email 2:	lance.l@milestoneenv.ca	Indicate Filtered (F), Preserved (P) or Filtered and Preserved	
Project Information		Oil and Gas Required Fields (client use)			
ALS Account # / Quote #:		AFE/Cost Center:	PO#:		
Job #:	01220228	Major/Minor Code:	Routing Code:		
PO / AFE:		Requisitioner:			
LSD:		Location:			
ALS Lab Work Order # (ALS use only):	WT2327725 TS	ALS Contact:	Sampler:		

NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved										SAMPLES ON HOLD	EXTENDED STORAGE REQ	SUSPECTED HAZARD (see n)			
	pH, TSS, Chl, Flu, Sul	TKN, TP, Phenols, HAF	Total Cyanide	Total Metals	Total Mercury	C-BOD	NOCs	OC pesticides, PCBs	SVOCs	Oil and Grease				PAHs	H2S sulfide	
18																

Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)			
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO				Cooling Method: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED			
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO				Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO			
				Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A			
				INITIAL COOLER TEMPERATURES °C: _____ FINAL COOLER TEMPERATURES °C: _____			
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)			
Released by:	Samson Walsom	Date:	8/30/2023	Received by:	BB	Date:	08/30/23
		Time:	3:00			Time:	3:15

Sewer Bylaw Quality Laboratory Report
October 3, 2023

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2331838</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone : ----</p> <p>Project : 01220228</p> <p>PO : ----</p> <p>C-O-C number : 20-1043591</p> <p>Sampler : CLIENT</p> <p>Site : ----</p> <p>Quote number : TSS & Hamilton Sanitary</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 12</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Emily Hansen</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 03-Oct-2023 16:00</p> <p>Issue Date : 16-Oct-2023 11:44</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Volatile Organic Compounds	QC-MRG2-1170115 002	----	Dichloromethane	75-09-2	E611D	133 % ^{MES}	70.0-130%	Recovery greater than upper control limit
Volatile Organic Compounds	QC-MRG2-1170115 002	----	Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	137 % ^{MES}	70.0-130%	Recovery greater than upper control limit
Semi-Volatile Organics	QC-MRG3-1166884 002	----	Dichlorobenzidine, 3,3'-	91-94-1	E655F	33.4 % ^{RRQC}	50.0-140%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RRQC	Refer to report comments for information regarding this QC result.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT-4d] CCDW-09	E555	03-Oct-2023	----	----	----		04-Oct-2023	4 days	0 days	✔
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-09	E567SG	03-Oct-2023	04-Oct-2023	28 days	1 days	✔	04-Oct-2023	40 days	0 days	✔
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-09	E567	03-Oct-2023	04-Oct-2023	28 days	1 days	✔	04-Oct-2023	40 days	0 days	✔
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] CCDW-09	E562	03-Oct-2023	03-Oct-2023	28 days	0 days	✔	04-Oct-2023	28 days	1 days	✔
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] CCDW-09	E235.Cl	03-Oct-2023	06-Oct-2023	28 days	3 days	✔	06-Oct-2023	28 days	3 days	✔
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP] CCDW-09	E235.F	03-Oct-2023	06-Oct-2023	28 days	3 days	✔	06-Oct-2023	28 days	3 days	✔
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] CCDW-09	E235.SO4	03-Oct-2023	06-Oct-2023	28 days	3 days	✔	06-Oct-2023	28 days	3 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] CCDW-09	E318	03-Oct-2023	04-Oct-2023	28 days	1 days	✔	04-Oct-2023	28 days	1 days	✔
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP] CCDW-09	E372-U	03-Oct-2023	04-Oct-2023	28 days	1 days	✔	05-Oct-2023	28 days	2 days	✔
Chlorinated Phenolics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-09	E655F	03-Oct-2023	03-Oct-2023	14 days	0 days	✔	05-Oct-2023	40 days	1 days	✔
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CCDW-09	E333	03-Oct-2023	04-Oct-2023	14 days	1 days	✔	04-Oct-2023	14 days	1 days	✔
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-09	E660F	03-Oct-2023	03-Oct-2023	14 days	0 days	✔	04-Oct-2023	40 days	1 days	✔
Phthalate Esters : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-09	E655F	03-Oct-2023	03-Oct-2023	14 days	0 days	✔	05-Oct-2023	40 days	1 days	✔
Physical Tests : pH by Meter										
HDPE [ON MECP] CCDW-09	E108	03-Oct-2023	06-Oct-2023	14 days	3 days	✔	06-Oct-2023	14 days	3 days	✔
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] CCDW-09	E160	03-Oct-2023	----	----	----		04-Oct-2023	7 days	1 days	✔
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-09	E687	03-Oct-2023	03-Oct-2023	14 days	0 days	✔	04-Oct-2023	40 days	1 days	✔



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs (ON Special List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-09	E642D	03-Oct-2023	03-Oct-2023	14 days	0 days	✓	04-Oct-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS (Low Level)										
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] CCDW-09	E641A-L	03-Oct-2023	04-Oct-2023	14 days	1 days	✓	06-Oct-2023	40 days	2 days	✓
Semi-Volatile Organics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW-09	E655F	03-Oct-2023	03-Oct-2023	14 days	0 days	✓	05-Oct-2023	40 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) [ON MECP] CCDW-09	E508	03-Oct-2023	03-Oct-2023	28 days	0 days	✓	03-Oct-2023	28 days	0 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) CCDW-09	E420	03-Oct-2023	03-Oct-2023	180 days	0 days	✓	04-Oct-2023	180 days	1 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) CCDW-09	E395-H	03-Oct-2023	----	----	----		08-Oct-2023	7 days	5 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) CCDW-09	E611D	03-Oct-2023	05-Oct-2023	14 days	2 days	✓	05-Oct-2023	14 days	2 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1167626	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1171917	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	1171918	1	11	9.0	5.0	✓
pH by Meter	E108	1171921	1	20	5.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1166540	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1171919	1	12	8.3	5.0	✓
Total Cyanide	E333	1167382	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1166536	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1166457	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1166979	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1166537	1	19	5.2	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1175112	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	1167306	1	17	5.8	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1170115	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1167626	1	20	5.0	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1166884	1	4	25.0	5.0	✓
Chloride in Water by IC	E235.Cl	1171917	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	1171918	1	11	9.0	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	1167217	1	6	16.6	5.0	✓
OCP Analysis by GC-MS-MS or GC-MS	E660F	1166898	1	1	100.0	5.0	✓
Oil & Grease by Gravimetry	E567	1167216	1	6	16.6	5.0	✓
PAHs (ON Special List) by GC-MS	E642D	1166895	1	3	33.3	5.0	✓
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1167348	1	2	50.0	5.0	✓
PCB Aroclors by GC-MS	E687	1166897	1	10	10.0	4.7	✓
pH by Meter	E108	1171921	1	20	5.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1166540	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1171919	1	12	8.3	5.0	✓
Total Cyanide	E333	1167382	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1166536	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1166457	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1166979	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1166537	1	19	5.2	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1175112	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	1167306	1	17	5.8	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1170115	1	16	6.2	5.0	✓



Matrix: **Water**

Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Method Blanks (MB)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1167626	1	20	5.0	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1166884	1	4	25.0	5.0	✓
Chloride in Water by IC	E235.Cl	1171917	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	1171918	1	11	9.0	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	1167217	1	6	16.6	5.0	✓
OCP Analysis by GC-MS-MS or GC-MS	E660F	1166898	1	1	100.0	5.0	✓
Oil & Grease by Gravimetry	E567	1167216	1	6	16.6	5.0	✓
PAHs (ON Special List) by GC-MS	E642D	1166895	1	3	33.3	5.0	✓
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1167348	1	2	50.0	5.0	✓
PCB Aroclors by GC-MS	E687	1166897	1	10	10.0	4.7	✓
Phenols (4AAP) in Water by Colorimetry	E562	1166540	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1171919	1	12	8.3	5.0	✓
Total Cyanide	E333	1167382	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1166536	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1166457	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1166979	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1166537	1	19	5.2	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1175112	1	14	7.1	5.0	✓
TSS by Gravimetry	E160	1167306	1	17	5.8	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1170115	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	1171917	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	1171918	1	11	9.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1166540	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1171919	1	12	8.3	5.0	✓
Total Cyanide	E333	1167382	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1166536	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1166457	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1166979	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1166537	1	19	5.2	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1175112	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1170115	1	16	6.2	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 ALS Environmental - Waterloo	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Waterloo	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.Cl ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Waterloo	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395-H ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Waterloo	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555 ALS Environmental - Waterloo	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Nitrification inhibitor is added to samples to prevent nitrogenous compounds from consuming oxygen resulting in only carbonaceous oxygen demand being reported by this method. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Waterloo	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K ₃ Fe(CN) ₆) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
Oil & Grease by Gravimetry	E567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry	E567SG ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
PAHs (ON Special List) by GC-MS	E642D ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	BNA are analyzed by GC-MS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
OCP Analysis by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS or GC-MS
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG ALS Environmental - Waterloo	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
Total PAH (Ontario Sewer Use Extended List)	EC640A ALS Environmental - Waterloo	Water	Calculation (Sum of the Squares)	Total PAH (Ontario Sewer Use) is the sum of the following PAHs: anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b+j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, pyrene, benzo(e)pyrene, perylene, 3-methylcholanthrene, 1,3-dinitropyrene, 1,6-dinitropyrene, 1,8-dinitropyrene, 7H-dibenzo(c,g)carbazole, dibenzo(a,i)pyrene, dibenz(a,j)acridine, and dibenz(a,h)acridine. When the PAH is less than LOR, zero is used for calculation.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 ALS Environmental - Waterloo	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Oil & Grease Extraction for Gravimetry	EP567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
PAHs DCM Extraction	EP642	Water	EPA 3510C (mod)	PAH are extracted from aqueous sample using DCM liquid-liquid extraction.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Waterloo			
BNA Extraction	EP655 ALS Environmental - Waterloo	Water	EPA 3510C (mod)	SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: WT2331838	Page	: 1 of 14
Client	: Milestone Environmental Contracting Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Lance Lemon	Account Manager	: Emily Hansen
Address	: 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 01220228	Date Samples Received	: 03-Oct-2023 16:00
PO	: ----	Date Analysis Commenced	: 03-Oct-2023
C-O-C number	: 20-1043591	Issue Date	: 16-Oct-2023 11:44
Sampler	: CLIENT ----		
Site	: ----		
Quote number	: TSS & Hamilton Sanitary		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Hannah Lewis	Inorganics Analyst	Waterloo Inorganics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Kate Dimitrova	Supervisor - Inorganic	Vancouver Inorganics, Burnaby, British Columbia
Rachel Cameron	Supervisor - Semi-Volatile Extractions	Waterloo Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

Page : 2 of 14
Work Order : WT2331838
Client : Milestone Environmental Contracting Inc.
Project : 01220228



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1167306)											
WT2331773-002	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1171921)											
WT2332124-001	Anonymous	pH	----	E108	0.10	pH units	8.16	8.09	0.862%	4%	----
Anions and Nutrients (QC Lot: 1166536)											
WT2331551-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.506	0.471	0.035	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1166537)											
WT2331513-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.283	0.282	0.403%	20%	----
Anions and Nutrients (QC Lot: 1171917)											
WT2332014-014	Anonymous	Chloride	16887-00-6	E235.Cl	2.50	mg/L	245	245	0.0130%	20%	----
Anions and Nutrients (QC Lot: 1171918)											
WT2332014-014	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	1.24	1.24	0.267%	20%	----
Anions and Nutrients (QC Lot: 1171919)											
WT2332014-014	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	277	276	0.248%	20%	----
Cyanides (QC Lot: 1167382)											
TY2309792-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Total Sulfides (QC Lot: 1175112)											
VA23C3589-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395-H	0.010	mg/L	0.024	0.026	0.001	Diff <2x LOR	----
Total Metals (QC Lot: 1166457)											
HA2300768-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000500	mg/L	0.000113	0.000114	0.0000010	Diff <2x LOR	----
Total Metals (QC Lot: 1166979)											
WT2331773-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0300	mg/L	<0.0300	<0.0300	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00100	mg/L	0.00105	0.00109	0.00004	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000500	mg/L	0.0000766	0.0000621	0.0000145	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00500	mg/L	0.0121	0.0123	0.00018	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 1166979) - continued											
WT2331773-001	Anonymous	Lead, total	7439-92-1	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00100	mg/L	0.0186	0.0189	1.25%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000500	mg/L	0.00205	0.00188	0.000172	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00300	mg/L	<0.00300	<0.00300	0	Diff <2x LOR	----
		Vanadium, total	7440-62-2	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0300	mg/L	<0.0300	<0.0300	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1166540)											
HA2300773-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1167626)											
WT2331843-001	Anonymous	Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2.0	mg/L	4.1	4.4	9.2%	30%	----
Volatile Organic Compounds (QC Lot: 1170115)											
WT2331889-001	Anonymous	Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	3.85	3.38	13.0%	30%	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	1.33	1.31	0.02	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	20.6	20.6	0.194%	30%	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	7.04	6.55	7.21%	30%	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	3.66	3.51	4.18%	30%	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	13.9	13.0	6.63%	30%	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1167306)						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
Anions and Nutrients (QCLot: 1166536)						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
Anions and Nutrients (QCLot: 1166537)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
Anions and Nutrients (QCLot: 1171917)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	---
Anions and Nutrients (QCLot: 1171918)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
Anions and Nutrients (QCLot: 1171919)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
Cyanides (QCLot: 1167382)						
Cyanide, strong acid dissociable (Total)	---	E333	0.002	mg/L	<0.0020	---
Total Sulfides (QCLot: 1175112)						
Sulfide, total (as S)	18496-25-8	E395-H	0.01	mg/L	<0.010	---
Total Metals (QCLot: 1166457)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Total Metals (QCLot: 1166979)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	---
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1166979) - continued						
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Aggregate Organics (QCLot: 1166540)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Aggregate Organics (QCLot: 1167216)						
Oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1167217)						
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1167626)						
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	<2.0	----
Volatile Organic Compounds (QCLot: 1170115)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1166895)						
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	<0.050	----
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	<0.050	----
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	<0.050	----
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	<0.050	----
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	<1.0	----
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	<1.0	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1166895) - continued						
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	<1.0	----
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	<0.050	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1167348)						
Anthracene	120-12-7	E641A-L	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	<0.010	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A-L	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	<0.010	----
Perylene	198-55-0	E641A-L	0.01	µg/L	<0.010	----
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	<0.010	----
Pyrene	129-00-0	E641A-L	0.01	µg/L	<0.010	----
Phthalate Esters (QCLot: 1166884)						
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	<2.0	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	<1.0	----
Semi-Volatile Organics (QCLot: 1166884)						
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	<0.40	----
Chlorinated Phenolics (QCLot: 1166884)						
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	<0.50	----
Polychlorinated Biphenyls (QCLot: 1166897)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----
Organochlorine Pesticides (QCLot: 1166898)						

Page : 8 of 14
 Work Order : WT2331838
 Client : Milestone Environmental Contracting Inc.
 Project : 01220228



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1166898) - continued						
Aldrin	309-00-2	E660F	0.008	µg/L	<0.0080	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	<0.0080	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	<0.0080	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	<0.0040	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	<0.0040	----
Dieldrin	60-57-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	<0.0080	----
Mirex	2385-85-5	E660F	0.008	µg/L	<0.0080	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1167306)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	102	85.0	115	----
Physical Tests (QCLot: 1171921)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 1166536)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.8	75.0	125	----
Anions and Nutrients (QCLot: 1166537)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.393 mg/L	103	80.0	120	----
Anions and Nutrients (QCLot: 1171917)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1171918)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1171919)									
Sulfate (as SO ₄)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Cyanides (QCLot: 1167382)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	95.2	80.0	120	----
Total Sulfides (QCLot: 1175112)									
Sulfide, total (as H ₂ S)	7783-06-4	E395-H	----	mg/L	0.085 mg/L	105	80.0	120	----
Sulfide, total (as S)	18496-25-8	E395-H	0.01	mg/L	0.08 mg/L	106	80.0	120	----
Total Metals (QCLot: 1166457)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.1	80.0	120	----
Total Metals (QCLot: 1166979)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	96.3	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	103	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	106	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	94.0	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	104	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.0125 mg/L	102	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	101	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 1166979) - continued									
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	100	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	97.0	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	104	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	103	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	101	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	105	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	96.8	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	100	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	102	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	102	80.0	120	----
Aggregate Organics (QCLot: 1166540)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	102	85.0	115	----
Aggregate Organics (QCLot: 1167216)									
Oil & grease (gravimetric)	----	E567	5	mg/L	200 mg/L	104	70.0	130	----
Aggregate Organics (QCLot: 1167217)									
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	100 mg/L	99.2	70.0	130	----
Aggregate Organics (QCLot: 1167626)									
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	198 mg/L	93.0	85.0	115	----
Volatile Organic Compounds (QCLot: 1170115)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	122	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	123	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	116	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	117	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	124	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	# 133	70.0	130	MES
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	99.5	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	# 137	70.0	130	MES
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	121	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	112	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	121	70.0	130	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	110	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	113	70.0	130	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1166895)									
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	1.6 µg/L	91.0	60.0	130	----
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	1.6 µg/L	93.8	60.0	130	----
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	1.6 µg/L	95.2	60.0	130	----
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	1.6 µg/L	100	60.0	130	----
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	1.6 µg/L	130	60.0	130	----
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	1.6 µg/L	90.4	60.0	130	----
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	1.6 µg/L	118	60.0	130	----
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	1.6 µg/L	100	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1167348)									
Anthracene	120-12-7	E641A-L	0.01	µg/L	0.5263 µg/L	127	50.0	140	----
Benz(a)anthracene	56-55-3	E641A-L	0.01	µg/L	0.5263 µg/L	126	50.0	140	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	0.5263 µg/L	139	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	0.5263 µg/L	113	50.0	140	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	0.5263 µg/L	108	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	0.5263 µg/L	96.0	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	0.5263 µg/L	120	50.0	140	----
Chrysene	218-01-9	E641A-L	0.01	µg/L	0.5263 µg/L	123	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	0.5263 µg/L	119	50.0	140	----
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	0.5263 µg/L	130	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	0.5263 µg/L	121	50.0	140	----
Perylene	198-55-0	E641A-L	0.01	µg/L	0.5263 µg/L	124	50.0	140	----
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	0.5263 µg/L	127	50.0	140	----
Pyrene	129-00-0	E641A-L	0.01	µg/L	0.5263 µg/L	131	50.0	140	----
Phthalate Esters (QCLot: 1166884)									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	6.4 µg/L	122	50.0	140	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	6.4 µg/L	101	50.0	140	----
Semi-Volatile Organics (QCLot: 1166884)									
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	1.6 µg/L	# 33.4	50.0	140	RRQC
Chlorinated Phenolics (QCLot: 1166884)									
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	4.8 µg/L	105	50.0	140	----
Polychlorinated Biphenyls (QCLot: 1166897)									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polychlorinated Biphenyls (QCLot: 1166897) - continued									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	113	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	113	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	113	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	113	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	70.6	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	105	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	117	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	117	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	117	60.0	140	----
Organochlorine Pesticides (QCLot: 1166898)									
Aldrin	309-00-2	E660F	0.008	µg/L	0.2 µg/L	85.4	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	0.2 µg/L	89.4	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	0.2 µg/L	102	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	0.2 µg/L	119	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	0.2 µg/L	92.8	50.0	150	----
Dieldrin	60-57-1	E660F	0.008	µg/L	0.2 µg/L	113	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	0.2 µg/L	86.2	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	0.2 µg/L	85.6	50.0	150	----
Mirex	2385-85-5	E660F	0.008	µg/L	0.2 µg/L	106	50.0	150	----

Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RRQC	Refer to report comments for information regarding this QC result.



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1166536)										
WT2331551-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.67 mg/L	2.5 mg/L	107	70.0	130	----
Anions and Nutrients (QCLot: 1166537)										
WT2331513-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.1 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1171917)										
WT2332014-014	Anonymous	Chloride	16887-00-6	E235.Cl	497 mg/L	500 mg/L	99.5	75.0	125	----
Anions and Nutrients (QCLot: 1171918)										
WT2332014-014	Anonymous	Fluoride	16984-48-8	E235.F	5.04 mg/L	5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1171919)										
WT2332014-014	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	486 mg/L	500 mg/L	97.2	75.0	125	----
Cyanides (QCLot: 1167382)										
TY2309792-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.246 mg/L	0.25 mg/L	98.4	75.0	125	----
Total Sulfides (QCLot: 1175112)										
VA23C3589-002	Anonymous	Sulfide, total (as S)	18496-25-8	E395-H	1.76 mg/L	2 mg/L	88.0	75.0	125	----
Total Metals (QCLot: 1166457)										
HA2300768-002	Anonymous	Mercury, total	7439-97-6	E508	0.000114 mg/L	0.0001 mg/L	114	70.0	130	----
Total Metals (QCLot: 1166979)										
WT2331773-002	Anonymous	Aluminum, total	7429-90-5	E420	0.0993 mg/L	0.1 mg/L	99.3	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0524 mg/L	0.05 mg/L	105	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0537 mg/L	0.05 mg/L	107	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0452 mg/L	0.05 mg/L	90.5	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00492 mg/L	0.005 mg/L	98.4	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0128 mg/L	0.0125 mg/L	103	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0126 mg/L	0.0125 mg/L	100	70.0	130	----
		Copper, total	7440-50-8	E420	0.0110 mg/L	0.0125 mg/L	88.1	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	0.05 mg/L	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0229 mg/L	0.025 mg/L	91.6	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0135 mg/L	0.0125 mg/L	108	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0245 mg/L	0.025 mg/L	98.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1166979) - continued										
WT2331773-002	Anonymous	Selenium, total	7782-49-2	E420	0.0510 mg/L	0.05 mg/L	102	70.0	130	----
		Silver, total	7440-22-4	E420	0.00453 mg/L	0.005 mg/L	90.6	70.0	130	----
		Tin, total	7440-31-5	E420	0.0260 mg/L	0.025 mg/L	104	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0134 mg/L	0.0125 mg/L	108	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0271 mg/L	0.025 mg/L	108	70.0	130	----
		Zinc, total	7440-66-6	E420	0.0218 mg/L	0.025 mg/L	87.4	70.0	130	----
Aggregate Organics (QCLot: 1166540)										
HA2300773-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0204 mg/L	0.02 mg/L	102	75.0	125	----
Volatile Organic Compounds (QCLot: 1170115)										
WT2331889-001	Anonymous	Benzene	71-43-2	E611D	107 µg/L	100 µg/L	107	60.0	140	----
		Chloroform	67-66-3	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		Dichloromethane	75-09-2	E611D	115 µg/L	100 µg/L	115	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		Ethylbenzene	100-41-4	E611D	91.0 µg/L	100 µg/L	91.0	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	123 µg/L	100 µg/L	123	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	97.2 µg/L	100 µg/L	97.2	60.0	140	----
		Toluene	108-88-3	E611D	97.1 µg/L	100 µg/L	97.1	60.0	140	----
		Trichloroethylene	79-01-6	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	190 µg/L	200 µg/L	95.1	60.0	140	----
		Xylene, o-	95-47-6	E611D	97.9 µg/L	100 µg/L	97.9	60.0	140	----



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20-1042501

Environmental Division
Waterloo
Work Order Reference
WT2331838



Telephone: +1 519 886 6910

Report To
 Company: Milestone Environmental C.
 Contact: Lance Lemon
 Phone: 905-925-1383
 Street: 1550 Laperriere Ave. Unit 200
 City/Province: Ottawa, Ontario
 Postal Code: K1Z 7T2
 Invoice To: Same as Report To
 Company: Milestone Environmental Contracting
 Contact: Lance Lemon

Reports / Recipients
 Select Report Format: PDF EXCEL EDD (DIGITAL)
 Merge QC/QCI Reports with COA YES NO N/A
 Compare Results to Criteria on Report - provide details below if box checked
 Select Distribution: EMAIL MAIL FAX
 Email 1 or Fax: Lance.L@milestoneenv.ca
 Email 2: matts@milestoneenv.ca
 Email 3: andrewc@milestoneenv.ca

Turnaround Time (TAT) Requested
 Routine [R] if received by 3pm M-F - no surcharges apply
 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
 Same day [E2] if received by 10am M-S - 200% rush surcharge. Addtl may apply to rush requests on weekends, statutory holidays and non-rst

Invoice Recipients
 Select Invoice Distribution: EMAIL MAIL FAX
 Email 1 or Fax: accounting@milestoneenv.ca
 Email 2: lance.l@milestoneenv.ca

Project Information
 ALS Account # / Quote #: 01220228
 Job #: 01220228
 PO / AFE:
 LSD:

Oil and Gas Required Fields (client use)
 AFE/Cost Center: PO#
 Major/Minor Code: Routing Code:
 Requisitioner:
 Location:

NUMBER OF CONTAINERS	Analysis Request										SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	
	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
18	pH, TSS, chl, Flu, SI												
	TKN, TP, Phenols, 4AAP												
	Total cyanide												
	Total metals												
	Total mercury												
	C-BOD												
	VOCs												
	OC pesticides, PCBs												
	SVOCs												
	Oil and Grease												
	PAH's												
	H2S sulfide												

ALS Lab Work Order # (ALS use only): WT2331838 78
 Sample Identification and/or Coordinates (This description will appear on the report):
 CCDW-09
 Date: 08-10-23
 Time: 1:00pm
 Sample Type: Water

ALS Contact:
 Sampler:

Drinking Water (DW) Samples¹ (client use)
 Are samples taken from a Regulated DW System?
 YES NO
 Are samples for human consumption/use?
 YES NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)
 Cooling Method: NONE ICE ICE PACKS FROZEN COOLING INITIATED
 Submission Comments identified on Sample Receipt Notification: YES NO
 Cooler Custody Seals Intact: YES N/A Sample Custody Seals Intact: YES NO
 INITIAL COOLER TEMPERATURES °C: 24.3
 FINAL COOLER TEMPERATURES °C:

Released by: Matt Stangel
SHIPMENT RELEASE (client use)
 Date: 10/03/2023
 Time: 3:00

INITIAL SHIPMENT RECEPTION (ALS use only)
 Received by: [Signature]
 Date: [Blank]
 Time: [Blank]

FINAL SHIPMENT RECEPTION (ALS use only)
 Received by: [Signature]
 Date: Oct 3/23
 Time: [Blank]

Sewer Bylaw Quality Laboratory Report
November 20, 2023

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2337886</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone : ----</p> <p>Project : ----</p> <p>PO : ----</p> <p>C-O-C number : 20-1084307</p> <p>Sampler : Client</p> <p>Site : ----</p> <p>Quote number : TSS & Hamilton Sanitary</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 12</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Emily Hansen</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 20-Nov-2023 14:50</p> <p>Issue Date : 28-Nov-2023 16:41</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Semi-Volatile Organics	QC-MRG5-1247232 002	----	Dichlorobenzidine, 3,3'-	91-94-1	E655F	24.0 % RRQC	50.0-140%	Recovery less than lower control limit
Organochlorine Pesticides	QC-MRG2-1246531 002	----	DDT, 2,4'-	789-02-6	E660F	165 % LCS-H	50.0-150%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
RRQC	Refer to report comments for information regarding this QC result.

Matrix Spike (MS) Recoveries								
Volatile Organic Compounds	Anonymous	Anonymous	Xylene, m+p-	179601-23-1	E611D	141 % MES	60.0-140%	Recovery greater than upper data quality objective

Result Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT-4d] CCDW11	E555	20-Nov-2023	----	----	----		21-Nov-2023	4 days	1 days	✔
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW11	E567SG	20-Nov-2023	23-Nov-2023	28 days	4 days	✔	23-Nov-2023	40 days	0 days	✔
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW11	E567	20-Nov-2023	23-Nov-2023	28 days	4 days	✔	23-Nov-2023	40 days	0 days	✔
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] CCDW11	E562	20-Nov-2023	28-Nov-2023	28 days	9 days	✔	28-Nov-2023	28 days	9 days	✔
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] CCDW11	E235.Cl	20-Nov-2023	22-Nov-2023	28 days	3 days	✔	22-Nov-2023	28 days	3 days	✔
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP] CCDW11	E235.F	20-Nov-2023	22-Nov-2023	28 days	3 days	✔	22-Nov-2023	28 days	3 days	✔
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] CCDW11	E235.SO4	20-Nov-2023	22-Nov-2023	28 days	3 days	✔	22-Nov-2023	28 days	3 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] CCDW11	E318	20-Nov-2023	23-Nov-2023	28 days	3 days	✔	23-Nov-2023	28 days	4 days	✔
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP] CCDW11	E372-U	20-Nov-2023	22-Nov-2023	28 days	3 days	✔	23-Nov-2023	28 days	4 days	✔
Chlorinated Phenolics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW11	E655F	20-Nov-2023	21-Nov-2023	14 days	2 days	✔	23-Nov-2023	40 days	2 days	✔
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) CCDW11	E333	20-Nov-2023	21-Nov-2023	14 days	2 days	✔	21-Nov-2023	14 days	2 days	✔
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW11	E660F	20-Nov-2023	21-Nov-2023	14 days	2 days	✔	22-Nov-2023	40 days	1 days	✔
Phthalate Esters : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW11	E655F	20-Nov-2023	21-Nov-2023	14 days	2 days	✔	23-Nov-2023	40 days	2 days	✔
Physical Tests : pH by Meter										
HDPE [ON MECP] CCDW11	E108	20-Nov-2023	22-Nov-2023	14 days	3 days	✔	23-Nov-2023	14 days	3 days	✔
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] CCDW11	E160	20-Nov-2023	----	----	----		21-Nov-2023	7 days	2 days	✔
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW11	E687	20-Nov-2023	21-Nov-2023	14 days	2 days	✔	23-Nov-2023	40 days	2 days	✔



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs (ON Special List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW11	E642D	20-Nov-2023	21-Nov-2023	14 days	2 days	✓	23-Nov-2023	40 days	2 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS (Low Level)										
Amber glass/Teflon lined cap (sodium bisulfate) CCDW11	E641A-L	20-Nov-2023	20-Nov-2023	14 days	1 days	✓	27-Nov-2023	40 days	6 days	✓
Semi-Volatile Organics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] CCDW11	E655F	20-Nov-2023	21-Nov-2023	14 days	2 days	✓	23-Nov-2023	40 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) [ON MECP] CCDW11	E508	20-Nov-2023	21-Nov-2023	28 days	1 days	✓	21-Nov-2023	28 days	0 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) CCDW11	E420	20-Nov-2023	20-Nov-2023	180 days	1 days	✓	21-Nov-2023	180 days	1 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) CCDW11	E395-H	20-Nov-2023	----	----	----		23-Nov-2023	7 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) CCDW11	E611D	20-Nov-2023	21-Nov-2023	14 days	2 days	✓	21-Nov-2023	14 days	2 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1246368	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	1247865	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1247866	1	10	10.0	5.0	✓
pH by Meter	E108	1247862	1	18	5.5	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1255691	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1247869	1	10	10.0	5.0	✓
Total Cyanide	E333	1246413	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1247552	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1245793	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1245541	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1247497	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1250083	1	16	6.2	5.0	✓
TSS by Gravimetry	E160	1245950	1	12	8.3	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1246493	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1246368	1	19	5.2	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1247233	1	5	20.0	5.0	✓
Chloride in Water by IC	E235.Cl	1247865	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1247866	1	10	10.0	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	1245612	1	4	25.0	5.0	✓
OCP Analysis by GC-MS-MS or GC-MS	E660F	1246532	1	4	25.0	5.0	✓
Oil & Grease by Gravimetry	E567	1245611	1	7	14.2	5.0	✓
PAHs (ON Special List) by GC-MS	E642D	1247238	1	2	50.0	5.0	✓
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1245540	1	2	50.0	5.0	✓
PCB Aroclors by GC-MS	E687	1246531	1	18	5.5	4.7	✓
pH by Meter	E108	1247862	1	18	5.5	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1255691	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1247869	1	10	10.0	5.0	✓
Total Cyanide	E333	1246413	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1247552	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1245793	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1245541	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1247497	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1250083	1	16	6.2	5.0	✓
TSS by Gravimetry	E160	1245950	1	12	8.3	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1246493	1	19	5.2	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Method Blanks (MB)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1246368	1	19	5.2	5.0	✔
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1247233	1	5	20.0	5.0	✔
Chloride in Water by IC	E235.Cl	1247865	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	1247866	1	10	10.0	5.0	✔
Mineral Oil & Grease by Gravimetry	E567SG	1245612	1	4	25.0	5.0	✔
OCP Analysis by GC-MS-MS or GC-MS	E660F	1246532	1	4	25.0	5.0	✔
Oil & Grease by Gravimetry	E567	1245611	1	7	14.2	5.0	✔
PAHs (ON Special List) by GC-MS	E642D	1247238	1	2	50.0	5.0	✔
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1245540	1	2	50.0	5.0	✔
PCB Aroclors by GC-MS	E687	1246531	1	18	5.5	4.7	✔
Phenols (4AAP) in Water by Colorimetry	E562	1255691	1	15	6.6	5.0	✔
Sulfate in Water by IC	E235.SO4	1247869	1	10	10.0	5.0	✔
Total Cyanide	E333	1246413	1	7	14.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1247552	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1245793	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1245541	1	16	6.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1247497	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1250083	1	16	6.2	5.0	✔
TSS by Gravimetry	E160	1245950	1	12	8.3	4.7	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1246493	1	19	5.2	5.0	✔
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	1247865	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	1247866	1	10	10.0	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1255691	1	15	6.6	5.0	✔
Sulfate in Water by IC	E235.SO4	1247869	1	10	10.0	5.0	✔
Total Cyanide	E333	1246413	1	7	14.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1247552	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1245793	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1245541	1	16	6.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1247497	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1250083	1	16	6.2	5.0	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1246493	1	19	5.2	5.0	✔



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 ALS Environmental - Waterloo	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Waterloo	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.Cl ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Waterloo	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395-H ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Waterloo	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555 ALS Environmental - Waterloo	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Nitrification inhibitor is added to samples to prevent nitrogenous compounds from consuming oxygen resulting in only carbonaceous oxygen demand being reported by this method. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K ₃ Fe(CN) ₆) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
Oil & Grease by Gravimetry	E567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry	E567SG ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
PAHs (ON Special List) by GC-MS	E642D ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	BNA are analyzed by GC-MS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
OCP Analysis by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS or GC-MS
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG ALS Environmental - Waterloo	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
Total PAH (Ontario Sewer Use Extended List)	EC640A ALS Environmental - Waterloo	Water	Calculation (Sum of the Squares)	Total PAH (Ontario Sewer Use) is the sum of the following PAHs: anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b+j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, pyrene, benzo(e)pyrene, perylene, 3-methylcholanthrene, 1,3-dinitropyrene, 1,6-dinitropyrene, 1,8-dinitropyrene, 7H-dibenzo(c,g)carbazole, dibenzo(a,i)pyrene, dibenz(a,j)acridine, and dibenz(a,h)acridine. When the PAH is less than LOR, zero is used for calculation.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 ALS Environmental - Waterloo	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Oil & Grease Extraction for Gravimetry	EP567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
PAHs DCM Extraction	EP642	Water	EPA 3510C (mod)	PAH are extracted from aqueous sample using DCM liquid-liquid extraction.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Waterloo			
BNA Extraction	EP655 ALS Environmental - Waterloo	Water	EPA 3510C (mod)	SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: WT2337886	Page	: 1 of 14
Client	: Milestone Environmental Contracting Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Lance Lemon	Account Manager	: Emily Hansen
Address	: 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: ----	Date Samples Received	: 20-Nov-2023 14:50
PO	: ----	Date Analysis Commenced	: 20-Nov-2023
C-O-C number	: 20-1084307	Issue Date	: 28-Nov-2023 16:41
Sampler	: Client		
Site	: ----		
Quote number	: TSS & Hamilton Sanitary		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Brieanna Allen	Production/Validation Manager	Vancouver Inorganics, Burnaby, British Columbia
Brooke Miller	Laboratory Analyst	Edmonton Inorganics, Edmonton, Alberta
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Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

Page : 2 of 14
Work Order : WT2337886
Client : Milestone Environmental Contracting Inc.
Project : ----



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1245950)											
WT2337675-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1247862)											
WT2337767-049	Anonymous	pH	----	E108	0.10	pH units	7.79	7.81	0.256%	4%	----
Anions and Nutrients (QC Lot: 1247497)											
WT2337822-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	2.00	mg/L	37.3	37.1	0.484%	20%	----
Anions and Nutrients (QC Lot: 1247552)											
WT2337594-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	3.46	3.40	1.62%	20%	----
Anions and Nutrients (QC Lot: 1247865)											
WT2337851-001	Anonymous	Chloride	16887-00-6	E235.Cl	2.50	mg/L	142	142	0.287%	20%	----
Anions and Nutrients (QC Lot: 1247866)											
WT2337851-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.291	0.297	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1247869)											
WT2337851-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	55.4	54.8	1.10%	20%	----
Cyanides (QC Lot: 1246413)											
WT2337582-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0020	mg/L	0.0053	0.0054	0.0001	Diff <2x LOR	----
Total Sulfides (QC Lot: 1250083)											
VA23C8010-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395-H	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Total Metals (QC Lot: 1245541)											
WT2337830-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.313	0.314	0.290%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	0.00012	0.000007	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00037	0.00039	0.00002	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000133	0.0000139	0.0000006	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.00074	0.00080	0.00006	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00026	0.00027	0.000006	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00128	0.00146	0.00018	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.867	0.880	1.40%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000278	0.000271	0.000007	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0648	0.0664	2.59%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 1245541) - continued											
WT2337830-001	Anonymous	Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000186	0.000191	0.000004	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.000050	mg/L	0.00107	0.00124	0.00017	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000066	0.000067	0.0000002	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.000010	mg/L	0.00012	<0.00010	0.00002	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00948	0.00971	2.33%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00086	0.00088	0.00002	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0041	0.0048	0.0007	Diff <2x LOR	----
Total Metals (QC Lot: 1245793)											
WT2337827-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1246368)											
WT2337842-006	Anonymous	Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2.0	mg/L	7.0	7.6	8.2%	30%	----
Aggregate Organics (QC Lot: 1255691)											
VA23C8455-004	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1246493)											
WT2337888-001	Anonymous	Benzene	71-43-2	E611D	20.0	µg/L	2120	1900	10.5%	30%	----
		Chloroform	67-66-3	E611D	23.6	µg/L	<23.2	<23.6	0.40	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	272	µg/L	<289	<272	17.0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	20.0	µg/L	1340	1240	7.99%	30%	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	20.0	µg/L	16500	15200	8.21%	30%	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	30.0	µg/L	5540	5120	7.80%	30%	----
		Xylene, o-	95-47-6	E611D	20.0	µg/L	1900	1760	7.88%	30%	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1245950)						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
Anions and Nutrients (QCLot: 1247497)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
Anions and Nutrients (QCLot: 1247552)						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
Anions and Nutrients (QCLot: 1247865)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	---
Anions and Nutrients (QCLot: 1247866)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
Anions and Nutrients (QCLot: 1247869)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
Cyanides (QCLot: 1246413)						
Cyanide, strong acid dissociable (Total)	---	E333	0.002	mg/L	<0.0020	---
Total Sulfides (QCLot: 1250083)						
Sulfide, total (as S)	18496-25-8	E395-H	0.01	mg/L	<0.010	---
Total Metals (QCLot: 1245541)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	---
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1245541) - continued						
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 1245793)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1245611)						
Oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1245612)						
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1246368)						
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 1255691)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1246493)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1245540)						
Anthracene	120-12-7	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)anthracene	56-55-3	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	<0.010	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	<0.010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1245540) - continued						
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	<0.010	---
Chrysene	218-01-9	E641A-L	0.01	µg/L	<0.010	---
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	<0.0050	---
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	<0.010	---
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	<0.010	---
Perylene	198-55-0	E641A-L	0.01	µg/L	<0.010	---
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	<0.010	---
Pyrene	129-00-0	E641A-L	0.01	µg/L	<0.010	---
Polycyclic Aromatic Hydrocarbons (QCLot: 1247238)						
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	<0.050	---
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	<0.050	---
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	<0.050	---
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	<0.050	---
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	<1.0	---
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	<1.0	---
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	<1.0	---
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	<0.050	---
Phthalate Esters (QCLot: 1247233)						
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	<2.0	---
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	<1.0	---
Semi-Volatile Organics (QCLot: 1247233)						
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	<0.40	---
Chlorinated Phenolics (QCLot: 1247233)						
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	<0.50	---
Polychlorinated Biphenyls (QCLot: 1246531)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	---
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	---
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	---
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	---
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	---
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	---
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	---
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	---
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	---
Organochlorine Pesticides (QCLot: 1246532)						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1246532) - continued						
Aldrin	309-00-2	E660F	0.008	µg/L	<0.0080	---
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	<0.0080	---
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	<0.0080	---
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	<0.0040	---
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	<0.0040	---
Dieldrin	60-57-1	E660F	0.008	µg/L	<0.0080	---
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	<0.0080	---
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	<0.0080	---
Mirex	2385-85-5	E660F	0.008	µg/L	<0.0080	---



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1245950)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	97.7	85.0	115	----
Physical Tests (QCLot: 1247862)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 1247497)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.393 mg/L	99.0	80.0	120	----
Anions and Nutrients (QCLot: 1247552)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1247865)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 1247866)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1247869)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.9	90.0	110	----
Cyanides (QCLot: 1246413)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	87.9	80.0	120	----
Total Sulfides (QCLot: 1250083)									
Sulfide, total (as H2S)	7783-06-4	E395-H	----	mg/L	0.085 mg/L	93.8	80.0	120	----
Sulfide, total (as S)	18496-25-8	E395-H	0.01	mg/L	0.08 mg/L	93.6	80.0	120	----
Total Metals (QCLot: 1245541)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	100	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	102	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	104	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	97.4	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	100	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.0125 mg/L	100	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	100	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	98.8	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	98.1	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	97.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1245541) - continued									
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	101	80.0	120	---
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	100	80.0	120	---
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	99.1	80.0	120	---
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	101	80.0	120	---
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	91.3	80.0	120	---
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	101	80.0	120	---
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	97.0	80.0	120	---
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	99.7	80.0	120	---
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	98.4	80.0	120	---
Total Metals (QCLot: 1245793)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	94.9	80.0	120	---
Aggregate Organics (QCLot: 1245611)									
Oil & grease (gravimetric)	---	E567	5	mg/L	200 mg/L	95.5	70.0	130	---
Aggregate Organics (QCLot: 1245612)									
Oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	100 mg/L	90.8	70.0	130	---
Aggregate Organics (QCLot: 1246368)									
Carbonaceous biochemical oxygen demand [CBOD]	---	E555	2	mg/L	198 mg/L	91.8	85.0	115	---
Aggregate Organics (QCLot: 1255691)									
Phenols, total (4AAP)	---	E562	0.001	mg/L	0.02 mg/L	96.4	85.0	115	---
Volatile Organic Compounds (QCLot: 1246493)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	94.8	70.0	130	---
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	96.0	70.0	130	---
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	97.4	70.0	130	---
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	98.5	70.0	130	---
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	96.7	70.0	130	---
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	102	70.0	130	---
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	104	70.0	130	---
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	90.5	70.0	130	---
Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	104	70.0	130	---
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	96.1	70.0	130	---
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	91.4	70.0	130	---
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	94.0	70.0	130	---
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	93.3	70.0	130	---
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	91.1	70.0	130	---



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1245540)									
Anthracene	120-12-7	E641A-L	0.01	µg/L	0.5263 µg/L	110	50.0	140	----
Benz(a)anthracene	56-55-3	E641A-L	0.01	µg/L	0.5263 µg/L	112	50.0	140	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	0.5263 µg/L	110	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	0.5263 µg/L	87.0	50.0	140	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	0.5263 µg/L	90.6	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	0.5263 µg/L	118	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	0.5263 µg/L	113	50.0	140	----
Chrysene	218-01-9	E641A-L	0.01	µg/L	0.5263 µg/L	107	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	0.5263 µg/L	105	50.0	140	----
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	0.5263 µg/L	105	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	0.5263 µg/L	117	50.0	140	----
Perylene	198-55-0	E641A-L	0.01	µg/L	0.5263 µg/L	108	50.0	140	----
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	0.5263 µg/L	109	50.0	140	----
Pyrene	129-00-0	E641A-L	0.01	µg/L	0.5263 µg/L	102	50.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1247238)									
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	1.6 µg/L	98.1	60.0	130	----
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	1.6 µg/L	102	60.0	130	----
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	1.6 µg/L	96.6	60.0	130	----
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	1.6 µg/L	109	60.0	130	----
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	1.6 µg/L	114	60.0	130	----
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	1.6 µg/L	87.7	60.0	130	----
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	1.6 µg/L	119	60.0	130	----
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	1.6 µg/L	116	60.0	130	----
Phthalate Esters (QCLot: 1247233)									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	6.4 µg/L	138	50.0	140	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	6.4 µg/L	117	50.0	140	----
Semi-Volatile Organics (QCLot: 1247233)									
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	1.6 µg/L	# 24.0	50.0	140	RRQC
Chlorinated Phenolics (QCLot: 1247233)									
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	4.8 µg/L	125	50.0	140	----
Polychlorinated Biphenyls (QCLot: 1246531)									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polychlorinated Biphenyls (QCLot: 1246531) - continued									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	116	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	116	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	116	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	116	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	95.1	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	94.7	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	110	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	110	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	110	60.0	140	----
Organochlorine Pesticides (QCLot: 1246532)									
Aldrin	309-00-2	E660F	0.008	µg/L	0.2 µg/L	62.3	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	0.2 µg/L	81.3	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	0.2 µg/L	87.2	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	0.2 µg/L	# 165	50.0	150	LCS-H
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	0.2 µg/L	137	50.0	150	----
Dieldrin	60-57-1	E660F	0.008	µg/L	0.2 µg/L	80.5	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	0.2 µg/L	78.5	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	0.2 µg/L	78.4	50.0	150	----
Mirex	2385-85-5	E660F	0.008	µg/L	0.2 µg/L	83.2	50.0	150	----

Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
RRQC	Refer to report comments for information regarding this QC result.



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1247497)										
WT2337822-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.1 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1247552)										
WT2337594-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1247865)										
WT2337851-001	Anonymous	Chloride	16887-00-6	E235.Cl	483 mg/L	500 mg/L	96.6	75.0	125	----
Anions and Nutrients (QCLot: 1247866)										
WT2337851-001	Anonymous	Fluoride	16984-48-8	E235.F	4.96 mg/L	5 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 1247869)										
WT2337851-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	489 mg/L	500 mg/L	97.9	75.0	125	----
Cyanides (QCLot: 1246413)										
WT2337582-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.231 mg/L	0.25 mg/L	92.6	75.0	125	----
Total Sulfides (QCLot: 1250083)										
VA23C8010-002	Anonymous	Sulfide, total (as S)	18496-25-8	E395-H	0.902 mg/L	1 mg/L	90.2	75.0	125	----
Total Metals (QCLot: 1245541)										
WT2337830-002	Anonymous	Aluminum, total	7429-90-5	E420	0.0949 mg/L	0.1 mg/L	94.9	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0515 mg/L	0.05 mg/L	103	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0524 mg/L	0.05 mg/L	105	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0475 mg/L	0.05 mg/L	95.0	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00508 mg/L	0.005 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0143 mg/L	0.0125 mg/L	114	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0123 mg/L	0.0125 mg/L	98.5	70.0	130	----
		Copper, total	7440-50-8	E420	0.0121 mg/L	0.0125 mg/L	96.7	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	0.05 mg/L	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0238 mg/L	0.025 mg/L	95.0	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0130 mg/L	0.0125 mg/L	104	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0262 mg/L	0.025 mg/L	105	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
		Silver, total	7440-22-4	E420	0.00454 mg/L	0.005 mg/L	90.8	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1245541) - continued										
WT2337830-002	Anonymous	Tin, total	7440-31-5	E420	0.0257 mg/L	0.025 mg/L	103	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0121 mg/L	0.0125 mg/L	97.0	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0258 mg/L	0.025 mg/L	103	70.0	130	----
		Zinc, total	7440-66-6	E420	0.0237 mg/L	0.025 mg/L	94.7	70.0	130	----
Total Metals (QCLot: 1245793)										
WT2337827-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000961 mg/L	0.0001 mg/L	96.1	70.0	130	----
Aggregate Organics (QCLot: 1255691)										
VA23C8455-004	Anonymous	Phenols, total (4AAP)	----	E562	0.0203 mg/L	0.02 mg/L	102	75.0	125	----
Volatile Organic Compounds (QCLot: 1246493)										
WT2337888-001	Anonymous	Benzene	71-43-2	E611D	12800 µg/L	100 µg/L	128	60.0	140	----
		Chloroform	67-66-3	E611D	122 µg/L	100 µg/L	122	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	96.1 µg/L	100 µg/L	96.1	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	96.4 µg/L	100 µg/L	96.4	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	95.6 µg/L	100 µg/L	95.6	60.0	140	----
		Dichloromethane	75-09-2	E611D	12800 µg/L	100 µg/L	128	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	98.0 µg/L	100 µg/L	98.0	60.0	140	----
		Ethylbenzene	100-41-4	E611D	12800 µg/L	100 µg/L	128	60.0	140	----
		Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	91.5 µg/L	100 µg/L	91.5	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	99.1 µg/L	100 µg/L	99.1	60.0	140	----
		Toluene	108-88-3	E611D	ND µg/L	100 µg/L	ND	60.0	140	----
		Trichloroethylene	79-01-6	E611D	99.5 µg/L	100 µg/L	99.5	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	28200 µg/L	200 µg/L	141	60.0	140	MES
		Xylene, o-	95-47-6	E611D	12900 µg/L	100 µg/L	129	60.0	140	----

Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



Report To Contact and company name below will appear on the final report Company: Milestone Environmental Inc Contact: Lance Lemon Phone: 905-925-1383 Company address below will appear on the final report Street: 1550 Laperriere Ave Unit 200 City/Province: Ottawa, ON Postal Code: K1Z 7T2		Reports / Recipients Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: LanceL@milestoneenv.ca Email 2: andrew.c@milestoneenv.ca Email 3: steves@milestoneenv.ca		Turnaround Time (TAT) Requested <input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Add may apply to rush requests on weekends, statutory holidays and non-r																											
Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Company: Milestone Environmental Contracting Contact: Lance Lemon		Invoice Recipients Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: accounting@milestoneenv.ca Email 2: lance.l@milestoneenv.ca		Date and Time Required for all E&P TATs: For all tests with rush TATs requested, please contact your ALS Account Manager																											
Project Information ALS Account # / Quote #: _____ Job #: _____ PO / AFE: _____ LSD: _____		Oil and Gas Required Fields (client use) AFE/Cost Center: _____ PO#: _____ Major/Minor Code: _____ Routing Code: _____ Requisitioner: _____ Location: _____		Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																											
ALS Lab Work Order # (ALS use only): WT2337886 #1		ALS Contact: _____ Sampler: _____		<table border="1"> <tr> <th rowspan="2">NUMBER OF CONTAINERS</th> <th colspan="10">Analysis Request</th> <th rowspan="2">SAMPLES ON HOLD</th> <th rowspan="2">EXTENDED STORAGE REQUIRED</th> <th rowspan="2">SUSPECTED HAZARD (see notes)</th> </tr> <tr> <td>PH, TSS, CHL, Flu, Sul</td> <td>TKN, TP, Phenols, HAPs</td> <td>Total cyanide</td> <td>Total metals</td> <td>Total mercury</td> <td>C-BOD</td> <td>VOCs</td> <td>OC pesticides, PCBs</td> <td>SVOCs</td> <td>oil and grease</td> <td>PAH's</td> <td>H2S sulfide</td> </tr> </table>		NUMBER OF CONTAINERS	Analysis Request										SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)	PH, TSS, CHL, Flu, Sul	TKN, TP, Phenols, HAPs	Total cyanide	Total metals	Total mercury	C-BOD	VOCs	OC pesticides, PCBs	SVOCs	oil and grease	PAH's	H2S sulfide
NUMBER OF CONTAINERS	Analysis Request										SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																		
	PH, TSS, CHL, Flu, Sul	TKN, TP, Phenols, HAPs	Total cyanide	Total metals	Total mercury	C-BOD	VOCs	OC pesticides, PCBs	SVOCs	oil and grease				PAH's	H2S sulfide																
ALS Sample # (ALS use only) Sample Identification and/or Coordinates (This description will appear on the report) CC DW 11		Date (dd-mmm-yy) 20-Nov-23		Time (hh:mm) water																											
Drinking Water (DW) Samples¹ (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only) Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input checked="" type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C: _____ FINAL COOLER TEMPERATURES °C: 6.1																											
SHIPMENT RELEASE (client use) Released by: Steven Sousa Date: 11/20/2023 Time: 130		INITIAL SHIPMENT RECEPTION (ALS use only) Received by: _____ Date: _____ Time: _____		FINAL SHIPMENT RECEPTION (ALS use only) Received by: SF Date: Nov 20/23 Time: 2:50pm																											

Sewer Bylaw Quality Laboratory Report
November 30, 2023



CERTIFICATE OF ANALYSIS

<p>Work Order : WT2339149</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone : ----</p> <p>Project : 01220228</p> <p>PO : ----</p> <p>C-O-C number : 20-1077243</p> <p>Sampler : Client</p> <p>Site : ----</p> <p>Quote number : Q90107 & More</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 2</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Costas Farassoglou</p> <p>Address : 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8</p> <p>Telephone : 613 225 8279</p> <p>Date Samples Received : 30-Nov-2023 14:05</p> <p>Date Analysis Commenced : 30-Nov-2023</p> <p>Issue Date : 01-Dec-2023 14:50</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
 LOR: Limit of Reporting (detection limit).

Unit	Description
mg/L	milligrams per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water					Client sample ID	CCDW-11	----	----	----	----
(Matrix: Water)					Client sampling date / time	30-Nov-2023 13:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2339149-001	-----	-----	-----	-----	
					Result	----	----	----	----	
Aggregate Organics										
Oil & grease (gravimetric)	----	E567/WT	5.0	mg/L	<5.0	----	----	----	----	
Oil & grease, animal/vegetable (gravimetric)	----	EC567A.SG/ WT	5.0	mg/L	<5.0	----	----	----	----	
Oil & grease, mineral (gravimetric)	----	E567SG/WT	5.0	mg/L	<5.0	----	----	----	----	

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2339149</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone : ----</p> <p>Project : 01220228</p> <p>PO : ----</p> <p>C-O-C number : 20-1077243</p> <p>Sampler : Client</p> <p>Site : ----</p> <p>Quote number : Q90107 & More</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 5</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Costas Farassoglou</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : 613 225 8279</p> <p>Date Samples Received : 30-Nov-2023 14:05</p> <p>Issue Date : 01-Dec-2023 14:50</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-11	E567SG	30-Nov-2023	30-Nov-2023	28 days	0 days	✔	01-Dec-2023	40 days	1 days	✔
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-11	E567	30-Nov-2023	30-Nov-2023	28 days	0 days	✔	01-Dec-2023	40 days	1 days	✔

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
Laboratory Control Samples (LCS)							
Mineral Oil & Grease by Gravimetry	E567SG	1259933	1	4	25.0	5.0	✔
Oil & Grease by Gravimetry	E567	1259932	1	13	7.6	5.0	✔
Method Blanks (MB)							
Mineral Oil & Grease by Gravimetry	E567SG	1259933	1	4	25.0	5.0	✔
Oil & Grease by Gravimetry	E567	1259932	1	13	7.6	5.0	✔



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Oil & Grease by Gravimetry	E567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry	E567SG ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG ALS Environmental - Waterloo	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Oil & Grease Extraction for Gravimetry	EP567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.

QUALITY CONTROL REPORT

<p>Work Order : WT2339149</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone :</p> <p>Project : 01220228</p> <p>PO : ----</p> <p>C-O-C number : 20-1077243</p> <p>Sampler : Client ----</p> <p>Site : ----</p> <p>Quote number : Q90107 & More</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 3</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Costas Farassoglou</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : 613 225 8279</p> <p>Date Samples Received : 30-Nov-2023 14:05</p> <p>Date Analysis Commenced : 30-Nov-2023</p> <p>Issue Date : 01-Dec-2023 14:50</p>
--	---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO = Data Quality Objective.
- LOR = Limit of Reporting (detection limit).
- RPD = Relative Percent Difference
- # = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Aggregate Organics (QCLot: 1259932)						
Oil & grease (gravimetric)	---	E567	5	mg/L	<5.0	---
Aggregate Organics (QCLot: 1259933)						
Oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	<5.0	---



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Aggregate Organics (QCLot: 1259932)									
Oil & grease (gravimetric)	----	E567	5	mg/L	200 mg/L	94.7	70.0	130	----
Aggregate Organics (QCLot: 1259933)									
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	100 mg/L	94.7	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1077243



Canada Toll Free: 1 800 668 9878

Page of

Environmental Division
Waterloo
Work Order Reference
WT2339149



Telephone : +1 519 886 6910

Report To		Reports / Recipients			Turnaround Time (TAT) Requested	
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Company:	Milestone Environmental	Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A				
Contact:	Lance Lemon	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				
Phone:	905 925 1343	Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				
Company address below will appear on the final report		Email 1 or Fax: LanceL@milestoneenv.ca			Date and Time Required for all E&P TATs:	
Street:	1550 LaPerriere Ave Unit 200	Email 2: SteveS@milestoneenv.ca				
City/Province:	Ottawa, ON	Email 3: AndrewC@milestoneenv.ca				
Postal Code:	K1Z 7T2				For all tests with rush TATs requested, please con	
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Invoice Recipients			Analysis Req	
	Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Indicate Filtered (F), Preserved (P) or Filtered and I	
Company:	Milestone Environmental	Email 1 or Fax: accounting@milestoneenv.ca			NUMBER OF CONTAINERS Oil and Grease SAMPLES ON HOLD EXTENDED STORAGE REQU SUSPECTED HAZARD (see n	
Contact:	Lance Lemon	Email 2: lanceL@milestoneenv.ca				
Project Information		Oil and Gas Required Fields (client use)				
ALS Account # / Quote #		AFE/Cost Center:	PO#			
Job #:	01220228	Major/Minor Code:	Routing Code:			
PO / AFE:		Requisitioner:				
LSD:		Location:				
ALS Lab Work Order # (ALS use only): WT2339149 cn		ALS Contact:	Sampler:			
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type		
	CCDW-11	30/11/23	1:00	Water	2	
Drinking Water (DW) Samples ¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			SAMPLE RECEIPT DETAILS (ALS use only)	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO					Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input checked="" type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO					Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO	
					Cooler Custody Seals Intact: <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A	
					INITIAL COOLER TEMPERATURES °C: 10.1 FINAL COOLER TEMPERATURES °C:	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)	
Released by: Steve Sousa	Date: 11/30/23	Time: 1:00	Received by: EC	Date: 30/11/23	Time: 14:10	AS

Sewer Bylaw Quality Laboratory
Report December 11, 2023

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2340297</p> <p>Client : Milestone Environmental Contracting Inc.</p> <p>Contact : Lance Lemon</p> <p>Address : 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2</p> <p>Telephone : ----</p> <p>Project : ----</p> <p>PO : ----</p> <p>C-O-C number : 20-1077241</p> <p>Sampler : Client</p> <p>Site : ----</p> <p>Quote number : TSS & Hamilton Sanitary</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 12</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Emily Hansen</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 11-Dec-2023 15:45</p> <p>Issue Date : 19-Dec-2023 13:17</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Test sample Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Regular Sample Surrogates

Sub-Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Phenolics Surrogates	WT2340297-001	CCDW-12	Tribromophenol, 2,4,6-	118-79-6	142 %	60.0-140 %	Recovery greater than upper data quality objective
Organochlorine Pesticides Surrogates	WT2340297-001	CCDW-12	Tetrachloro-m-xylene	877-09-8	45.3 %	50.0-130 %	Recovery less than lower data quality objective



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT-4d] CCDW-12	E555	11-Dec-2023	----	----	----		12-Dec-2023	4 days	0 days	✔
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-12	E567SG	11-Dec-2023	12-Dec-2023	28 days	1 days	✔	12-Dec-2023	40 days	0 days	✔
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CCDW-12	E567	11-Dec-2023	12-Dec-2023	28 days	1 days	✔	12-Dec-2023	40 days	0 days	✔
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] CCDW-12	E562	11-Dec-2023	12-Dec-2023	28 days	1 days	✔	12-Dec-2023	28 days	1 days	✔
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] CCDW-12	E235.Cl	11-Dec-2023	12-Dec-2023	28 days	1 days	✔	14-Dec-2023	28 days	3 days	✔
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP] CCDW-12	E235.F	11-Dec-2023	12-Dec-2023	28 days	1 days	✔	14-Dec-2023	28 days	3 days	✔
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] CCDW-12	E235.SO4	11-Dec-2023	12-Dec-2023	28 days	1 days	✔	14-Dec-2023	28 days	3 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)											
Amber glass total (sulfuric acid) [ON MECP] CCDW-12	E318	11-Dec-2023	15-Dec-2023	28 days	4 days	✔	15-Dec-2023	28 days	4 days	✔	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass total (sulfuric acid) [ON MECP] CCDW-12	E372-U	11-Dec-2023	13-Dec-2023	28 days	2 days	✔	14-Dec-2023	28 days	3 days	✔	
Chlorinated Phenolics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-12	E655F	11-Dec-2023	18-Dec-2023	14 days	7 days	✔	19-Dec-2023	40 days	1 days	✔	
Cyanides : Total Cyanide											
HDPE - total (sodium hydroxide) CCDW-12	E333	11-Dec-2023	12-Dec-2023	14 days	1 days	✔	12-Dec-2023	14 days	1 days	✔	
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-12	E660F	11-Dec-2023	15-Dec-2023	14 days	4 days	✔	18-Dec-2023	40 days	3 days	✔	
Phthalate Esters : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-12	E655F	11-Dec-2023	18-Dec-2023	14 days	7 days	✔	19-Dec-2023	40 days	1 days	✔	
Physical Tests : pH by Meter											
HDPE [ON MECP] CCDW-12	E108	11-Dec-2023	12-Dec-2023	14 days	1 days	✔	12-Dec-2023	14 days	1 days	✔	
Physical Tests : TSS by Gravimetry											
HDPE [ON MECP] CCDW-12	E160	11-Dec-2023	----	----	----		13-Dec-2023	7 days	2 days	✔	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-12	E687	11-Dec-2023	15-Dec-2023	14 days	4 days	✔	18-Dec-2023	40 days	3 days	✔	



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polycyclic Aromatic Hydrocarbons : PAHs (ON Special List) by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-12	E642D	11-Dec-2023	18-Dec-2023	14 days	7 days	✓	19-Dec-2023	40 days	1 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS (Low Level)											
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] CCDW-12	E641A-L	11-Dec-2023	14-Dec-2023	14 days	3 days	✓	15-Dec-2023	40 days	1 days	✓	
Semi-Volatile Organics : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS											
Amber glass/Teflon lined cap [ON MECP] CCDW-12	E655F	11-Dec-2023	18-Dec-2023	14 days	7 days	✓	19-Dec-2023	40 days	1 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) [ON MECP] CCDW-12	E508	11-Dec-2023	12-Dec-2023	28 days	1 days	✓	12-Dec-2023	28 days	0 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) CCDW-12	E420	11-Dec-2023	12-Dec-2023	180 days	1 days	✓	12-Dec-2023	180 days	1 days	✓	
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)											
HDPE total (zinc acetate+sodium hydroxide) [ON MECP] CCDW-12	E395-H	11-Dec-2023	----	----	----		15-Dec-2023	7 days	4 days	✓	
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS											
Glass vial (sodium bisulfate) CCDW-12	E611D	11-Dec-2023	14-Dec-2023	14 days	3 days	✓	14-Dec-2023	14 days	3 days	✓	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1273181	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1272758	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	1272757	1	3	33.3	5.0	✓
pH by Meter	E108	1272762	1	19	5.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1272879	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1272759	1	3	33.3	5.0	✓
Total Cyanide	E333	1273076	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1272876	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1272806	1	9	11.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1272535	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1272877	1	12	8.3	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1279060	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1275082	1	19	5.2	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1277000	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1273181	1	14	7.1	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1280474	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	1272758	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	1272757	1	3	33.3	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	1272529	1	11	9.0	5.0	✓
OCP Analysis by GC-MS-MS or GC-MS	E660F	1278927	1	5	20.0	5.0	✓
Oil & Grease by Gravimetry	E567	1272528	1	15	6.6	5.0	✓
PAHs (ON Special List) by GC-MS	E642D	1280484	1	5	20.0	5.0	✓
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1277712	1	2	50.0	5.0	✓
PCB Aroclors by GC-MS	E687	1278929	1	4	25.0	4.7	✓
pH by Meter	E108	1272762	1	19	5.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1272879	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1272759	1	3	33.3	5.0	✓
Total Cyanide	E333	1273076	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1272876	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1272806	1	9	11.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1272535	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1272877	1	12	8.3	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1279060	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1275082	1	19	5.2	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1277000	1	19	5.2	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Method Blanks (MB)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1273181	1	14	7.1	5.0	✔
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1280474	1	7	14.2	5.0	✔
Chloride in Water by IC	E235.Cl	1272758	1	6	16.6	5.0	✔
Fluoride in Water by IC	E235.F	1272757	1	3	33.3	5.0	✔
Mineral Oil & Grease by Gravimetry	E567SG	1272529	1	11	9.0	5.0	✔
OCP Analysis by GC-MS-MS or GC-MS	E660F	1278927	1	5	20.0	5.0	✔
Oil & Grease by Gravimetry	E567	1272528	1	15	6.6	5.0	✔
PAHs (ON Special List) by GC-MS	E642D	1280484	1	5	20.0	5.0	✔
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L	1277712	1	2	50.0	5.0	✔
PCB Aroclors by GC-MS	E687	1278929	1	4	25.0	4.7	✔
Phenols (4AAP) in Water by Colorimetry	E562	1272879	1	10	10.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1272759	1	3	33.3	5.0	✔
Total Cyanide	E333	1273076	1	11	9.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1272876	1	9	11.1	5.0	✔
Total Mercury in Water by CVAAS	E508	1272806	1	9	11.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1272535	1	11	9.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1272877	1	12	8.3	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1279060	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1275082	1	19	5.2	4.7	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1277000	1	19	5.2	5.0	✔
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	1272758	1	6	16.6	5.0	✔
Fluoride in Water by IC	E235.F	1272757	1	3	33.3	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1272879	1	10	10.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1272759	1	3	33.3	5.0	✔
Total Cyanide	E333	1273076	1	11	9.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1272876	1	9	11.1	5.0	✔
Total Mercury in Water by CVAAS	E508	1272806	1	9	11.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1272535	1	11	9.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1272877	1	12	8.3	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395-H	1279060	1	20	5.0	5.0	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1277000	1	19	5.2	5.0	✔



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 ALS Environmental - Waterloo	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Waterloo	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.Cl ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Waterloo	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395-H ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Waterloo	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555 ALS Environmental - Waterloo	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Nitrification inhibitor is added to samples to prevent nitrogenous compounds from consuming oxygen resulting in only carbonaceous oxygen demand being reported by this method. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Waterloo	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K ₃ Fe(CN) ₆) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
Oil & Grease by Gravimetry	E567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry	E567SG ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS (Low Level)	E641A-L ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
PAHs (ON Special List) by GC-MS	E642D ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	BNA are analyzed by GC-MS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
OCP Analysis by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS or GC-MS
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG ALS Environmental - Waterloo	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
Total PAH (Ontario Sewer Use Extended List)	EC640A ALS Environmental - Waterloo	Water	Calculation (Sum of the Squares)	Total PAH (Ontario Sewer Use) is the sum of the following PAHs: anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b+j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, pyrene, benzo(e)pyrene, perylene, 3-methylcholanthrene, 1,3-dinitropyrene, 1,6-dinitropyrene, 1,8-dinitropyrene, 7H-dibenzo(c,g)carbazole, dibenzo(a,i)pyrene, dibenz(a,j)acridine, and dibenz(a,h)acridine. When the PAH is less than LOR, zero is used for calculation.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 ALS Environmental - Waterloo	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Oil & Grease Extraction for Gravimetry	EP567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
PAHs DCM Extraction	EP642	Water	EPA 3510C (mod)	PAH are extracted from aqueous sample using DCM liquid-liquid extraction.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Waterloo			
BNA Extraction	EP655 ALS Environmental - Waterloo	Water	EPA 3510C (mod)	SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: WT2340297	Page	: 1 of 14
Client	: Milestone Environmental Contracting Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Lance Lemon	Account Manager	: Emily Hansen
Address	: 200- 1550 Laperriere Avenue Ottawa ON Canada K1Z 7T2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: ----	Date Samples Received	: 11-Dec-2023 15:45
PO	: ----	Date Analysis Commenced	: 12-Dec-2023
C-O-C number	: 20-1077241	Issue Date	: 19-Dec-2023 13:22
Sampler	: Client		
Site	: ----		
Quote number	: TSS & Hamilton Sanitary		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
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Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

Page : 2 of 14
Work Order : WT2340297
Client : Milestone Environmental Contracting Inc.
Project : ----



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1272762)											
WT2340001-001	Anonymous	pH	----	E108	0.10	pH units	8.11	8.12	0.123%	4%	----
Physical Tests (QC Lot: 1275082)											
WT2340379-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1272757)											
WT2340285-003	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.702	0.707	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1272758)											
WT2340285-003	Anonymous	Chloride	16887-00-6	E235.Cl	2.50	mg/L	263	263	0.0175%	20%	----
Anions and Nutrients (QC Lot: 1272759)											
WT2340285-003	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	298	298	0.177%	20%	----
Anions and Nutrients (QC Lot: 1272876)											
WT2340009-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.252	0.257	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1272877)											
WT2340066-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0138	0.0151	0.0012	Diff <2x LOR	----
Cyanides (QC Lot: 1273076)											
CG2317426-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
Total Sulfides (QC Lot: 1279060)											
FJ2303279-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395-H	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Total Metals (QC Lot: 1272535)											
HA2301252-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0159	0.0156	0.0003	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00121	0.00118	3.08%	20%	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.429	0.433	0.776%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0250	0.0249	0.124%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 1272535) - continued											
HA2301252-001	Anonymous	Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00227	0.00226	0.489%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 1272806)											
TY2312820-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1272879)											
WT2340066-003	Anonymous	Phenols, total (4AAP)	----	E562	0.0050	mg/L	0.378	0.440	15.2%	20%	----
Aggregate Organics (QC Lot: 1273181)											
WT2340254-001	Anonymous	Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2.0	mg/L	10.0	9.8	1.2%	30%	----
Volatile Organic Compounds (QC Lot: 1277000)											
WT2340359-001	Anonymous	Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1275082)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 1272757)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1272758)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1272759)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1272876)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1272877)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 1273076)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Total Sulfides (QCLot: 1279060)						
Sulfide, total (as S)	18496-25-8	E395-H	0.01	mg/L	<0.010	----
Total Metals (QCLot: 1272535)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1272535) - continued						
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 1272806)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1272528)						
Oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1272529)						
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1272879)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Aggregate Organics (QCLot: 1273181)						
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	<2.0	----
Volatile Organic Compounds (QCLot: 1277000)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1277712)						
Anthracene	120-12-7	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)anthracene	56-55-3	E641A-L	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	<0.010	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	<0.010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1277712) - continued						
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	<0.010	---
Chrysene	218-01-9	E641A-L	0.01	µg/L	<0.010	---
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	<0.0050	---
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	<0.010	---
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	<0.010	---
Perylene	198-55-0	E641A-L	0.01	µg/L	<0.010	---
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	<0.010	---
Pyrene	129-00-0	E641A-L	0.01	µg/L	<0.010	---
Polycyclic Aromatic Hydrocarbons (QCLot: 1280484)						
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	<0.050	---
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	<0.050	---
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	<0.050	---
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	<0.050	---
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	<1.0	---
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	<1.0	---
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	<1.0	---
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	<0.050	---
Phthalate Esters (QCLot: 1280474)						
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	<2.0	---
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	<1.0	---
Semi-Volatile Organics (QCLot: 1280474)						
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	<0.40	---
Chlorinated Phenolics (QCLot: 1280474)						
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	<0.50	---
Polychlorinated Biphenyls (QCLot: 1278929)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	---
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	---
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	---
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	---
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	---
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	---
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	---
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	---
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	---
Organochlorine Pesticides (QCLot: 1278927)						

Page : 8 of 14
 Work Order : WT2340297
 Client : Milestone Environmental Contracting Inc.
 Project : ---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1278927) - continued						
Aldrin	309-00-2	E660F	0.008	µg/L	<0.0080	---
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	<0.0080	---
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	<0.0080	---
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	<0.0040	---
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	<0.0040	---
Dieldrin	60-57-1	E660F	0.008	µg/L	<0.0080	---
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	<0.0080	---
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	<0.0080	---
Mirex	2385-85-5	E660F	0.008	µg/L	<0.0080	---



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1272762)									
pH	---	E108	---	pH units	7 pH units	101	98.0	102	---
Physical Tests (QCLot: 1275082)									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	94.0	85.0	115	---
Anions and Nutrients (QCLot: 1272757)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
Anions and Nutrients (QCLot: 1272758)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.2	90.0	110	---
Anions and Nutrients (QCLot: 1272759)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	---
Anions and Nutrients (QCLot: 1272876)									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	110	75.0	125	---
Anions and Nutrients (QCLot: 1272877)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.393 mg/L	102	80.0	120	---
Cyanides (QCLot: 1273076)									
Cyanide, strong acid dissociable (Total)	---	E333	0.002	mg/L	0.25 mg/L	92.4	80.0	120	---
Total Sulfides (QCLot: 1279060)									
Sulfide, total (as H2S)	7783-06-4	E395-H	---	mg/L	0.085 mg/L	108	80.0	120	---
Sulfide, total (as S)	18496-25-8	E395-H	0.01	mg/L	0.08 mg/L	107	80.0	120	---
Total Metals (QCLot: 1272535)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	96.3	80.0	120	---
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	102	80.0	120	---
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	104	80.0	120	---
Bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	102	80.0	120	---
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	103	80.0	120	---
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.0125 mg/L	102	80.0	120	---
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	100	80.0	120	---
Copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	101	80.0	120	---
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	101	80.0	120	---
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	101	80.0	120	---



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 1272535) - continued									
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	101	80.0	120	---
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	103	80.0	120	---
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	100	80.0	120	---
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	101	80.0	120	---
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	97.5	80.0	120	---
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	99.6	80.0	120	---
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	96.6	80.0	120	---
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	102	80.0	120	---
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	99.8	80.0	120	---
Total Metals (QCLot: 1272806)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	96.2	80.0	120	---
Aggregate Organics (QCLot: 1272528)									
Oil & grease (gravimetric)	---	E567	5	mg/L	200 mg/L	102	70.0	130	---
Aggregate Organics (QCLot: 1272529)									
Oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	100 mg/L	98.6	70.0	130	---
Aggregate Organics (QCLot: 1272879)									
Phenols, total (4AAP)	---	E562	0.001	mg/L	0.02 mg/L	103	85.0	115	---
Aggregate Organics (QCLot: 1273181)									
Carbonaceous biochemical oxygen demand [CBOD]	---	E555	2	mg/L	198 mg/L	110	85.0	115	---
Volatile Organic Compounds (QCLot: 1277000)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	97.1	70.0	130	---
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	96.6	70.0	130	---
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	97.9	70.0	130	---
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	96.8	70.0	130	---
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	97.6	70.0	130	---
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	99.7	70.0	130	---
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	94.1	70.0	130	---
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	96.8	70.0	130	---
Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	108	70.0	130	---
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	91.5	70.0	130	---
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	99.0	70.0	130	---
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	92.6	70.0	130	---
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	101	70.0	130	---
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	97.3	70.0	130	---



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1277712)									
Anthracene	120-12-7	E641A-L	0.01	µg/L	0.5263 µg/L	118	50.0	140	----
Benz(a)anthracene	56-55-3	E641A-L	0.01	µg/L	0.5263 µg/L	119	50.0	140	----
Benzo(a)pyrene	50-32-8	E641A-L	0.005	µg/L	0.5263 µg/L	117	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	µg/L	0.5263 µg/L	98.3	50.0	140	----
Benzo(e)pyrene	192-97-2	E641A-L	0.01	µg/L	0.5263 µg/L	103	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	µg/L	0.5263 µg/L	93.3	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	µg/L	0.5263 µg/L	100	50.0	140	----
Chrysene	218-01-9	E641A-L	0.01	µg/L	0.5263 µg/L	117	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	µg/L	0.5263 µg/L	96.0	50.0	140	----
Fluoranthene	206-44-0	E641A-L	0.01	µg/L	0.5263 µg/L	109	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	µg/L	0.5263 µg/L	111	50.0	140	----
Perylene	198-55-0	E641A-L	0.01	µg/L	0.5263 µg/L	98.8	50.0	140	----
Phenanthrene	85-01-8	E641A-L	0.01	µg/L	0.5263 µg/L	112	50.0	140	----
Pyrene	129-00-0	E641A-L	0.01	µg/L	0.5263 µg/L	112	50.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1280484)									
Dibenz(a,h)acridine	226-36-8	E642D	0.05	µg/L	1.6 µg/L	87.1	60.0	130	----
Dibenz(a,j)acridine	224-42-0	E642D	0.05	µg/L	1.6 µg/L	89.9	60.0	130	----
Dibenzo(a,i)pyrene	189-55-9	E642D	0.05	µg/L	1.6 µg/L	79.5	60.0	130	----
Dibenzo(c,g)carbazole, 7H-	194-59-2	E642D	0.05	µg/L	1.6 µg/L	91.1	60.0	130	----
Dinitropyrene, 1,3-	75321-20-9	E642D	1	µg/L	1.6 µg/L	128	60.0	130	----
Dinitropyrene, 1,6-	42397-64-8	E642D	1	µg/L	1.6 µg/L	100	60.0	130	----
Dinitropyrene, 1,8-	42397-65-9	E642D	1	µg/L	1.6 µg/L	114	60.0	130	----
Methylcholanthrene, 3-	56-49-5	E642D	0.05	µg/L	1.6 µg/L	90.9	60.0	130	----
Phthalate Esters (QCLot: 1280474)									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	6.4 µg/L	128	50.0	140	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	6.4 µg/L	123	50.0	140	----
Semi-Volatile Organics (QCLot: 1280474)									
Dichlorobenzidine, 3,3'-	91-94-1	E655F	0.4	µg/L	1.6 µg/L	68.9	50.0	140	----
Chlorinated Phenolics (QCLot: 1280474)									
Pentachlorophenol [PCP]	87-86-5	E655F	0.5	µg/L	4.8 µg/L	128	50.0	140	----
Polychlorinated Biphenyls (QCLot: 1278929)									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polychlorinated Biphenyls (QCLot: 1278929) - continued									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	108	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	108	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	108	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	108	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	79.8	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	108	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	99.2	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	99.2	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	99.2	60.0	140	----
Organochlorine Pesticides (QCLot: 1278927)									
Aldrin	309-00-2	E660F	0.008	µg/L	0.2 µg/L	91.0	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	0.2 µg/L	116	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	0.2 µg/L	101	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	0.2 µg/L	115	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	0.2 µg/L	86.7	50.0	150	----
Dieldrin	60-57-1	E660F	0.008	µg/L	0.2 µg/L	85.8	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	0.2 µg/L	79.2	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	0.2 µg/L	93.0	50.0	150	----
Mirex	2385-85-5	E660F	0.008	µg/L	0.2 µg/L	92.0	50.0	150	----



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

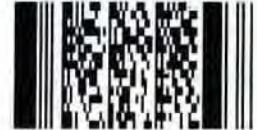
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1272757)										
WT2340285-003	Anonymous	Fluoride	16984-48-8	E235.F	5.06 mg/L	5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1272758)										
WT2340285-003	Anonymous	Chloride	16887-00-6	E235.Cl	503 mg/L	500 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1272759)										
WT2340285-003	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	496 mg/L	500 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 1272876)										
WT2340009-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.91 mg/L	2.5 mg/L	116	70.0	130	----
Anions and Nutrients (QCLot: 1272877)										
WT2340066-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.101 mg/L	0.1 mg/L	101	70.0	130	----
Cyanides (QCLot: 1273076)										
CG2317426-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	2.23 mg/L	2.5 mg/L	89.1	75.0	125	----
Total Sulfides (QCLot: 1279060)										
FJ2303279-002	Anonymous	Sulfide, total (as S)	18496-25-8	E395-H	0.090 mg/L	0.1 mg/L	90.0	75.0	125	----
Total Metals (QCLot: 1272535)										
WT2339768-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0968 mg/L	0.1 mg/L	96.8	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0540 mg/L	0.05 mg/L	108	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0529 mg/L	0.05 mg/L	106	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0483 mg/L	0.05 mg/L	96.6	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00510 mg/L	0.005 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0127 mg/L	0.0125 mg/L	101	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0126 mg/L	0.0125 mg/L	101	70.0	130	----
		Copper, total	7440-50-8	E420	0.0122 mg/L	0.0125 mg/L	97.7	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	0.05 mg/L	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0245 mg/L	0.025 mg/L	98.0	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0244 mg/L	0.025 mg/L	97.8	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0511 mg/L	0.05 mg/L	102	70.0	130	----
		Silver, total	7440-22-4	E420	0.00495 mg/L	0.005 mg/L	99.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1272535) - continued										
WT2339768-001	Anonymous	Tin, total	7440-31-5	E420	0.0257 mg/L	0.025 mg/L	103	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0129 mg/L	0.0125 mg/L	104	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0267 mg/L	0.025 mg/L	107	70.0	130	----
		Zinc, total	7440-66-6	E420	0.0240 mg/L	0.025 mg/L	95.9	70.0	130	----
Total Metals (QCLot: 1272806)										
TY2312820-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000814 mg/L	0.0001 mg/L	81.4	70.0	130	----
Aggregate Organics (QCLot: 1272879)										
WT2340066-003	Anonymous	Phenols, total (4AAP)	----	E562	ND mg/L	0.02 mg/L	ND	75.0	125	----
Volatile Organic Compounds (QCLot: 1277000)										
WT2340359-001	Anonymous	Benzene	71-43-2	E611D	96.2 µg/L	100 µg/L	96.2	60.0	140	----
		Chloroform	67-66-3	E611D	96.0 µg/L	100 µg/L	96.0	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	97.3 µg/L	100 µg/L	97.3	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	96.3 µg/L	100 µg/L	96.3	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	97.0 µg/L	100 µg/L	97.0	60.0	140	----
		Dichloromethane	75-09-2	E611D	98.9 µg/L	100 µg/L	98.9	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	91.2 µg/L	100 µg/L	91.2	60.0	140	----
		Ethylbenzene	100-41-4	E611D	96.6 µg/L	100 µg/L	96.6	60.0	140	----
		Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611D	106 µg/L	100 µg/L	106	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	89.6 µg/L	100 µg/L	89.6	60.0	140	----
		Toluene	108-88-3	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		Trichloroethylene	79-01-6	E611D	91.7 µg/L	100 µg/L	91.7	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	201 µg/L	200 µg/L	100	60.0	140	----
		Xylene, o-	95-47-6	E611D	96.5 µg/L	100 µg/L	96.5	60.0	140	----

Environmental Division
Waterloo
Work Order Reference
WT2340297



Telephone: - 1 519 886 6910

Report To Contact and company name below will appear on the final report Company: Milestone Environmental C. Contact: Lance Lemon Phone: 905 925 1383 Company address below will appear on the final report Street: 1550 Laperrriere Ave. Unit 200 City/Province: Ottawa, ON Postal Code: K1Z 7T2		Reports / Recipients Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: lance.l@milestoneenv.ca Email 2: andrew.c@milestoneenv.ca Email 3: steve.s@milestoneenv.ca		Turnaround Time (TAT) Requested <input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Addtl may apply to rush requests on weekends, statutory holidays and non-rx.	
Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Company: Milestone Environmental C. Contact: Lance Lemon		Invoice Recipients Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: accounting@milestoneenv.ca Email 2: lance.l@milestoneenv.ca		Date and Time Required for all E&P TATs: For all tests with rush TATs requested, please c	
Project Information ALS Account # / Quote # Job #: PO / AFE: LSD:		Oil and Gas Required Fields (client use) AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		Analysis Rec Indicate Filtered (F), Preserved (P) or Filtered and	
ALS Lab Work Order # (ALS use only): WT2340297 CN		ALS Contact:		Sampler:	
ALS Sample # (ALS use only) Sample Identification and/or Coordinates (This description will appear on the report) CCDW-12		Date (dd-mmm-yy)		Time (hh:mm) Sample Type water	
Drinking Water (DW) Samples¹ (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only) Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input checked="" type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C: FINAL COOLER TEMPERATURES °C:	
SHIPMENT RELEASE (client use) Released by: Steve Sansa Date: Dec 11, 2023 Time: 2:00		INITIAL SHIPMENT RECEPTION (ALS use only) Received by: Date: Time:		FINAL SHIPMENT RECEPTION (ALS use only) Received by: FH Date: 2023-DEC-11 Time: 15:45	

NUMBER OF CONTAINERS	ph	TENTP	Phenols	AAAD	Total Cyanide	Total Metals	Total Mercury	C-BOD	NOC'S	OC pesticides	silox	Oil and Grease	PAH's	H2S sulfide	SAMPLES ON HOLD	EXTENDED STORAGE REQ	SUSPECTED HAZARD (see
18																	

H.2

SEWER DISCHARGE SUMMARY REPORT



Chedoke Creek Dredging - Reporting and Submission Tracking

Sewer Discharge Summary

Days of Op	Date	Total Flow (L)	Days Pumped (Monthly)	Monthly Flow (L)	Quarterly Flow (L)
1	26-Jul	137,466			
2	27-Jul	137,466			
3	28-Jul	170,414			
4	29-Jul				
5	30-Jul				
6	31-Jul	260,133	4	705,479	
7	1-Aug	371,166			
8	2-Aug	427,547			
9	3-Aug	607,841			
10	4-Aug				
11	5-Aug	1,634,400			
12	6-Aug	1,634,400			
13	7-Aug	817,200			
14	8-Aug	1,896,000			
15	9-Aug	1,908,000			
16	10-Aug				
17	11-Aug	1,701,000			
18	12-Aug	486,000			
19	13-Aug	1,607,400			
20	14-Aug	1,500,000			
21	15-Aug				
22	16-Aug	1,180,800			
23	17-Aug	885,600			
24	18-Aug	767,520			
25	19-Aug	811,800			
26	20-Aug	1,697,400			
27	21-Aug	1,490,760			
28	22-Aug	1,018,440			
29	23-Aug	1,771,200			
30	24-Aug	885,600			
31	25-Aug				
32	26-Aug	1,328,400			
33	27-Aug	1,476,000			
34	28-Aug	1,476,000			
35	29-Aug	2,214,000			
36	30-Aug				
37	31-Aug		25	31,594,474	
38	1-Sep				
39	2-Sep				
40	3-Sep				
41	4-Sep				
42	5-Sep	1,771,200			
43	6-Sep	2,892,960			
44	7-Sep	1,535,040			

Days of Op	Date	Total Flow (L)	Days Pumped (Monthly)	Monthly Flow (L)	Quarterly Flow (L)
45	8-Sep	295,200			
46	9-Sep	2,509,200			
47	10-Sep	1,845,000			
48	11-Sep	1,845,000			
49	12-Sep	2,656,800			
50	13-Sep	3,247,200			
51	14-Sep	1,476,000			
52	15-Sep	1,623,600			
53	16-Sep	1,254,600			
54	17-Sep	767,520			
55	18-Sep				
56	19-Sep	1,121,760			
57	20-Sep	1,505,520			
58	21-Sep	723,240			
59	22-Sep	1,121,760			
60	23-Sep	1,697,400			
61	24-Sep	1,594,080			
62	25-Sep	767,520			
63	26-Sep	1,107,000			
64	27-Sep	1,387,440			
65	28-Sep	1,387,440			
66	29-Sep	442,800			
67	30-Sep	1,476,000	25	38,051,280	70,351,233
68	1-Oct	1,402,200			
69	2-Oct	1,653,120			
70	3-Oct	1,335,780			
71	4-Oct	1,535,040			
72	5-Oct	1,645,740			
73	6-Oct	1,380,060			
74	7-Oct	1,357,920			
75	8-Oct	804,420			
76	9-Oct	1,350,540			
77	10-Oct	1,402,200			
78	11-Oct	1,490,760			
79	12-Oct	1,557,180			
80	13-Oct	1,771,200			
81	14-Oct	1,476,000			
82	15-Oct	1,845,000			
83	16-Oct	2,029,500			
84	17-Oct	1,992,600			
85	18-Oct	1,365,300			
86	19-Oct	1,918,800			
87	20-Oct	1,881,900			
88	21-Oct	1,476,000			
89	22-Oct	1,881,900			
90	23-Oct	1,660,500			
91	24-Oct	1,697,400			
92	25-Oct	1,918,800			

Days of Op	Date	Total Flow (L)	Days Pumped (Monthly)	Monthly Flow (L)	Quarterly Flow (L)
93	26-Oct	442,800			
94	27-Oct	1,771,200			
95	28-Oct	1,845,000			
96	29-Oct	1,476,000			
97	30-Oct	1,143,900			
98	31-Oct		30	46,508,760	
99	1-Nov				
100	2-Nov	1,656,000			
101	3-Nov	3,168,000			
102	4-Nov	1,872,000			
103	5-Nov	2,908,800			
104	6-Nov	3,340,800			
105	7-Nov	2,059,200			
106	8-Nov	1,411,200			
107	9-Nov	1,224,000			
108	10-Nov	1,267,200			
109	11-Nov	1,900,800			
110	12-Nov	1,857,600			
111	13-Nov	1,886,400			
112	14-Nov	1,872,000			
113	15-Nov	1,368,000			
114	16-Nov	1,584,000			
115	17-Nov	1,440,000			
116	18-Nov				
117	19-Nov				
118	20-Nov				
119	21-Nov				
120	22-Nov				
121	23-Nov	264,000			
122	24-Nov				
123	25-Nov				
124	26-Nov				
125	27-Nov				
126	28-Nov				
127	29-Nov				
128	30-Nov		17	31,080,000	
129	1-Dec				
130	2-Dec				
131	3-Dec	432,000			
132	4-Dec				
133	5-Dec				
134	6-Dec				
135	7-Dec				
136	8-Dec				
137	9-Dec				
138	10-Dec				
139	11-Dec				
140	12-Dec	144,000			

Days of Op	Date	Total Flow (L)	Days Pumped (Monthly)	Monthly Flow (L)	Quarterly Flow (L)
141	13-Dec				
142	14-Dec				
143	15-Dec				
144	16-Dec				
145	17-Dec				
146	18-Dec				
147	19-Dec				
148	20-Dec				
149	21-Dec				
150	22-Dec				
151	23-Dec				
152	24-Dec				
153	25-Dec				
154	26-Dec				
155	27-Dec				
156	28-Dec	432,000			
157	29-Dec				
158	30-Dec				
159	31-Dec		3	1,008,000	78,596,760
160	1-Jan				
161	2-Jan				
162	3-Jan	288,000	1		
	Minimum	137,466			
	Maximum	3,340,800			
	Median	1,476,000			

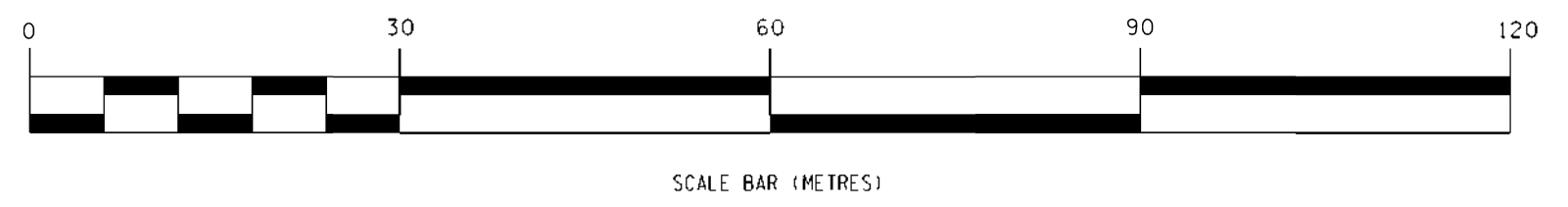
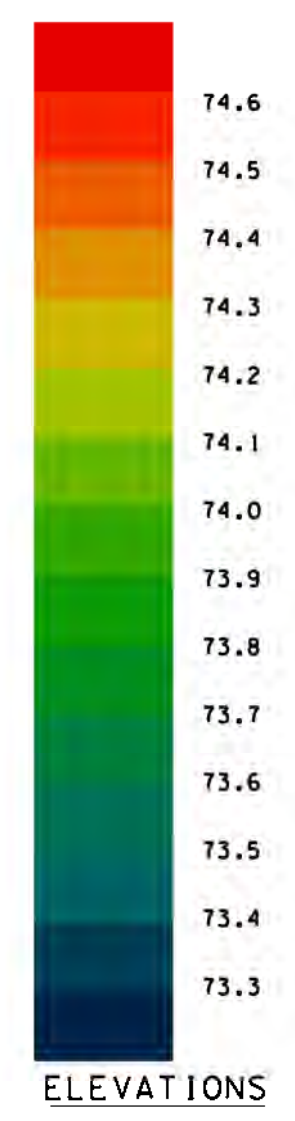
APPENDIX

I: PRE AND POST CONSTRUCTION BATHYMETRIC SURVEYS

I.1

PRE-CONSTRUCTION BATHYMETRIC SURVEY





- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 4 JULY 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
 4. STANDARD MULTI-BEAM CALIBRATION PROCEDURES WERE UTILIZED.
 5. TOP OF WATER LEVEL AVERAGED 75.17 m DURING TIME OF DATA COLLECTION.
 6. CONTOUR INTERVAL IS 0.1 METRE WITH 0.5 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
 VESSEL: ASI OTTER
 INTEGRATED MULTI-BEAM SYSTEM: NORBIT 177 WINGHEAD WITH APPLANIX OCEANMASTER IMU
 GPS/RTK CORRECTIONS: GNSS AIDED INERTIAL NAVIGATION SYSTEM
 DATA COLLECTION SOFTWARE: CAN-NET RTK/GPS (SUB-DECIMETRE ACCURACY) HYPACK 2022

REV.	DESCRIPTION	DATE	APPR.



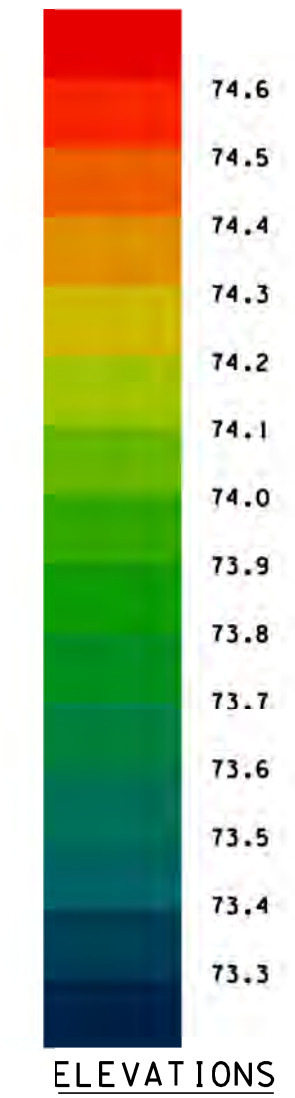
SURVEYED BY: A. GIBSON	FIELD BOOK(S)	DATE(S) OF SURVEY: 4 JULY 2023
DRAWN BY: P. GELLNER	PLOT SCALE: 1: 800	ASI-GROUP JOB NO.: GH22-014
CHECKED BY: Z. ONEILL	PLOT DATE: 11 JULY 2023	DRAWING FILE NAME: GH22-014 COLOURCONTOURS SH11

APPROVED:	DATE:
APPROVED:	DATE:
APPROVED:	DATE:



MILESTONE ENVIRONMENTAL CONTRACTING INC.
 CHEDOKO CREEK DREDGING SUPPORT
 HAMILTON, ON
 BATHYMETRIC SURVEYING SERVICES
 COLOUR-FILLED
 CONTOURED BATHYMETRIC PLAN VIEW

DRAWING NUMBER:
1
 SHEET 1 OF 2



- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 4 JULY 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
 4. STANDARD MULTI-BEAM CALIBRATION PROCEDURES WERE UTILIZED.
 5. TOP OF WATER LEVEL AVERAGED 75.17 m DURING TIME OF DATA COLLECTION.
 6. CONTOUR INTERVAL IS 0.1 METRE WITH 0.5 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
 VESSEL: ASI OTTER
 INTEGRATED MULTI-BEAM SYSTEM: NORBIT 177 WINGHEAD WITH APPLANIX OCEANMASTER IMU
 GPS/RTK CORRECTIONS: CAN-NET RTK/GPS (SUB-DECIMETRE ACCURACY)
 DATA COLLECTION SOFTWARE: HYPACK 2022

MATCHLINE - SEE SHEET 1 OF 2

REV.	DESCRIPTION	DATE	APPR.

ASI Marine	
SURVEYED BY: A. GIBSON	DATE(S) OF SURVEY: 4 JULY 2023
DRAWN BY: P. GELLNER	ASI-GROUP JOB NO.: GH22-014
CHECKED BY: Z. O'NEILL	DRAWING FILE NAME: GH22-014 COLOURCONTOURS SH2
	PLOT DATE: 11 JULY 2023
	PLOT SCALE: 1: 800

APPROVED:	DATE:
APPROVED:	DATE:
APPROVED:	DATE:



MILESTONE ENVIRONMENTAL CONTRACTING INC.
 CHEDOKO CREEK DREDGING SUPPORT
 HAMILTON, ON
 BATHYMETRIC SURVEYING SERVICES
 COLOUR-FILLED
 CONTOURED BATHYMETRIC PLAN VIEW

DRAWING NUMBER:
2
 SHEET 2 OF 2

E 589760

E 589880

N 4791240

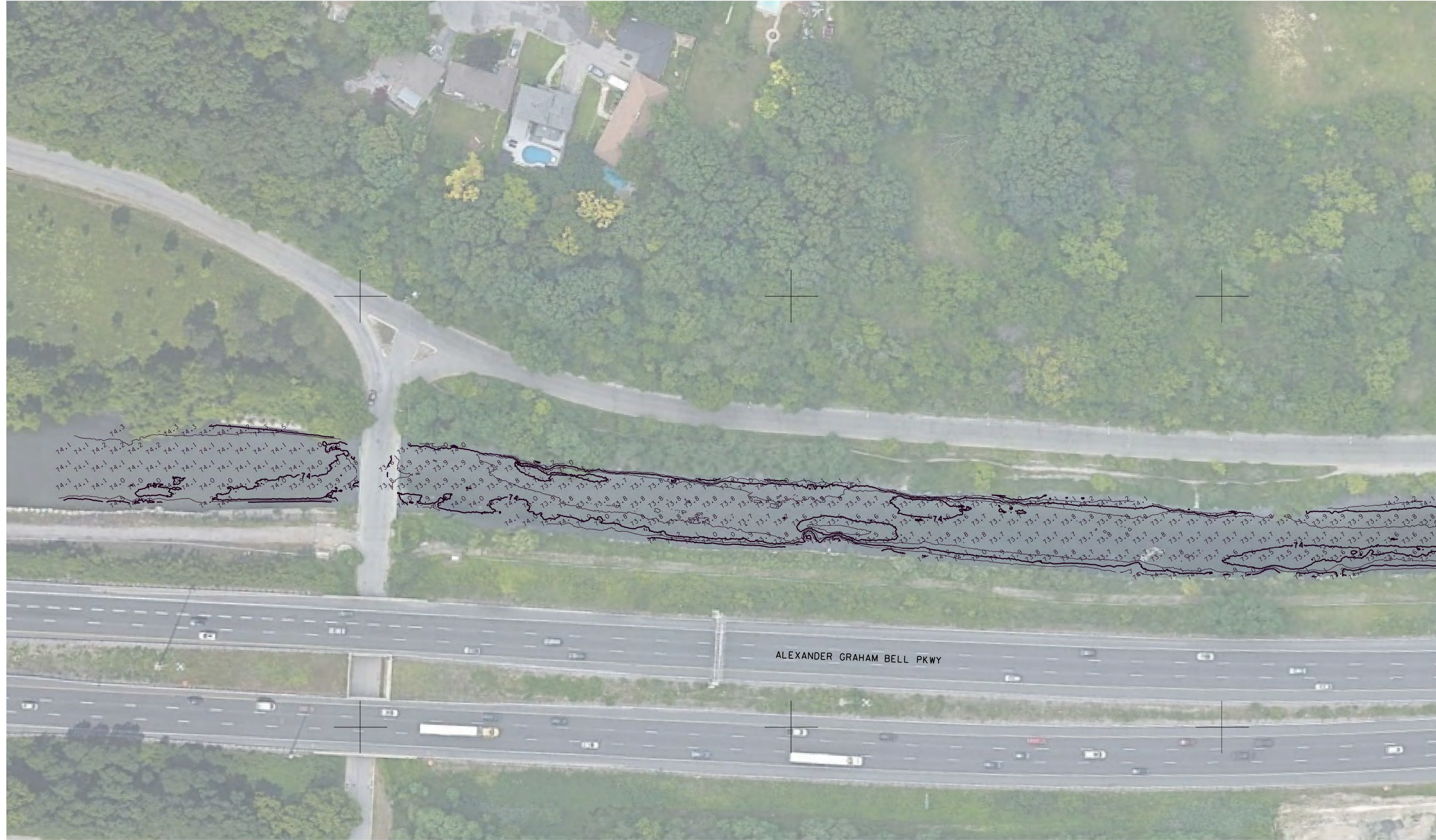
N 4791360

N 4791480

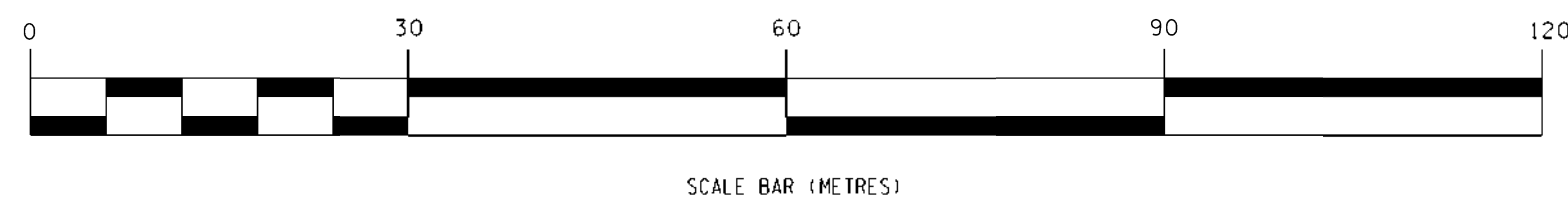
N 4791240

N 4791360

N 4791480



MATCH LINE - SEE SHEET 2 OF 2



SCALE BAR (METRES)

- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 4 JULY 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
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 6. CONTOUR INTERVAL IS 0.1 METRE WITH 0.5 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
 VESSEL: NORBIT 77 WINGHEAD WITH APPLANIX OCEANMASTER IMU
 INTEGRATED MULTI-BEAM SYSTEM: GNSS AIDED INERTIAL NAVIGATION SYSTEM
 GPS/RTK CORRECTIONS: CAN-NET RTK/GPS (SUB-DECIMETRE ACCURACY)
 DATA COLLECTION SOFTWARE: HYPACK 2022

REV.	DESCRIPTION	DATE	APPR.

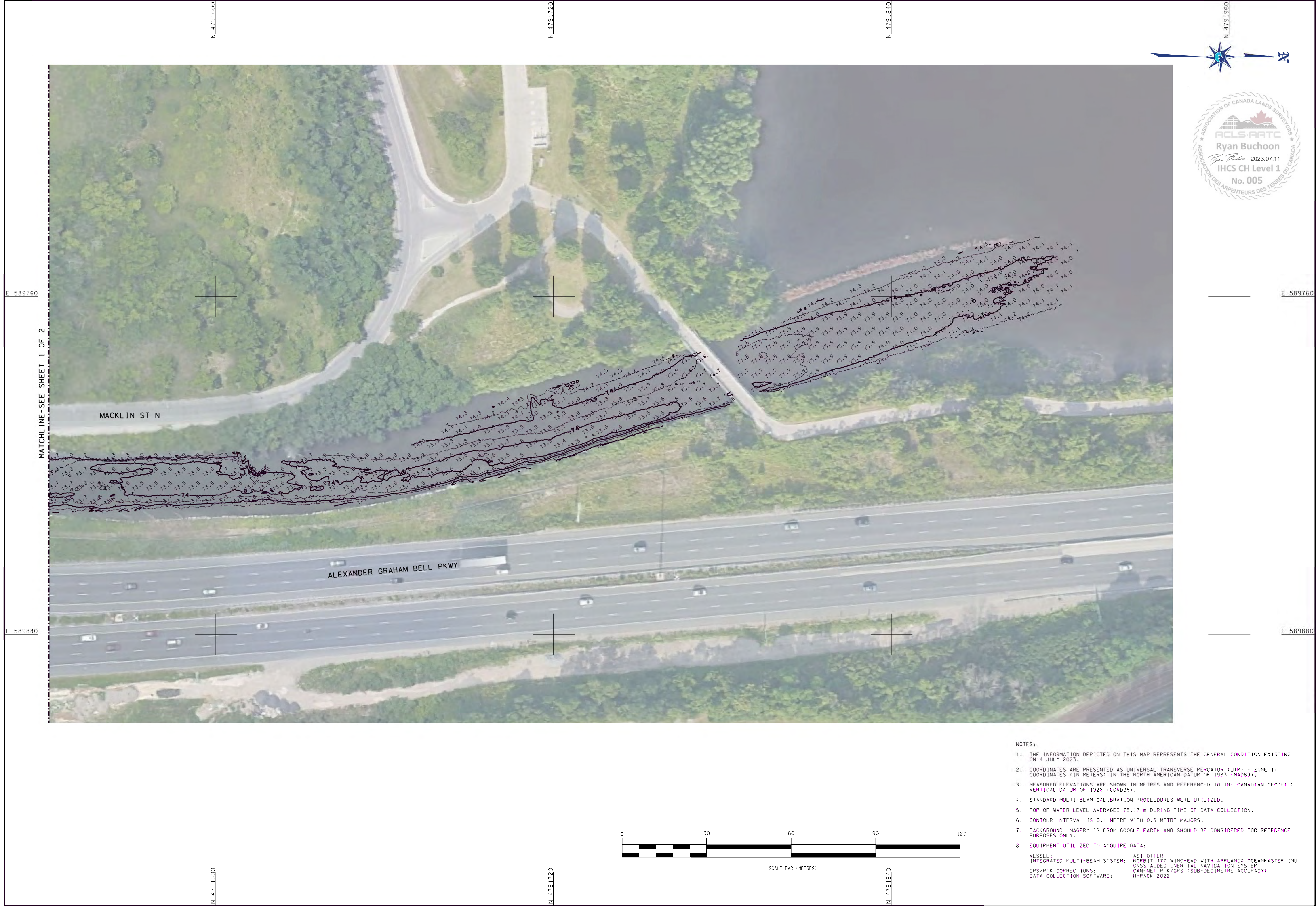
ASI Marine	
SURVEYED BY: A. GIBSON	DATE(S) OF SURVEY: 4 JULY 2023
DRAWN BY: P. GELLNER	ASI-GROUP JOB NO.: GH22-014
CHECKED BY: Z. O'NEILL	DRAWING FILE NAME: GH22-014 CONTOURS SHT1
APPROVED:	DATE:

Milestone
 ENVIRONMENTAL CONTRACTING INC.
 CHEDoke CREEK DREDGING SUPPORT
 HAMILTON, ON

BATHYMETRIC SURVEYING SERVICES
 CONTOURED BATHYMETRIC PLAN VIEW

DRAWING NUMBER:
1

SHEET 1 OF 2



REV.	DESCRIPTION	DATE	APPROV.

SURVEYED BY: A. GIBSON	DATE(S) OF SURVEY: 4 JULY 2023
DRAWN BY: P. GELLNER	ASI-GROUP JOB NO.: GH22-014
CHECKED BY: Z. O'NEILL	DRAWING FILE NAME: GH22-014 CONTOURS SHT2

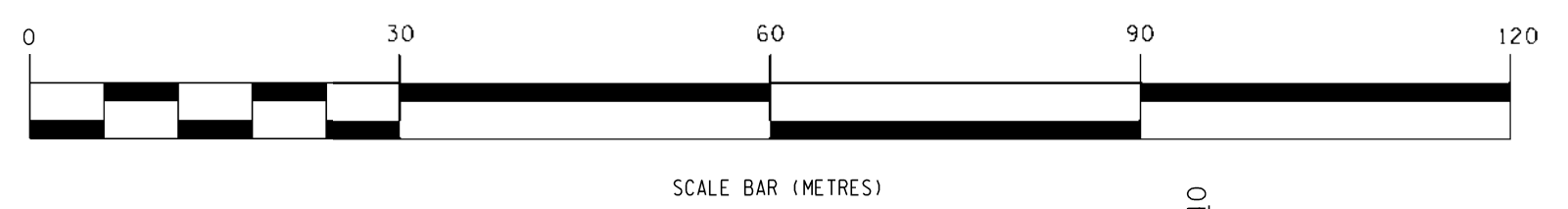
APPROVED:	DATE:
APPROVED:	DATE:
APPROVED:	DATE:



MILESTONE ENVIRONMENTAL CONTRACTING INC. CHEDOKE CREEK DREDGING SUPPORT HAMILTON, ON	BATHYMETRIC SURVEYING SERVICES CONTOURED BATHYMETRIC PLAN VIEW
--	---

DRAWING NUMBER: 2
SHEET 2 OF 2

- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 4 JULY 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
 4. STANDARD MULTI-BEAM CALIBRATION PROCEDURES WERE UTILIZED.
 5. TOP OF WATER LEVEL AVERAGED 75.17 m DURING TIME OF DATA COLLECTION.
 6. CONTOUR INTERVAL IS 0.1 METRE WITH 0.5 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
VESSEL: ASI OTTER
INTEGRATED MULTI-BEAM SYSTEM: NORBIT 177 WINGHEAD WITH APPLANIX OCEANMASTER IMU
GPS/RTK CORRECTIONS: CAN-NET RTK/GPS (SUB-DECIMETRE ACCURACY)
DATA COLLECTION SOFTWARE: HYPACK 2022

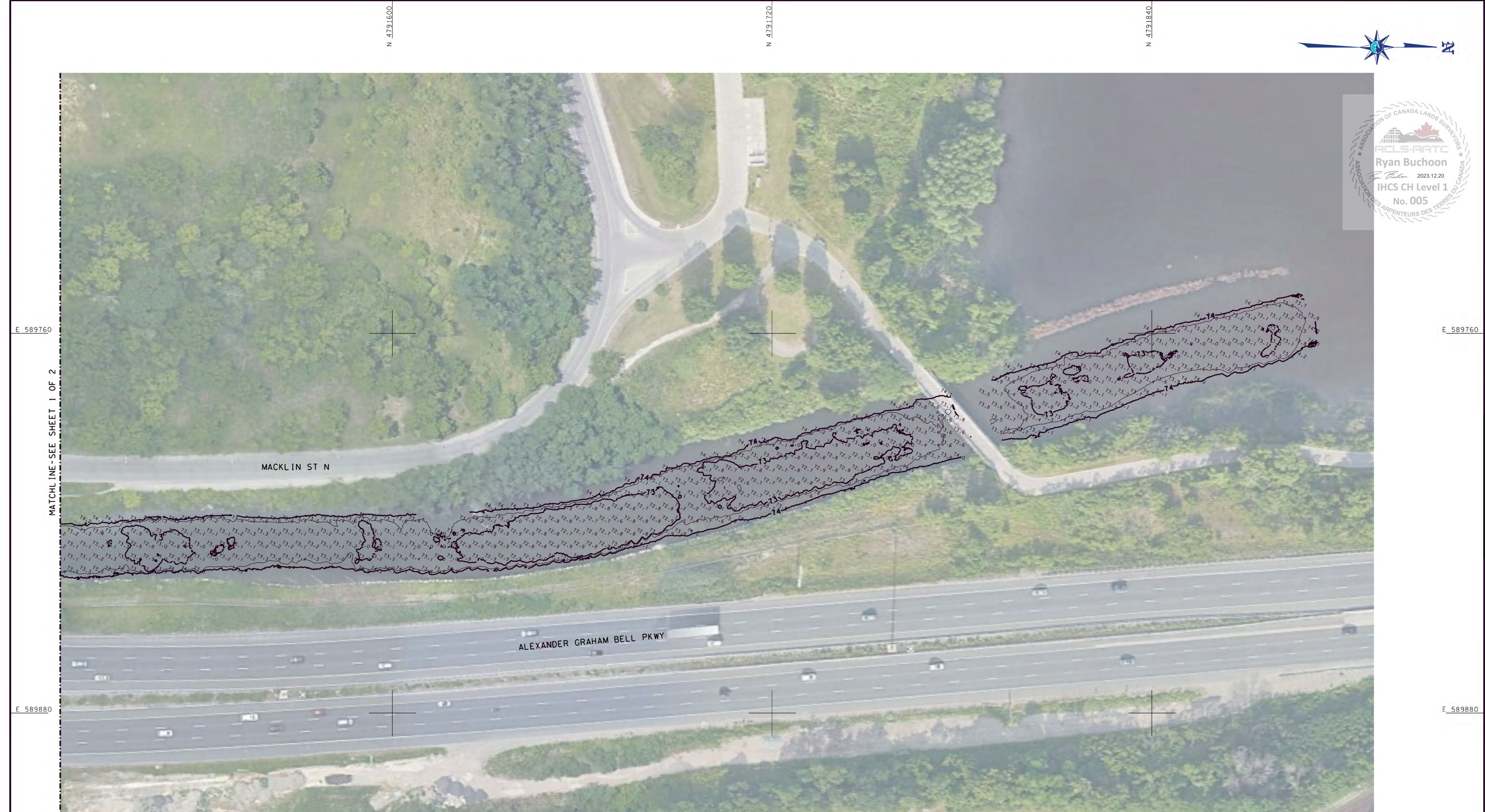


MATCHLINE - SEE SHEET 1 OF 2

I.2

POST-CONSTRUCTION BATHYMETRIC SURVEY





REV.	DESCRIPTION	DATE	APPR.

ASI Marine	
SURVEYED BY: B. ELLIOTT	DATE(S) OF SURVEY: 20 NOV 2023
DRAWN BY: P. GELLNER	ASI GROUP JOB NO.: GH22-014
CHECKED BY: Z. O'NEILL	PLOT DATE: 11 DEC 2023
DRAWING FILE NAME: GH22-014 POST DREDGE CONTOURS SHITZ	

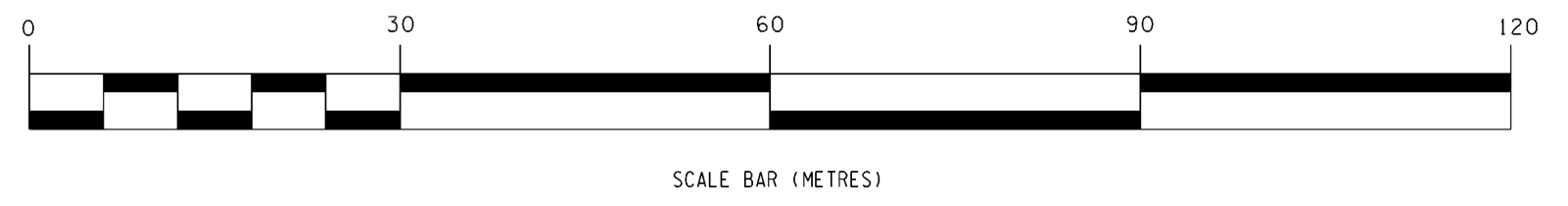
APPROVED:	DATE:
APPROVED:	DATE:
APPROVED:	DATE:



MILESTONE ENVIRONMENTAL CONTRACTING INC. CHEDOKE CREEK POST DREDGING SUPPORT HAMILTON, ON	BATHYMETRIC SURVEYING SERVICES CONTOURED BATHYMETRIC PLAN VIEW
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APPENDIX NUMBER: 4
SHEET 2 OF 2

- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 20 NOVEMBER 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
 4. STANDARD MULTIBEAM CALIBRATION PROCEDURES WERE UTILIZED.
 5. TOP OF WATER LEVEL AVERAGED 74.46 m DURING TIME OF DATA COLLECTION.
 6. CONTOUR INTERVAL IS 0.5 METRE WITH 1.0 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
VESSEL: ASI OTTER
INTEGRATED MULTIBEAM SYSTEM: NORBIT 177 WINGHEAD WITH APPLANIX OCEANMASTER IMU
GPS/AIDED INERTIAL NAVIGATION SYSTEM: CNSS AIDED INERTIAL NAVIGATION SYSTEM
GPS/RTK CORRECTIONS: CAN-NET RTK/GPS (SLB-DECIMETRE ACCURACY)
DATA COLLECTION SOFTWARE: HYPACK 2023



MATCHLINE-SEE SHEET 1 OF 2

N 4791120

N 4791240

N 4791360

N 4791480

E 589760

E 589760

E 589880

E 589880

N 4791120

N 4791240

N 4791360



MATCH LINE - SEE SHEET 2 OF 2



SCALE BAR (METRES)

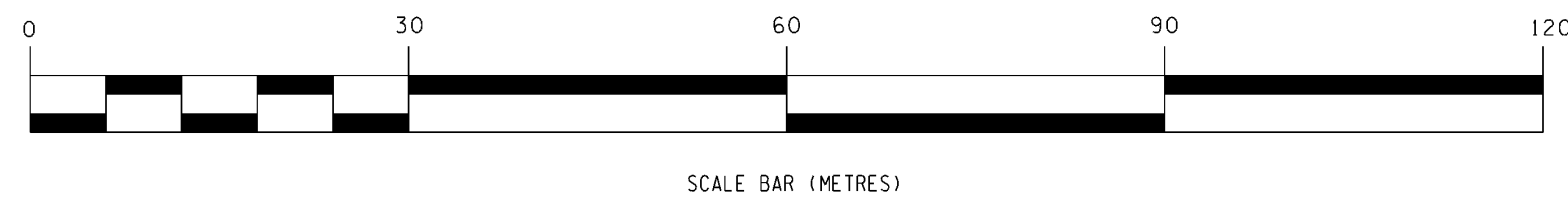
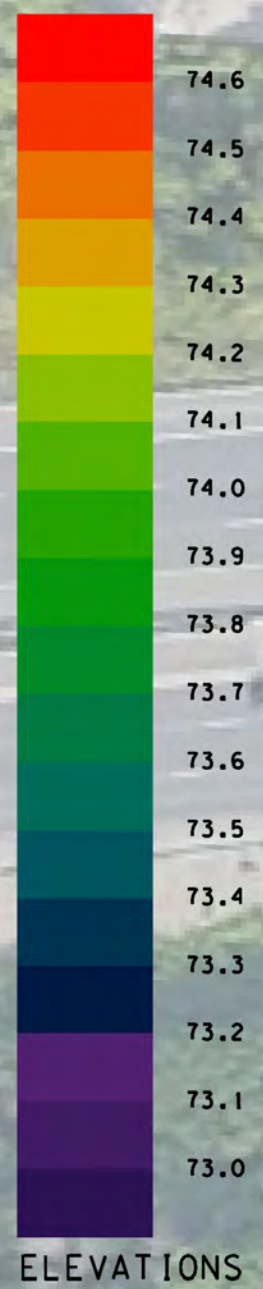
- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 20 NOVEMBER 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
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 6. CONTOUR INTERVAL IS 0.5 METRE WITH 1.0 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
 VESSEL: NORBIT 77 WINGHEAD WITH APPLANIX OCEANMASTER IMU
 INTEGRATED MULTIBEAM SYSTEM: GNSS AIDED INERTIAL NAVIGATION SYSTEM
 GPS/RTK CORRECTIONS: CAN-NET RTK/GPS (SUB-DECIMETRE ACCURACY)
 DATA COLLECTION SOFTWARE: HYPACK 2023

REV.	DESCRIPTION	DATE	APPR.

SURVEYED BY: B. ELLIOTT	DATE(S) OF SURVEY: 20 NOV 2023
DRAWN BY: P. GELLNER	ASI GROUP JOB NO.: GH22-014
CHECKED BY: Z. ONEILL	DRAWING FILE NAME: GH22-014 POST DREDGE CONTOURS SH1
APPROVED:	DATE:

MILESTONE ENVIRONMENTAL CONTRACTING INC. CHEDORE CREEK POST DREDGING SUPPORT HAMILTON, ON	BATHYMETRIC SURVEYING SERVICES
CONTOURED BATHYMETRIC PLAN VIEW	

APPENDIX NUMBER: 4
SHEET 1 OF 2



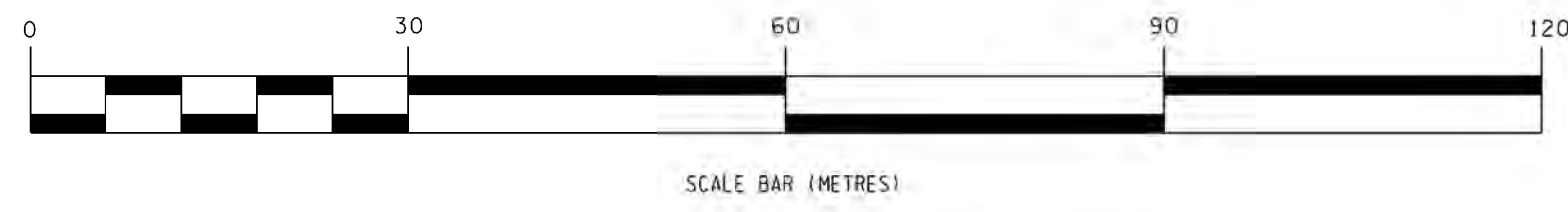
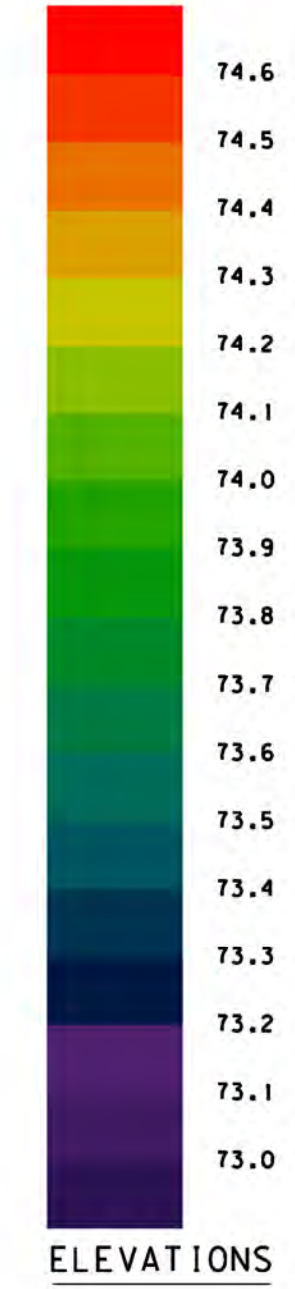
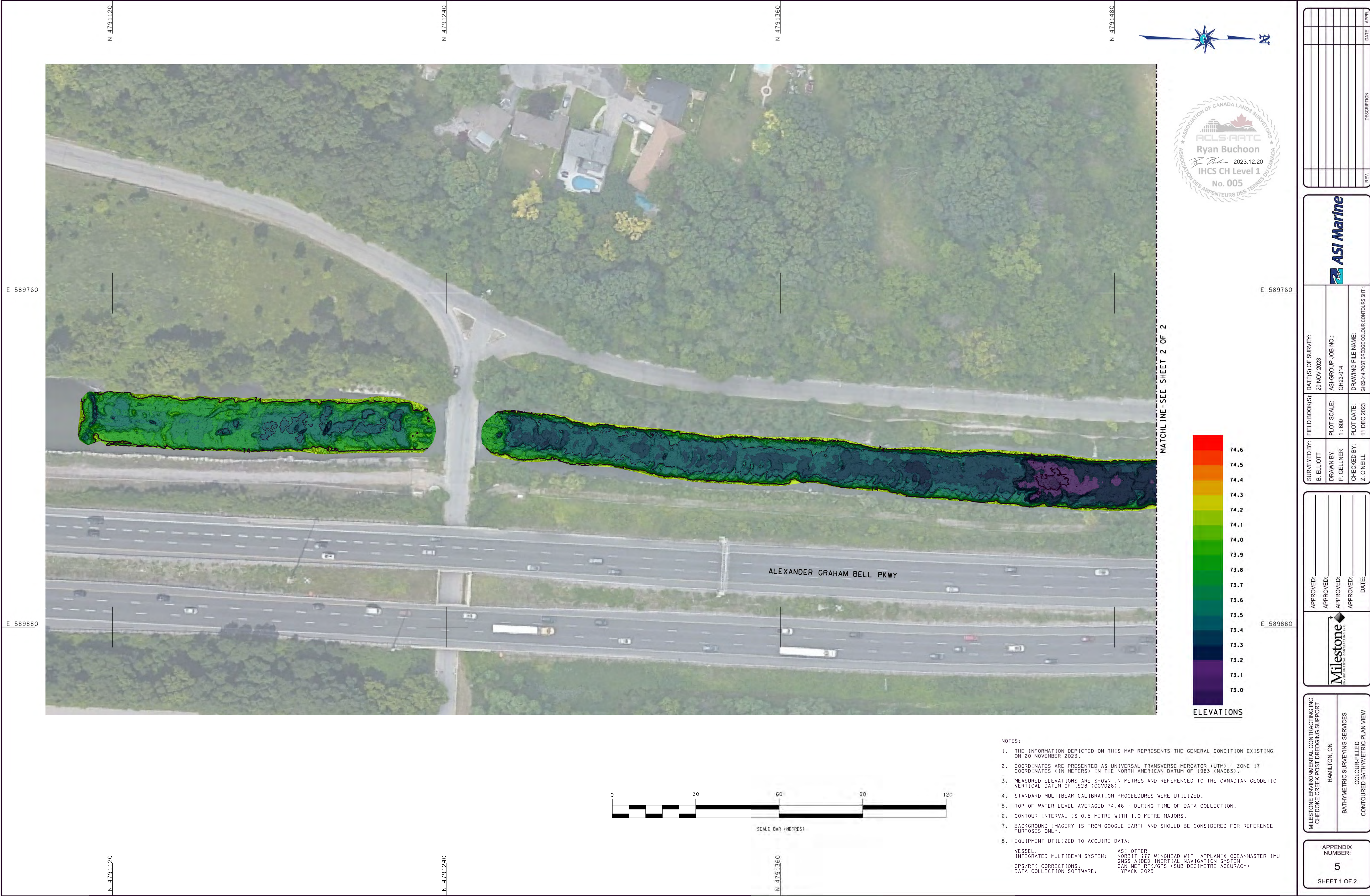
- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 20 NOVEMBER 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
 4. STANDARD MULTIBEAM CALIBRATION PROCEDURES WERE UTILIZED.
 5. TOP OF WATER LEVEL AVERAGED 74.46 m DURING TIME OF DATA COLLECTION.
 6. CONTOUR INTERVAL IS 0.5 METRE WITH 1.0 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
 VESSEL: ASI OTTER
 INTEGRATED MULTIBEAM SYSTEM: NORBIT 177 WINGHEAD WITH APPLANIX OCEANMASTER IMU
 GNSS AIDED INERTIAL NAVIGATION SYSTEM
 CAN-NET RTK/GPS (SUB-DECIMETRE ACCURACY)
 GPS/RTK CORRECTIONS: HYPACK 2023
 DATA COLLECTION SOFTWARE: HYPACK 2023

REV.	DESCRIPTION	DATE	APPR.

SURVEYED BY: B. ELLIOTT	DATE(S) OF SURVEY: 20 NOV 2023
DRAWN BY: P. GELLNER	ASI-GROUP JOB NO.: GH22-014
CHECKED BY: Z. ONEILL	PLOT DATE: 11 DEC 2023
DRAWING FILE NAME: GH22014 POST DREDGE COLOUR CONTOURS SH2	

APPROVED:	DATE:
APPROVED:	DATE:
APPROVED:	DATE:

MILESTONE ENVIRONMENTAL CONTRACTING INC.
 CHEDoke CREEK POST DREDGING SUPPORT
 HAMILTON, ON
 BATHYMETRIC SURVEYING SERVICES
 COLOUR-FILLED
 CONTOURED BATHYMETRIC PLAN VIEW



- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 20 NOVEMBER 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
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 6. CONTOUR INTERVAL IS 0.5 METRE WITH 1.0 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
 VESSEL: NORBIT 77 WINGHEAD WITH APPLANIX OCEANMASTER IMU
 INTEGRATED MULTIBEAM SYSTEM: GNSS AIDED INERTIAL NAVIGATION SYSTEM
 GPS/RTK CORRECTIONS: CAN-NET RTK/GPS (SUB-DECIMETRE ACCURACY)
 DATA COLLECTION SOFTWARE: HYPACK 2023

ASi Marine	SURVEYED BY: B. ELLIOTT DRAWN BY: P. GELLNER CHECKED BY: Z. ONEILL		DATES(S) OF SURVEY: 20 NOV 2023 ASI-GROUP JOB NO.: GH22-014 PLOT SCALE: 1:800 PLOT DATE: 11 DEC 2023		DESCRIPTION: BR250+H POST DREDGE COLOUR CONTOURS SH11			APPR: DATE:
Milestone <small>AN ASSOCIATED COMPANY OF ASI</small>	APPROVED: _____ APPROVED: _____ APPROVED: _____ DATE: _____							
MILESTONE ENVIRONMENTAL CONTRACTING INC. CHEDoke CREEK POST DREDGING SUPPORT HAMILTON, ON	BATHYMETRIC SURVEYING SERVICES COLOUR-FILLED CONTOURED BATHYMETRIC PLAN VIEW							
APPENDIX NUMBER: 5		SHEET 1 OF 2						

APPENDIX

J: DESIGN vs PRE-DREDGE SEDIMENT VOLUME



Technical Memorandum

To: Tim Crowley
Public Works, City of Hamilton

From: Lance Lombard; Matt Senior
WSP Environment & Infrastructure, Inc. (WSP)

Date: October 2, 2023

Ref: WW20101062 City of Hamilton – Chedoke Creek Remediation Project

RE: Updated Pre-Dredge Estimate of In-Situ Total Phosphorus and Total Kjeldahl Nitrogen Mass within Chedoke Creek, City of Hamilton

1.0 REVIEW OF INITIAL MASS LOAD REMOVAL ESTIMATES

Restoration dredging for the Chedoke Creek project commenced July 25, 2023. While the five zones shown in Figure 1 were originally evaluated for dredging, Zones 2 and 3 were the only zones where dredging was deemed feasible. The initial bathymetric survey of Zones 2 and 3 was performed by WSP during April, 2021. Concurrent with the bathymetric survey, WSP also collected sediment cores to provide an estimate of the total phosphorus (TP) and total Kjeldahl nitrogen (TKN) that could potentially be removed by dredging. In-situ TP and TKN was estimated for all zones using bathymetric data and sediment chemistry as part of a July 7, 2021 technical memorandum titled, *“Evaluation of Chedoke Creek and Princess Point Sediment Cores and Preliminary Estimate of In-Situ Total Phosphorus and Total Nitrogen Mass”*. Table 1 provides the original in-situ sediment volume and TP / TKN mass estimates for Zones 2 and 3. Total dredge volume was estimated to be 10,674 m³. The initial potential TKN load reduction was estimated to be 29 tonnes while potential TP load reduction was estimated to be 23 tonnes.

As part of a subsequent September 17, 2021 technical memorandum titled *“Comparison of Sediment Contaminants in Surficial and Deep Layers in Chedoke Creek and Princess Point Sediment Cores and Recommended Dredge Target Modifications”*, dredge target elevations were lowered to 73.5 m IGLD for Zone 2 and 73.0 m IGLD for Zone 3 to provide higher quality sediment at the water interface once dredging was completed. These adjustments increased the anticipated dredge volume to an estimated 11,300 m³ but revised reduction estimates were postponed pending an initial pre-dredge survey.

2.0 REVISED MASS LOAD REMOVAL ESTIMATES

As part of the Contract-based pre-dredge requirements, ASI Marine was hired by the dredge contractor (Milestone) Environmental Contracting, Inc. to perform a bathymetric survey of Zones 2 and 3. The results of the survey completed on July 4, 2023 are included in Attachment 1. The pre-dredge survey indicates a reduction of available material by approximately 29% compared to the

original 10,674 m³ in-situ dredge volume estimate. Figure 2 shows a centerline profile view of both April 2021 and July 2023 survey data along the length of Zone 2 and Zone 3. The top of sediment data from April 2021 is consistently higher than the top of sediment data from July 2023. It is assumed that the reduction in available dredge volume is the result of downstream sediment transport. The adjusted volume and loading data for Zones 2 and 3 is provided in Table 2. The anticipated TKN mass load removal based on the revised dredge template has decreased by 31% from 29 tonnes to 20.9 tonnes, while anticipated TP mass load removal has decreased by 28% from 23 tonnes to 16.5 tonnes.

3.0 SUMMARY

Based on the July 2023 pre-dredge bathymetric survey, the total amount of material to be dredged from Chedoke Creek has decreased by approximately 29% likely as a result of continued oxidation of organic sediments deposited during the spill and downstream transport. The result is a reduction of 9.1 tonnes of TKN and 6.5 tonnes of TP as compared to the April 2021 bathymetric survey estimate.

Figure 1 – Original Five Zones Evaluated for Dredging



Figure 2 – Original (April 2021) Compared to Pre-Dredge (July 2023) Centerline Bathymetric Profile. Black dashed line is the April 2021 top of sediment, light blue line is the July 2023 top of sediment, dark blue line is the dredge target elevation.

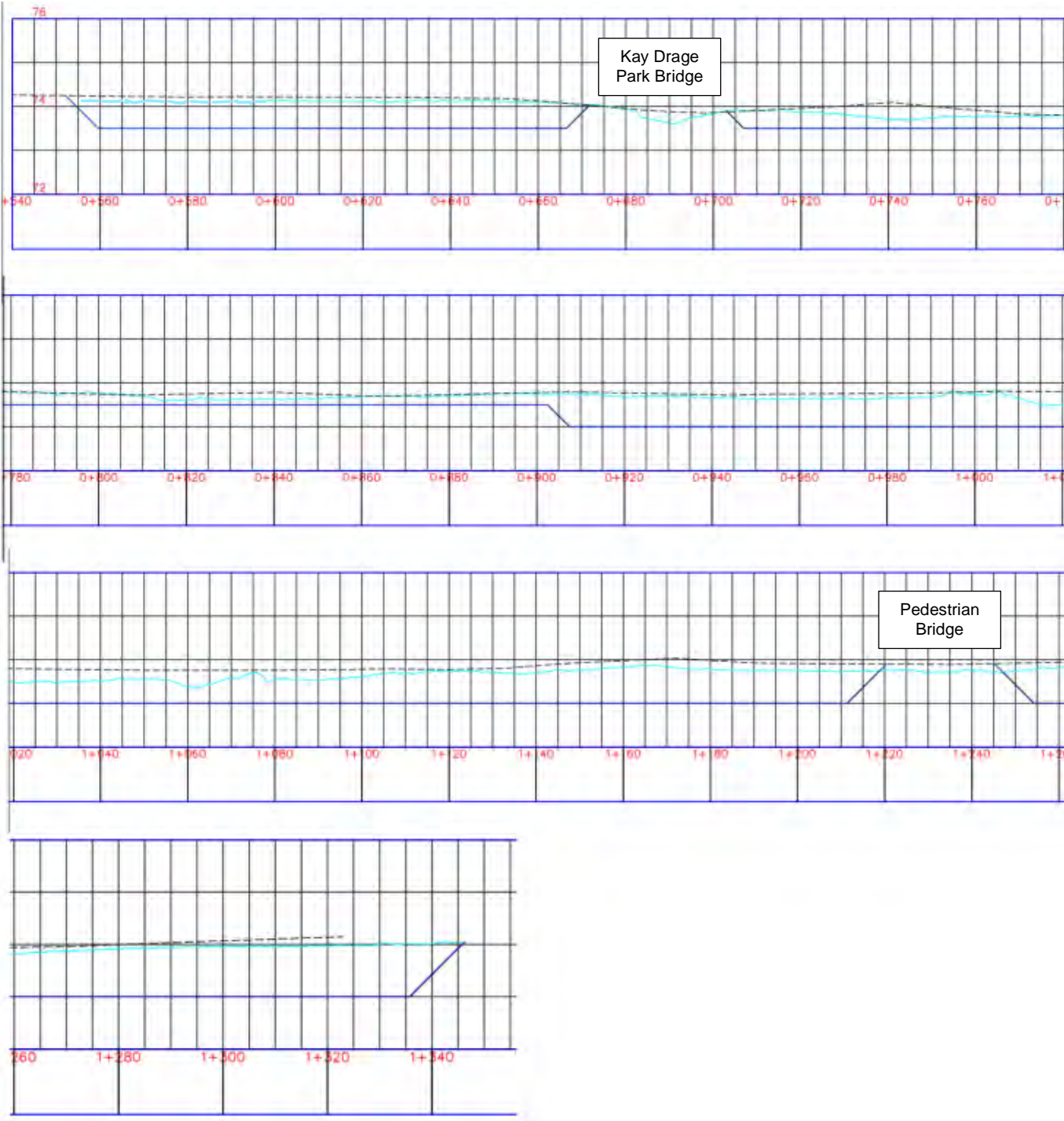


Table 1 – Original Zone 2 and 3 Dredge Areas and Associated In-Situ TKN and TP Mass

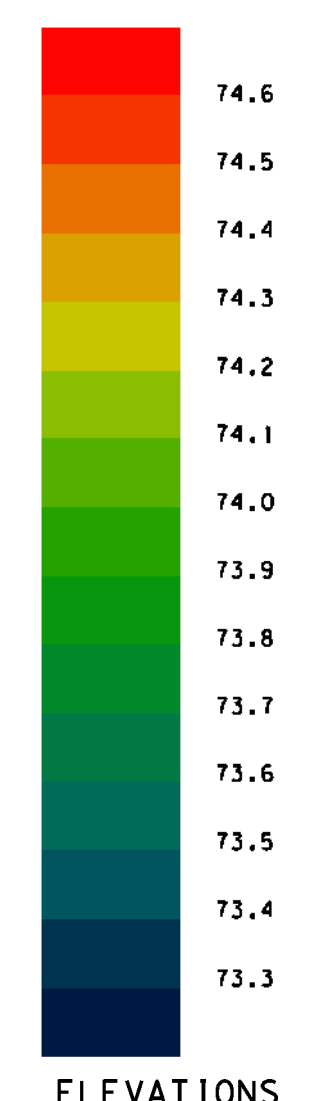
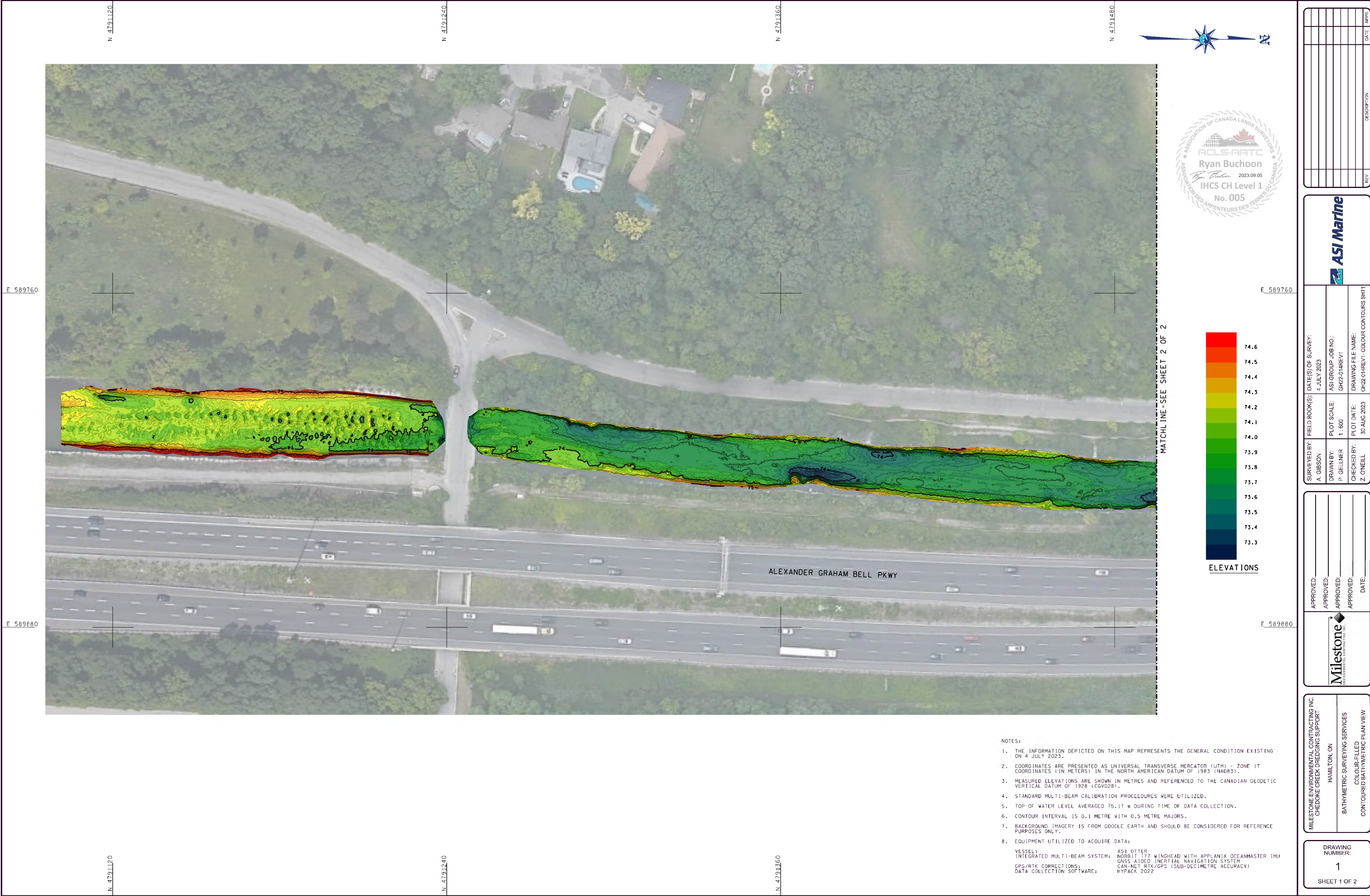
Project Area	Description	Area (m ²)	Target Dredge Elevation (m IGLD)	Average Targeted Sediment Thickness (m)	Volume (m ³)	Average TKN Conc. (ug/g)	Estimated TKN Mass within Zone (tonnes)	Average TP Conc. (ug/g)	Estimated TP Mass within Zone (tonnes)
Zone 2	CC-C14 to CC-C19	6,946	73.7	0.45	3,347	1,180	7	1,067	6
Zone 3	CC-C19 to CC-C26	9,973	73.4	0.60	7,327	1,641	22	1,251	17
Total Zones 2&3					10,674		29		23

Table 2 – Revised Zone 2 and 3 Dredge Areas and Associated In-Situ TKN and TP Mass

Project Area	Description	Area (m ²)	Target Dredge Elevation (m IGLD)	Average Targeted Sediment Thickness (m)	Volume (m ³)	Average TKN Conc. (ug/g)	Estimated TKN Mass within Zone (tonnes)	Average TP Conc. (ug/g)	Estimated TP Mass within Zone (tonnes)
Zone 2	CC-C14 to CC-C19	6,946	73.5	0.45	2,177	1,180	4.6	1,067	3.9
Zone 3	CC-C19 to CC-C26	9,973	73.0	0.60	5,425	1,641	16.3	1,251	12.6
Total Zones 2&3					7,602		20.9		16.5

Attachment 1

Pre-Dredge Survey Completed July 4, 2023



MATCHLINE - SEE SHEET 2 OF 2

- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 4 JULY 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE 17 COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
 4. STANDARD MULTI-BEAM CALIBRATION PROCEDURES WERE UTILIZED.
 5. TOP OF WATER LEVEL AVERAGED 75.17 m DURING TIME OF DATA COLLECTION.
 6. CONTOUR INTERVAL IS 0.1 METRE WITH 0.5 METRE MAJORS.
 7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
 8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
 VESSEL: NORBIT 177 WINGHEAD WITH APPLANIX OCEANMASTER IMU
 INTEGRATED MULTI-BEAM SYSTEM: GNSS AIDED INERTIAL NAVIGATION SYSTEM
 GPS/RTK CORRECTIONS: CAN-NET RTK/GPS (SUB-DECIMETRE ACCURACY)
 DATA COLLECTION SOFTWARE: HYPACK 2022

REV	DESCRIPTION	DATE	APPR



SURVEYED BY: A. GIBSON	FIELD BOOK(S): 4 JULY 2023	DATE(S) OF SURVEY: 4 JULY 2023
DRAWN BY: P. GELLNER	PLT SCALE: 1: 600	ASI GROUP JOB NO.: GH22-01REV1
CHECKED BY: Z. O'NEILL	PLT DATE: 30 AUG 2023	DRAWING FILE NAME: GH22-01REV1 - COLOUR CONTOURS SH11

APPROVED:	DATE:
APPROVED:	DATE:
APPROVED:	DATE:



MILESTONE ENVIRONMENTAL CONTRACTING INC.
 CHEDoke CREEK DREDGING SUPPORT
 HAMILTON, ON
 BATHYMETRIC SURVEYING SERVICES
 COLOUR-FILLED
 CONTOURED BATHYMETRIC PLAN VIEW

DRAWING NUMBER:
1
 SHEET 1 OF 2

N 4791120

E 589760

E 589880

N 4791120

N 4791240

E 589760

E 589880

N 4791240

N 4791360

E 589760

E 589880

N 4791360

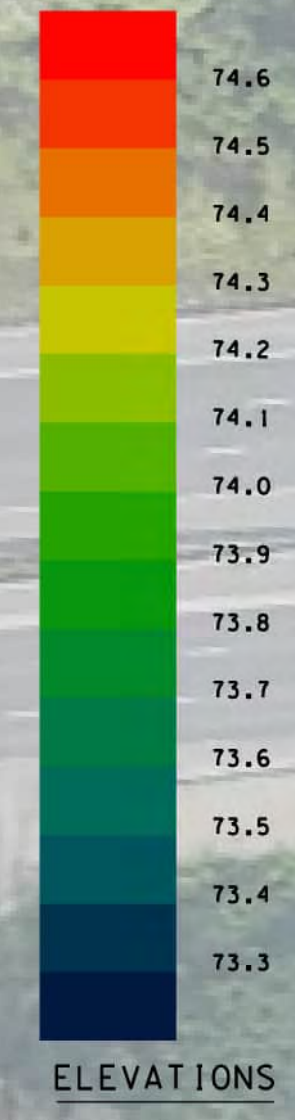
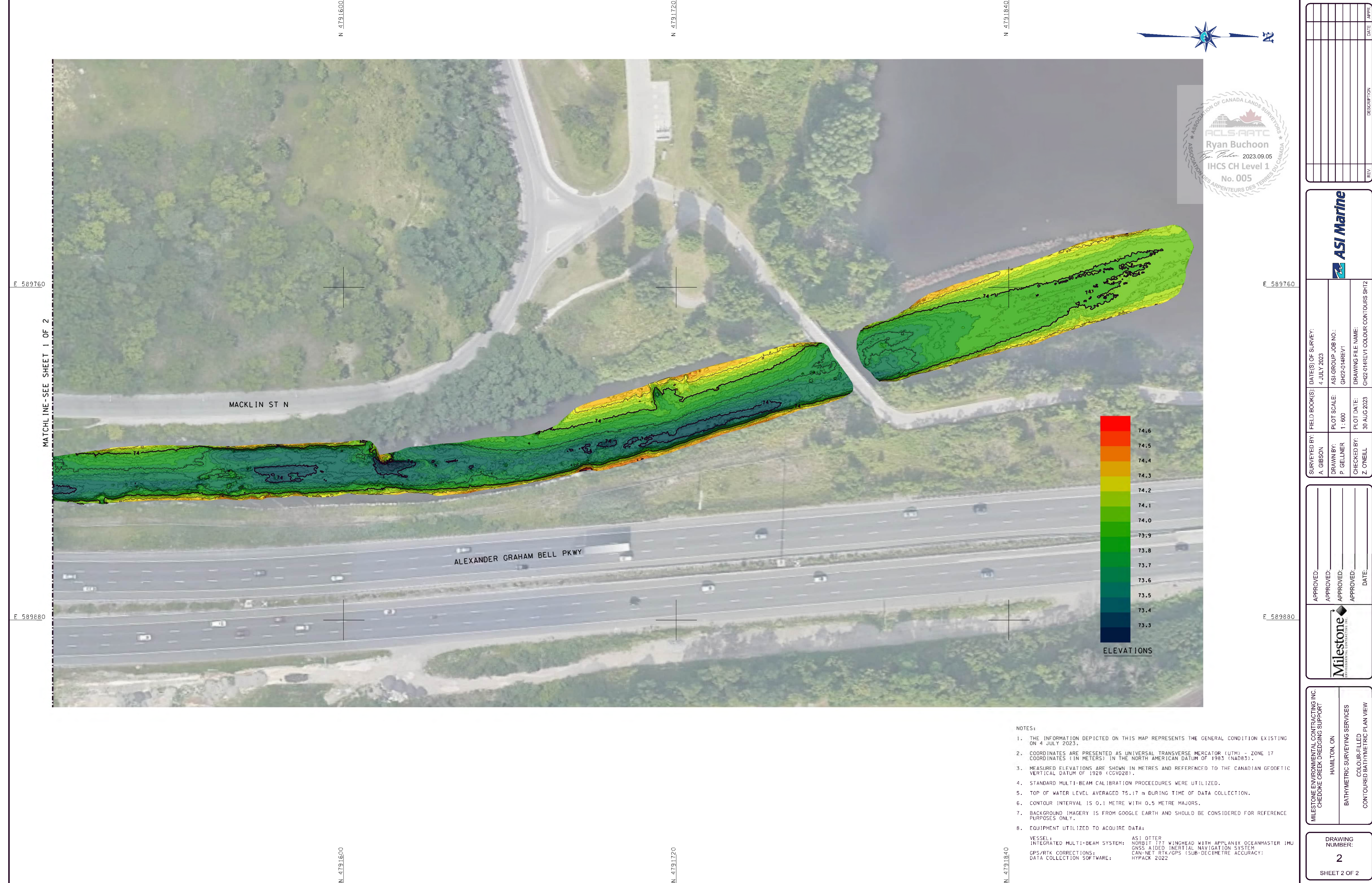
N 4791480

E 589760

E 589880

N 4791480

ALEXANDER GRAHAM BELL PKWY



REV	DESCRIPTION	DATE	APPR

ASI Marine	
SURVEYED BY: A. GIBSON	FIELD BOOK(S): 4 JULY 2023
DRAWN BY: P. GELLNER	ASI GROUP JOB NO.: GH22-014REV1
CHECKED BY: Z. O'NEILL	PLOT DATE: 30 AUG 2023
DRAWING FILE NAME: GH22-014REV1 COLOUR CONTOURS SH12	

APPROVED:	DATE:
APPROVED:	DATE:
APPROVED:	DATE:

MILESTONE ENVIRONMENTAL CONTRACTING INC. CHEDOKÉ CREEK DREDGING SUPPORT HAMILTON, ON	BATHYMETRIC SURVEYING SERVICES COLOUR-FILLED CONTOURED BATHYMETRIC PLAN VIEW
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DRAWING NUMBER: 2
SHEET 2 OF 2

NOTES:

1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION EXISTING ON 4 JULY 2023.
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3. MEASURED ELEVATIONS ARE SHOWN IN METERS AND REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
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6. CONTOUR INTERVAL IS 0.1 METRE WITH 0.5 METRE MAJORS.
7. BACKGROUND IMAGERY IS FROM GOOGLE EARTH AND SHOULD BE CONSIDERED FOR REFERENCE PURPOSES ONLY.
8. EQUIPMENT UTILIZED TO ACQUIRE DATA:
VESSEL: ASI OTTER
INTEGRATED MULTI-BEAM SYSTEM: NORBIT 177 WINGHEAD WITH APPLANIX OCEANMASTER IMU
GNSS AIDED INERTIAL NAVIGATION SYSTEM
CAN-NET RTK/GPS 1SUB-DECIMETRE ACCURACY:
GPS/RTK CORRECTIONS:
DATA COLLECTION SOFTWARE: HYPACK 2022

MATCHLINE - SEE SHEET 1 OF 2

E 589760

E 589880

N 4791600

N 4791600

N 4791720

N 4791720

N 4791840

N 4791840

N 4791120

N 4791240

N 4791360

N 4791480

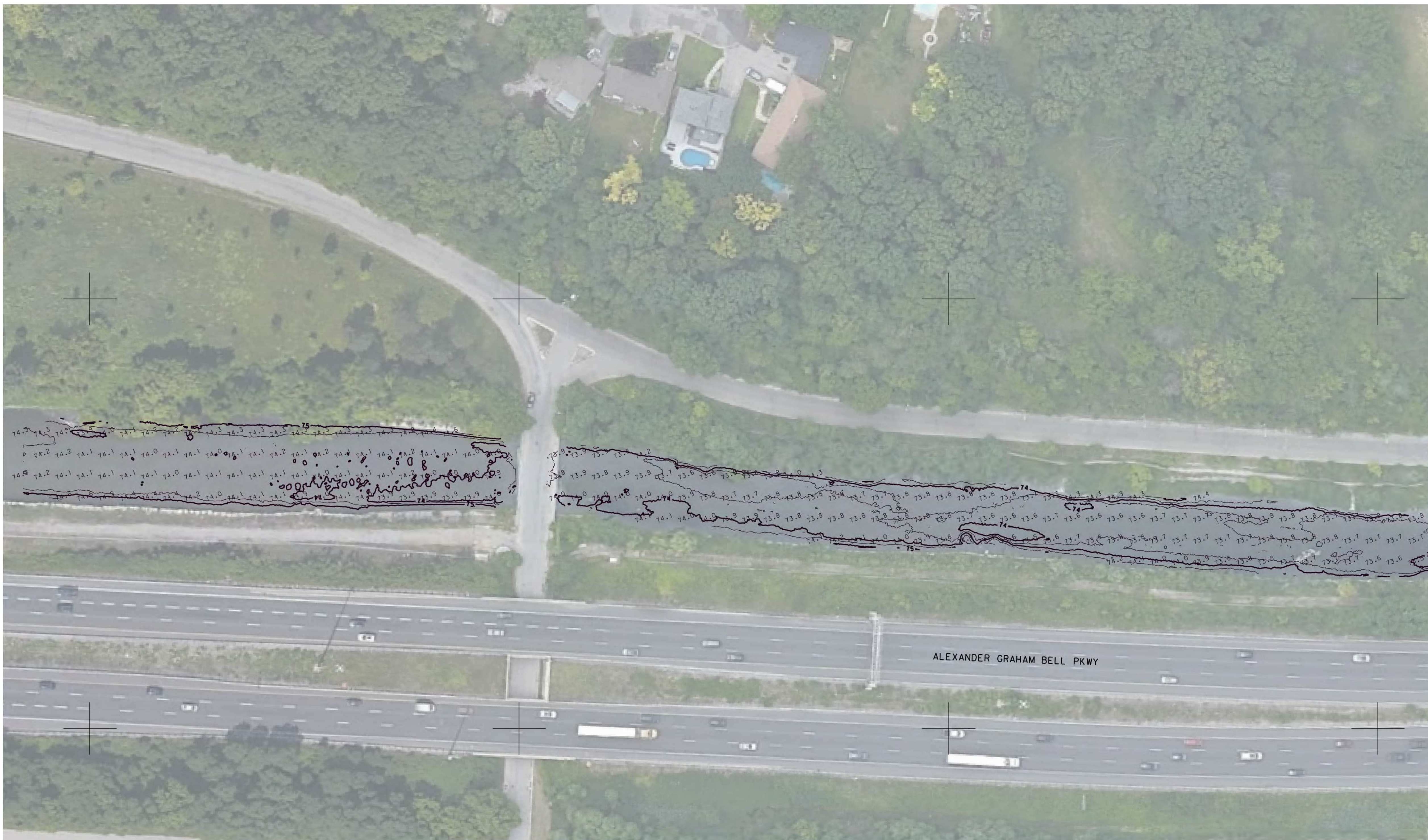


E 589760

E 589760

E 589880

E 589880



MATCH LINE - SEE SHEET 2 OF 2

N 4791120

N 4791240

N 4791360

- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE ON 4 JULY 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE ME COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM

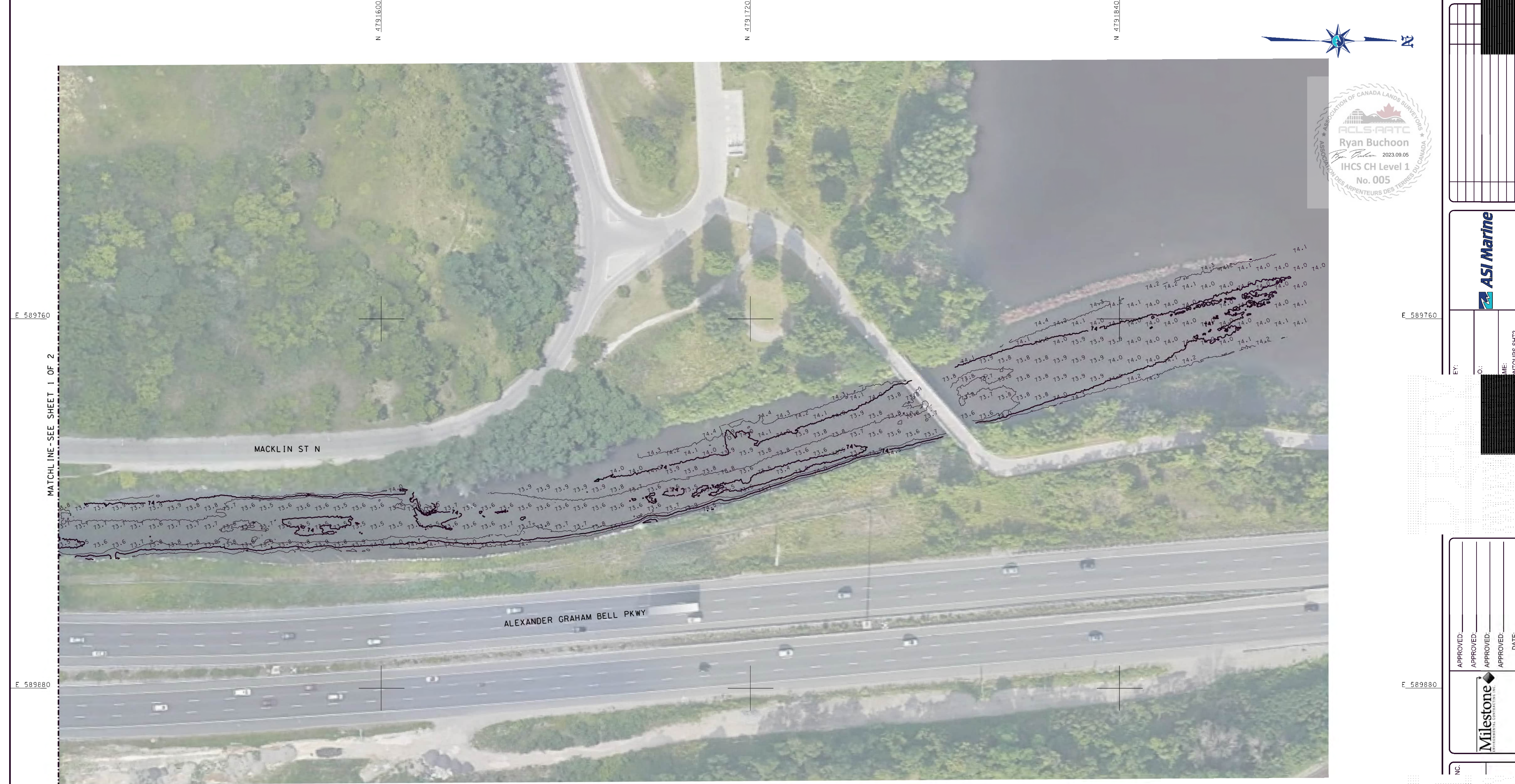
REV	DESCRIPTION

BY: _____
 DATE: _____
 ME: _____
 SURVEYOR'S SIGNATURE

APPROVED: _____
 APPROVED: _____
 APPROVED: _____
 DATE: _____

NUMBER:
1
 SHEET 1 OF 2

ER 1MU



REV	DESCRIPTION

ASI Marine

BY: _____

DATE: _____

ME: _____

PROJECT: ANTOURS SHFT2

Milestone

APPROVED: _____

APPROVED: _____

APPROVED: _____

DATE: _____

- NOTES:
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE GENERAL CONDITION AS OF 4 JULY 2023.
 2. COORDINATES ARE PRESENTED AS UNIVERSAL TRANSVERSE MERCATOR (UTM) - ZONE COORDINATES (IN METERS) IN THE NORTH AMERICAN DATUM OF 1983 (NAD83).
 3. MEASURED ELEVATIONS ARE SHOWN IN METRES AND REFERENCED TO THE CANADIAN MEAN SEA LEVEL.

INTEGRATED WITH APPLIANCA CLEANMASTER 1500 GPS/R DATA NAVIGATION SYSTEM SUB-DECIMETRE ACCURACY

APPENDIX

K: SEDIMENT QUALITY & DISPOSAL

K.1

Dredged Sediment Material Tracking Report





Dredged Sediment Material Tracking Report

Landfill	# of Loads	Tonnage (MT)
Stoney Creek	8	275.32
Twin Creeks	242	9,536.30
Niagara	31	851.48
Total	281	10,663.10

Subtotal	MT
	10,663.10

CLIENT: City of Hamilton
 PROJECT NO.: 01220228
 PROJECT DESCRIPTION: Dredging Chedoke Creek
 PROJECT LOCATION: Kay Drage Park, Hamilton, ON

Load #	Date	Haul Record #	Material Slip #	Place of Origin	Destination	Carrier	Material Type	Quantity (kg)	Quantity (MT)	Quantity (lbs)	Quantity (tons)	Truck ID	Scale Ticket #
1	11/21/2023	DMMA#1-001	4476	Chedoke Creek	GFL Stoney Creek Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,240.00	36.24			803	56475
2	11/21/2023	DMMA#1-002	4477	Chedoke Creek	GFL Stoney Creek Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,360.00	33.36			801	56487
3	11/21/2023	DMMA#1-003	4478	Chedoke Creek	GFL Stoney Creek Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	30,460.00	30.46			808	56501
4	11/21/2023	DMMA#1-004	4479	Chedoke Creek	GFL Stoney Creek Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,790.00	37.79			805	56502
5	11/21/2023	DMMA#1-005	4480	Chedoke Creek	GFL Stoney Creek Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,360.00	37.36			803	56525
6	11/21/2023	DMMA#1-006	4481	Chedoke Creek	GFL Stoney Creek Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,040.00	34.04			801	56536
7	11/21/2023	DMMA#1-007	4482	Chedoke Creek	GFL Stoney Creek Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	30,430.00	30.43			808	56540
8	11/21/2023	DMMA#1-008	4483	Chedoke Creek	GFL Stoney Creek Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,640.00	35.64			805	56543
9	12/01/2023	DMMA#1-009	4486	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,430.00	35.43			803	641277
10	12/01/2023	DMMA#1-010	4487	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,200.00	39.20			801	641284
11	12/01/2023	DMMA#1-011	4488	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	29,140.00	29.14			118	641276
12	12/01/2023	DMMA#1-012	4489	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	31,500.00	31.50			818	641285
13	12/01/2023	DMMA#1-013	4490	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,060.00	34.06			10	641292
14	12/01/2023	DMMA#1-014	4492	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,280.00	35.28			805	641299
15	12/01/2023	DMMA#1-015	4493	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,570.00	37.57			1595	641301
16	12/01/2023	DMMA#1-016	4494	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,000.00	33.00			5090	641316
17	12/01/2023	DMMA#1-017	4495	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	32,380.00	32.38			883	641307
18	12/01/2023	DMMA#1-018	4496	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,180.00	39.18			105	641325
19	12/01/2023	DMMA#1-019	4499	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,840.00	37.84			4060	641336
20	12/01/2023	DMMA#1-020	4500	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,160.00	41.16			826	641322
21	12/01/2023	DMMA#1-021	4326	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	30,280.00	30.28			616	641347
22	12/01/2023	DMMA#1-022	4327	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,220.00	36.22			1596	641331
23	12/01/2023	DMMA#1-023	4328	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,480.00	33.48			1598	641345
24	12/04/2023	DMMA#1-024	4329	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,190.00	39.19			10	641466
25	12/04/2023	DMMA#1-025	4330	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,910.00	34.91			118	641467
26	12/04/2023	DMMA#1-026	4331	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,420.00	38.42			1596	641482
27	12/04/2023	DMMA#1-027	4332	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,460.00	42.46			4060	641502
28	12/04/2023	DMMA#1-028	4333	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,720.00	39.72			818	641495
29	12/04/2023	DMMA#1-029	4334	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,900.00	41.90			1595	641501
30	12/04/2023	DMMA#1-030	4335	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,400.00	41.40			801	641514
31	12/04/2023	DMMA#1-031	4336	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,720.00	38.72			1322	641520
32	12/04/2023	DMMA#1-032	4337	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,310.00	42.31			105	641532
33	12/05/2023	DMMA#1-033	4338	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,930.00	33.93			118	641593
34	12/05/2023	DMMA#1-034	4339	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,420.00	39.42			10	641613
35	12/05/2023	DMMA#1-035	4340	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,870.00	35.87			1598	641616
36	12/05/2023	DMMA#1-036	4341	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,380.00	41.38			1595	641606
37	12/05/2023	DMMA#1-037	4342	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,600.00	41.60			818	641595
38	12/05/2023	DMMA#1-038	4344	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,240.00	40.24			801	641632
39	12/05/2023	DMMA#1-039	4345	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,110.00	40.11			811	641633
40	12/05/2023	DMMA#1-040	4346	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,270.00	37.27			1324	641640
41	12/05/2023	DMMA#1-041	4347	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,470.00	35.47			5011	641641
42	12/05/2023	DMMA#1-042	4348	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,530.00	41.53			105	641657
43	12/05/2023	DMMA#1-043	4349	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,700.00	36.70			118	641715
44	12/05/2023	DMMA#1-044	4350	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,190.00	41.19			1595	641716
45	12/05/2023	DMMA#1-045	4426	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,530.00	38.53			818	641717
46	12/05/2023	DMMA#1-046	4427	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,840.00	37.84			1598	641722
47	12/05/2023	DMMA#1-047	4428	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,710.00	35.71			10	641750
48	12/06/2023	DMMA#1-048	4429	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,280.00	39.28			811	641795

49	12/06/2023	DMMA#1-049	4430	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,610.00	38.61			801	641794
50	12/06/2023	DMMA#1-050	4431	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	32,420.00	32.42			5011	641800
51	12/06/2023	DMMA#1-051	4432	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,780.00	40.78			5090	641784
52	12/06/2023	DMMA#1-052	4433	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	45,230.00	45.23			826	641808
53	12/06/2023	DMMA#1-053	4434	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,260.00	42.26			105	641805
54	12/06/2023	DMMA#1-054	4435	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,840.00	38.84			118	641809
55	12/06/2023	DMMA#1-055	4436	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,480.00	42.48			1595	641863
56	12/06/2023	DMMA#1-056	4437	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,770.00	42.77			805	641879
57	12/06/2023	DMMA#1-057	4438	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,050.00	41.05			1596	641873
58	12/06/2023	DMMA#1-058	4439	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,400.00	41.40			5012	641881
59	12/06/2023	DMMA#1-059	4440	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,970.00	40.97			5090	641901
60	12/06/2023	DMMA#1-060	4441	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,550.00	41.55			105	641918
61	12/06/2023	DMMA#1-061	4442	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	32,220.00	32.22			826	641925
62	12/06/2023	DMMA#1-062	4443	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,680.00	38.68			5011	641920
63	12/07/2023	DMMA#1-063	4444	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,770.00	36.77			801	641974
64	12/07/2023	DMMA#1-064	4445	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,930.00	33.93			118	641959
65	12/07/2023	DMMA#1-065	4446	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,340.00	38.34			1598	641984
66	12/07/2023	DMMA#1-066	4447	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,700.00	40.70			1595	641969
67	12/07/2023	DMMA#1-067	4448	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,900.00	37.90			1596	641983
68	12/07/2023	DMMA#1-068	4449	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,210.00	38.21			10	641981
69	12/07/2023	DMMA#1-069	4450	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,910.00	34.91			805	641973
70	12/07/2023	DMMA#1-070	4451	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,000.00	40.00			5012	641997
71	12/07/2023	DMMA#1-071	4452	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,090.00	40.09			1324	642008
72	12/07/2023	DMMA#1-072	4453	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,790.00	43.79			5011	642012
73	12/07/2023	DMMA#1-073	4454	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,240.00	43.24			826	642025
74	12/07/2023	DMMA#1-074	4455	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,510.00	37.51			4060	642096
75	12/07/2023	DMMA#1-075	4456	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,580.00	38.58			118	642090
76	12/07/2023	DMMA#1-076	4457	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,730.00	40.73			1595	642094
77	12/07/2023	DMMA#1-027	4459	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,340.00	38.34			801	642101
78	12/07/2023	DMMA#1-078	4460	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,590.00	36.59			810	642102
79	12/07/2023	DMMA#1-079	4461	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,060.00	38.06			2011	642114
80	12/07/2023	DMMA#1-080	4462	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,640.00	40.64			805	642106
81	12/07/2023	DMMA#1-081	4463	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,370.00	40.37			1596	642110
82	12/07/2023	DMMA#1-082	4464	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,270.00	40.27			1598	642116
83	12/07/2023	DMMA#1-083	4465	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,750.00	34.75			10	642121
84	12/07/2023	DMMA#1-084	4466	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,340.00	39.34			5012	642122
85	12/07/2023	DMMA#1-086	4468	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,630.00	40.63			5011	642123
86	12/08/2023	DMMA#1-085	4467	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,640.00	37.64			826	642182
87	12/08/2023	DMMA#1-087	4469	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,850.00	40.85			818	642157
88	12/08/2023	DMMA#1-088	4470	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	30,540.00	30.54			808	642172
89	12/08/2023	DMMA#1-089	4471	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,620.00	42.62			105	642184
90	12/08/2023	DMMA#1-090	4472	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,130.00	39.13			5090	642170
91	12/08/2023	DMMA#1-091	4473	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,350.00	41.35			1595	642153
92	12/08/2023	DMMA#1-092	4474	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,330.00	37.33			604	642195
93	12/08/2023	DMMA#1-093	4475	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,880.00	37.88			1323	642280
94	12/08/2023	DMMA#1-094	4501	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,080.00	44.08			5011	642205
95	12/08/2023	DMMA#1-095	4502	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,940.00	39.94			1324	642226
96	12/08/2023	DMMA#1-096	4503	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,720.00	39.72			805	642227
97	12/08/2023	DMMA#1-097	4504	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,580.00	42.58			107	642235
98	12/08/2023	DMMA#1-098	4505	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,250.00	42.25			1595	642255
99	12/08/2023	DMMA#1-099	4506	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,960.00	41.96			818	642261
100	12/12/2023	DMMA#1-100	4507	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,230.00	39.23			118	642497
101	12/12/2023	DMMA#1-101	4508	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,760.00	35.76			10	642527
102	12/12/2023	DMMA#1-102	4509	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,080.00	37.08			1593	642512
103	12/12/2023	DMMA#1-103	4510	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	29,260.00	29.26			1596	642505
104	12/12/2023	DMMA#1-104	4511	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,310.00	38.31			5090	642529
105	12/12/2023	DMMA#1-105	4512	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,780.00	35.78			1322	642541
106	12/12/2023	DMMA#1-106	4513	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,780.00	42.78			5011	642545
107	12/12/2023	DMMA#1-107	4514	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	31,270.00	31.27			810	642556
108	12/12/2023	DMMA#1-108	4515	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,710.00	42.71			826	642565
109	12/12/2023	DMMA#1-109	4516	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,210.00	37.21			107	642574

110	12/12/2023	DMMA#1-110	4517	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,070.00	41.07			825	642586
111	12/12/2023	DMMA#1-111	4518	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,340.00	40.34			801	642605
112	12/12/2023	DMMA#1-112	4519	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,370.00	40.37			105	642640
113	12/12/2023	DMMA#1-113	4520	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,450.00	43.45			1593	642636
114	12/12/2023	DMMA#1-114	4521	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,290.00	40.29			1596	642630
115	12/12/2023	DMMA#1-115	4522	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,070.00	39.07			118	642627
116	12/12/2023	DMMA#1-116	4523	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	47,210.00	47.21			10	642662
117	12/12/2023	DMMA#1-117	4524	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,130.00	40.13			5090	642670
118	12/12/2023	DMMA#1-118	4525	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,870.00	43.87			5011	642666
119	12/12/2023	DMMA#1-119	4551	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,880.00	34.88			826	642685
120	12/13/2023	DMMA#1-120	4552	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	45,660.00	45.66			818	642719
121	12/13/2023	DMMA#1-121	4553	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,820.00	38.82			118	642722
122	12/13/2023	DMMA#1-122	4554	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,660.00	40.66			1596	642742
123	12/13/2023	DMMA#1-123	4555	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,250.00	42.25			1322	642776
124	12/13/2023	DMMA#1-124	4556	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,070.00	44.07			5011	642781
125	12/13/2023	DMMA#1-125	4557	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,510.00	40.51			1324	642792
126	12/13/2023	DMMA#1-126	4558	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,290.00	37.29			801	642801
127	12/13/2023	DMMA#1-127	4559	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,550.00	36.55			805	642800
128	12/13/2023	DMMA#1-128	4560	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,450.00	41.45			5090	642817
129	12/13/2023	DMMA#1-129	4561	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,810.00	39.81			107	642806
130	12/13/2023	DMMA#1-130	4562	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,680.00	42.68			826	642807
131	12/13/2023	DMMA#1-131	4563	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,530.00	41.53			2011	642816
132	12/13/2023	DMMA#1-132	4564	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	45,650.00	45.65			105	642820
133	12/13/2023	DMMA#1-133	4565	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	45,930.00	45.93			1598	642823
134	12/13/2023	DMMA#1-134	4566	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	46,340.00	46.34			818	642865
135	12/13/2023	DMMA#1-135	4567	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,220.00	42.22			825	642852
136	12/13/2023	DMMA#1-136	4568	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,860.00	42.86			1596	642855
137	12/13/2023	DMMA#1-137	4569	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,970.00	44.97			118	642864
138	12/13/2023	DMMA#1-138	4570	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,720.00	44.72			5011	642897
139	12/13/2023	DMMA#1-139	4571	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,300.00	42.30			826	642903
140	12/14/2023	DMMA#1-140	4572	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,970.00	44.97			105	642940
141	12/14/2023	DMMA#1-141	4573	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,890.00	41.89			1598	642959
142	12/14/2023	DMMA#1-142	4574	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,800.00	42.80			825	642945
143	12/14/2023	DMMA#1-143	4575	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,520.00	44.52			1596	642939
144	12/14/2023	DMMA#1-144	4376	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,950.00	44.95			1324	642974
145	12/14/2023	DMMA#1-145	4377	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,570.00	36.57			801	642983
146	12/14/2023	DMMA#1-146	4378	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,900.00	33.90			810	642982
147	12/14/2023	DMMA#1-147	4379	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,970.00	44.97			5090	643000
148	12/14/2023	DMMA#1-148	4380	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,840.00	39.84			1323	643001
149	12/14/2023	DMMA#1-149	4381	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,030.00	41.03			826	642992
150	12/14/2023	DMMA#1-150	4382	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,210.00	43.21			518	642997
151	12/14/2023	DMMA#1-151	4383	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,670.00	37.67			10	643004
152	12/14/2023	DMMA#1-152	4384	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,620.00	41.62			107	643012
153	12/14/2023	DMMA#1-153	4385	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,580.00	34.58			111	643013
154	12/14/2023	DMMA#1-154	4386	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,530.00	37.53			2011	643019
155	12/14/2023	DMMA#1-155	4387	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,680.00	42.68			118	643028
156	12/14/2023	DMMA#1-156	4388	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	45,780.00	45.78			818	643036
157	12/14/2023	DMMA#1-157	4389	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,570.00	41.57			1596	643056
158	12/14/2023	DMMA#1-158	4390	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,850.00	40.85			825	643054
159	12/14/2023	DMMA#1-159	4391	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,600.00	36.60			105	643065
160	12/14/2023	DMMA#1-160	4392	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,840.00	39.84			1598	643067
161	12/14/2023	DMMA#1-163	4395	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	31,390.00	31.39			826	643087
162	12/15/2023	DMMA#1-161	4393	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,650.00	33.65			810	643148
163	12/15/2023	DMMA#1-162	4394	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,330.00	37.33			801	643146
164	12/15/2023	DMMA#1-164	4396	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,130.00	39.13			5090	643126
165	12/15/2023	DMMA#1-165	4397	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,190.00	44.19			2011	643131
166	12/15/2023	DMMA#1-166	4398	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	31,700.00	31.70			10	643151
167	12/15/2023	DMMA#1-167	4399	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,920.00	39.92			1596	643137
168	12/15/2023	DMMA#1-168	4400	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	46,180.00	46.18			1322	643162
169	12/15/2023	DMMA#1-169	4401	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,690.00	41.69			811	643170
170	12/15/2023	DMMA#1-170	4402	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,290.00	41.29			5011	643172

171	12/15/2023	DMMA#1-171	4403	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,910.00	38.91			805	643189
172	12/15/2023	DMMA#1-172	4404	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,320.00	33.32			808	643188
173	12/15/2023	DMMA#1-173	4405	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,850.00	43.85			518	643204
174	12/15/2023	DMMA#1-174	4406	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,300.00	38.30			107	643212
175	12/18/2023	DMMA#1-175	4407	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,620.00	41.62			818	643437
176	12/18/2023	DMMA#1-176	4408	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,580.00	42.58			118	643377
177	12/18/2023	DMMA#1-177	4409	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,060.00	36.06			808	643385
178	12/18/2023	DMMA#1-178	4410	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,570.00	34.57			10	643384
179	12/18/2023	DMMA#1-179	4411	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,230.00	35.23			518	643396
180	12/18/2023	DMMA#1-180	4412	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		31.57	69,600	34.80	904	1256658
181	12/18/2023	DMMA#1-181	4413	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		20.69	45,620	22.81	905	1256661
182	12/18/2023	DMMA#1-182	4414	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,740.00	39.74			105	643430
183	12/18/2023	DMMA#1-183	4415	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,690.00	38.69			1596	643458
184	12/18/2023	DMMA#1-184	4416	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		23.93	52,760	26.38	904	1256699
185	12/18/2023	DMMA#1-185	4417	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,680.00	40.68			1593	643473
186	12/18/2023	DMMA#1-186	4418	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		26.28	57,940	28.97	905	1256706
187	12/18/2023	DMMA#1-187	4419	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,420.00	40.42			118	643482
188	12/18/2023	DMMA#1-188	4420	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,160.00	38.16			10	643486
189	12/19/2023	DMMA#1-189	4421	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,140.00	34.14			808	643544
190	12/19/2023	DMMA#1-190	4422	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,420.00	43.42			105	643531
191	12/19/2023	DMMA#1-191	4423	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,360.00	41.36			1596	643541
192	12/19/2023	DMMA#1-192	4424	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,690.00	38.69			5011	643553
193	12/19/2023	DMMA#1-193	4425	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,350.00	41.35			5012	643558
194	12/19/2023	DMMA#1-194	4526	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,430.00	42.43			809	643562
195	12/19/2023	DMMA#1-195	4527	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		28.02	61,780	30.89	904	1256748
196	12/19/2023	DMMA#1-196	4528	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		24.29	53,540	26.77	905	1256749
197	12/19/2023	DMMA#1-197	4529	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,620.00	39.62			1323	643573
198	12/19/2023	DMMA#1-198	4530	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,100.00	40.10			518	643575
199	12/19/2023	DMMA#1-199	4531	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,950.00	41.95			1593	643592
200	12/19/2023	DMMA#1-200	4532	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	31,670.00	31.67			111	643602
201	12/19/2023	DMMA#1-201	4533	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,250.00	42.25			805	643610
202	12/19/2023	DMMA#1-202	4534	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,850.00	39.85			811	643640
203	12/19/2023	DMMA#2-203	4535	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,190.00	42.19			5090	643661
204	12/19/2023	DMMA#2-204	4536	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,720.00	38.72			559	643652
205	12/19/2023	DMMA#2-205	4540	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		25.64	56,520	28.26	904	1256779
206	12/19/2023	DMMA#2-206	4541	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		29.91	65,940	32.97	905	1256783
207	12/19/2023	DMMA#2-207	4539	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	45,100.00	45.10			1596	643672
208	12/19/2023	DMMA#2-209	4542	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		25.90	57,100	28.55	905	1256803
209	12/20/2023	DMMA#2-208	4538	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,460.00	43.46			5011	643728
210	12/20/2023	DMMA#2-210	4543	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		26.93	59,380	29.69	904	1256817
211	12/20/2023	DMMA#2-211	4544	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	42,920.00	42.92			5090	643762
212	12/20/2023	DMMA#2-212	4545	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,340.00	44.34			811	643756
213	12/20/2023	DMMA#2-213	4546	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,400.00	36.40			809	643757
214	12/20/2023	DMMA#2-214	4547	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,950.00	38.95			604	643759
215	12/20/2023	DMMA#2-215	4548	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,370.00	40.37			5012	643772
216	12/20/2023	DMMA#2-216	4549	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,650.00	41.65			9192	643777
217	12/20/2023	DMMA#2-217	4550	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,630.00	40.63			1323	643784
218	12/20/2023	DMMA#2-218	4077	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		30.89	68,100	34.05	904	1256831
219	12/20/2023	DMMA#2-219	4078	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,190.00	35.19			111	643791
220	12/20/2023	DMMA#2-220	4079	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,330.00	39.33			1593	643809
221	12/20/2023	DMMA#2-221	4080	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,110.00	36.11			805	643814
222	12/20/2023	DMMA#2-222	4081	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		27.53	60,700	30.35	927	1256853
223	12/20/2023	DMMA#2-223	4082	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,240.00	39.24			559	643840
224	12/20/2023	DMMA#2-225	4084	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		27.87	61,440	30.72	904	1256870
225	12/20/2023	DMMA#2-226	4085	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		29.63	65,320	32.66	927	1256879
226	12/21/2023	DMMA#2-224	4083	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,680.00	37.68			5011	643902
227	12/21/2023	DMMA#2-227	4086	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,710.00	41.71			5090	643899
228	12/21/2023	DMMA#2-228	4087	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,740.00	40.74			1593	643891
229	12/21/2023	DMMA#2-229	4088	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,700.00	39.70			9192	643944
230	12/21/2023	DMMA#2-230	4089	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,380.00	36.38			5012	643936
231	12/21/2023	DMMA#2-231	4090	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		26.68	58,820	29.41	904	1256924

232	12/21/2023	DMMA#2-232	4091	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		27.40	60,400	30.20	927	1256932
233	12/21/2023	DMMA#2-233	4092	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	26,840.00	26.84			808	643951
234	12/21/2023	DMMA#2-234	4093	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,690.00	36.69			10	643957
235	12/21/2023	DMMA#2-235	4094	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,180.00	41.18			111	643978
236	12/21/2023	DMMA#2-236	4095	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		27.31	60,200	30.10	904	1256973
237	12/21/2023	DMMA#2-237	4096	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,590.00	38.59			1593	644021
238	12/21/2023	DMMA#2-238	4097	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		31.64	69,760	34.88	927	1256994
239	12/21/2023	DMMA#2-239	4098	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,490.00	40.49			1598	644025
240	12/21/2023	DMMA#2-240	4099	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,510.00	41.51			5090	644041
241	12/21/2023	DMMA#2-241	4100	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,420.00	37.42			105	644042
242	12/21/2023	DMMA#2-242	5401	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,910.00	35.91			5011	644043
243	12/21/2023	DMMA#2-245	5404	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		24.89	54,880	27.44	904	1257018
244	12/22/2023	DMMA#2-243	5402	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,740.00	41.74			5012	644116
245	12/22/2023	DMMA#2-244	5403	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	31,650.00	31.65			811	644107
246	12/22/2023	DMMA#2-246	5405	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	34,840.00	34.84			1593	644091
247	12/22/2023	DMMA#2-247	5406	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,750.00	40.75			118	644134
248	12/22/2023	DMMA#2-248	5407	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,670.00	33.67			801	644145
249	12/22/2023	DMMA#2-249	5408	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		24.35	53,680	26.84	904	1257052
250	12/22/2023	DMMA#2-250	5409	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		26.67	58,800	29.40	927	1257068
251	12/22/2023	DMMA#2-251	5410	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	24,450.00	24.45			809	644149
252	12/22/2023	DMMA#2-252	5411	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	39,060.00	39.06			5090	644181
253	12/22/2023	DMMA#2-253	5412	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	41,820.00	41.82			10	644182
254	12/22/2023	DMMA#2-254	5413	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	47,850.00	47.85			818	644198
255	12/22/2023	DMMA#2-255	5419	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		25.30	55,780	27.89	904	1257098
256	12/22/2023	DMMA#2-256	5415	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	43,390.00	43.39			111	644231
257	12/22/2023	DMMA#2-257	5416	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,910.00	44.91			105	644233
258	12/22/2023	DMMA#2-258	5417	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	48,410.00	48.41			1596	644245
259	12/27/2023	DMMA#2-259	5420	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		29.39	64,800	32.40	904	1257176
260	12/27/2023	DMMA#2-260	5421	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,090.00	40.09			118	644373
261	12/27/2023	DMMA#2-261	5422	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,480.00	35.48			10	644381
262	12/27/2023	DMMA#2-262	5423	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	59,180.00	59.18			811	644410
263	12/27/2023	DMMA#2-263	5424	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,510.00	33.51			808	644424
264	12/27/2023	DMMA#2-264	5425	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,740.00	40.74			4060	644438
265	12/27/2023	DMMA#2-265	5476	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	35,420.00	35.42			1596	644444
266	12/27/2023	DMMA#2-266	5477	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		27.95	61,620	30.81	904	1257218
267	12/28/2023	DMMA#2-267	5478	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	51,730.00	51.73			5090	644483
268	12/28/2023	DMMA#2-268	5479	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	44,000.00	44.00			118	644491
269	12/28/2023	DMMA#2-269	5480	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	38,160.00	38.16			10	644497
270	12/28/2023	DMMA#2-270	5481	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	37,700.00	37.70			808	644498
271	12/28/2023	DMMA#2-271	5482	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		30.35	66,920	33.46	927	1257249
272	12/28/2023	DMMA#2-272	5484	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		31.55	69,560	34.78	927	1257279
273	12/29/2023	DMMA#2-273	5485	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		27.07	59,680	29.84	927	1257292
274	12/29/2023	DMMA#2-274	5486	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		28.57	62,980	31.49	927	1257313
275	01/02/2024	DMMA#2-275	5488	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		27.02	59,560	29.78	927	1257328
276	01/02/2024	DMMA#2-276	5489	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		28.43	62,680	31.34	904	1257324
277	01/02/2024	DMMA#2-277	5493	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,980.00	36.98			1593	644842
278	01/02/2024	DMMA#2-278	5494	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	33,050.00	33.05			1598	644828
279	01/02/2024	DMMA#2-279	5495	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	40,770.00	40.77			4060	644846
280	01/02/2024	DMMA#2-280	5490	Chedoke Creek	Allied Waste Niagara	Culp Transport	Non-Hazardous Sediment		27.82	61,340	30.67	734	1257321
281	01/02/2024	DMMA#2-281	5499	Chedoke Creek	WM Twin Creeks Landfill	TERRACLEAN CONSULTANTS INC.	Non-Hazardous Sediment	36,730.00	36.73			1595	644849



STONEY CREEK LF
65 GREEN MOUNTAIN RD
STONEY CREEK, ON

ECA A181008

001643
GFL SOIL - DORCHESTER
600 HUDSON DRIVE
DORCHESTER, ON N0L 1G5

INVOICE
INBOUND

SITE	CELL	OPERATOR	TICKET #	
GA	5724	mdavid	56475	
TRUCK			LICENSE	
1936 - 2115 NORTH SE				
REFERENCE			IN	OUT
TERRACLEAN #803 / AV87352			11/21/23 8:13 am	11/21/23 8:34 am

CONTRACT: 1936 - 2115 NORTH SERVICE RD W OAKVILLE					GROSS	53,520.00KGS			
BOL: 23146					TARE	17,280.00KGS			
					NET	36,240.00 KGS			
QTY	UNIT	DESCRIPTION	LD	0.00	ORIGIN	%	RATE	TAX	TOTAL
36.24	MT	CONTAMINATED SOIL			OT	100.00			

HST# 81968 1594 RT001

Total
Paid
Change
Check#
Recpt #

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE: _____

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STONE CREEK LF
65 GREEN MOUNTAIN RD
STONE CREEK, ON

ECA A181008

001643
GFL SOIL - DORCHESTER
600 HUDSON DRIVE
DORCHESTER, ON N0L 1G5

INVOICE
INBOUND

SITE	CELL	OPERATOR	TICKET #	
GA	5724	mdavid	56487	
TRUCK			LICENSE	
1936 - 2115 NORTH SE				
REFERENCE			IN	OUT
TERRACLEAN #801 / BW81062			11/21/23 8:43 am	11/21/23 9:12 am

CONTRACT: 1936 - 2115 NORTH SERVICE RD W OAKVILLE				GROSS 51,260.00KGS					
BOL: 23174				TARE 17,900.00KGS					
				NET 33,360.00 KGS					
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL		
33.36	MT	CONTAMINATED SOIL LD 0.00	OT	100.00					

HST# 81968 1594 RT001

Total
Paid
Change
Check#
Recpt #

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE: _____

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STONEY CREEK LF
65 GREEN MOUNTAIN RD
STONEY CREEK, ON

ECA A181008

001643
GFL SOIL - DORCHESTER
600 HUDSON DRIVE
DORCHESTER, ON N0L 1G5

INVOICE
INBOUND

SITE	CELL	OPERATOR	TICKET #	
GA	5724	mdavid	56501	
TRUCK			LICENSE	
1936 - 2115 NORTH SE				
REFERENCE			IN	OUT
TERRACLEAN #808 / BT56370			11/21/23 9:09 am	11/21/23 9:44 am

CONTRACT: 1936 - 2115 NORTH SERVICE RD W OAKVILLE
BOL: 23131

GROSS 47,920.00KGS
TARE 17,460.00KGS
NET 30,460.00 KGS

QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
30.46	MT	CONTAMINATED SOIL LD	0.00	OT	100.00		

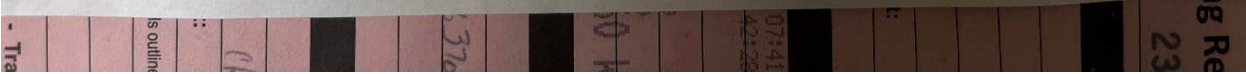
HST# 81968 1594 RT001

Total
Paid
Change
Check#
Recpt #

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE: _____

CUSTOMER COPY





STONEY CREEK LF
65 GREEN MOUNTAIN RD
STONEY CREEK, ON

ECA A181008

001643
GFL SOIL - DORCHESTER
600 HUDSON DRIVE
DORCHESTER, ON N0L 1G5

INVOICE
INBOUND

SITE	CELL	OPERATOR	TICKET #	
GA	5724	mdavid	56502	
TRUCK			LICENSE	
1936 - 2115 NORTH SE				
REFERENCE			IN	OUT
TERRACLEAN #805 / AZ31554			11/21/23 9:10 am	11/21/23 9:45 am

CONTRACT: 1936 - 2115 NORTH SERVICE RD W OAKVILLE
BOL: 23180

GROSS 55,410.00KGS
TARE 17,620.00KGS
NET 37,790.00 KGS

QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
37.79	MT	CONTAMINATED SOIL LD	0.00	OT	100.00		

HST# 81968 1594 RT001

Total
Paid
Change
Check#
Recpt #

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE: _____

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STONEY CREEK LF
65 GREEN MOUNTAIN RD
STONEY CREEK, ON

ECA A181008

001643
GFL SOIL - DORCHESTER
600 HUDSON DRIVE
DORCHESTER, ON N0L 1G5

INVOICE
INBOUND

SITE		CELL	OPERATOR	TICKET #	
GA	5724		mdavid	56525	
TRUCK				LICENSE	
1936 - 2115 NORTH SE					
REFERENCE				IN	OUT
TERRACLEAN #803 / AV87352				11/21/23 10:07 am	11/21/23 10:42 am

CONTRACT: 1936 - 2115 NORTH SERVICE RD W OAKVILLE
BOL: 23148

GROSS 54,760.00KGS
TARE 17,400.00KGS
NET 37,360.00 KGS

QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
37.36	MT	CONTAMINATED SOIL LD	OT	100.00			

HST# 81968 1594 RT001

I hereby certify that this load does not contain any unauthorized hazardous waste.

Total
Paid
Change
Check#
Recpt #

SIGNATURE: _____

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STONEY CREEK LF
65 GREEN MOUNTAIN RD
STONEY CREEK, ON

ECA A181008

001643
GFL SOIL - DORCHESTER
600 HUDSON DRIVE
DORCHESTER, ON NOL 1G5

INVOICE
INBOUND

SITE	CELL	OPERATOR	TICKET #	
GA	5724	mdavid	56536	
TRUCK			LICENSE	
1936 - 2115 NORTH SE				
REFERENCE			IN	OUT
TERRACLEAN #801 / BW81062			11/21/23 10:36 am	11/21/23 11:17 am

CONTRACT: 1936 - 2115 NORTH SERVICE RD W OAKVILLE					GROSS	52,140.00KGS			
BOL: 23171					TARE	18,100.00KGS			
					NET	34,040.00 KGS			
QTY	UNIT	DESCRIPTION	LD	0.00	ORIGIN	%	RATE	TAX	TOTAL
34.04	MT	CONTAMINATED SOIL	LD	0.00	OT	100.00			

HST# 81968 1594 RT001

Total
Paid
Change
Check#
Recpt #

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE: _____

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STONEY CREEK LF
65 GREEN MOUNTAIN RD
STONEY CREEK, ON

ECA A181008

001643
GFL SOIL - DORCHESTER
600 HUDSON DRIVE
DORCHESTER, ON N0L 1G5

INVOICE
INBOUND

SITE	CELL	OPERATOR	TICKET #	
GA	5724	mdavid	56540	
TRUCK			LICENSE	
1936 - 2115 NORTH SE				
REFERENCE			IN	OUT
TERRACLEAN #808 / BT56370			11/21/23 10:59 am	11/21/23 11:26 am

CONTRACT: 1936 - 2115 NORTH SERVICE RD W OAKVILLE
BOL: 23128

GROSS 48,630.00KGS
TARE 18,200.00KGS
NET 30,430.00 KGS

QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
30.43	MT	CONTAMINATED SOIL LD	OT	100.00			

HST# 81968 1594 RT001

I hereby certify that this load does not contain any unauthorized hazardous waste.

Total
Paid
Change
Check#
Recpt #

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SIGNATURE: _____



STONEY CREEK LF
65 GREEN MOUNTAIN RD
STONEY CREEK, ON

ECA A181008

001643
GFL SOIL - DORCHESTER
600 HUDSON DRIVE
DORCHESTER, ON N0L 1G5

INVOICE
INBOUND

SITE	CELL	OPERATOR	TICKET #	
GA	5724	mdavid	56543	
TRUCK			LICENSE	
1936 - 2115 NORTH SE				
REFERENCE			IN	OUT
TERRACLEAN #805 / AZ31554			11/21/23 11:13 am	11/21/23 11:40 am

CONTRACT: 1936 - 2115 NORTH SERVICE RD W OAKVILLE
BOL: 23181

GROSS 53,290.00KGS
TARE 17,650.00KGS
NET 35,640.00 KGS

QTY	UNIT	DESCRIPTION	LD	0.00	ORIGIN	%	RATE	TAX	TOTAL
35.64	MT	CONTAMINATED SOIL	LD	0.00	OT	100.00			

HST# 81968 1594 RT001

Total
Paid
Change
Check#
Recpt #

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE: _____

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Total: 275.32 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641277

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# HTR803 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23163 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52640 kg*
In	12/01/2023 09:38:53	scale2-outEmily W			tare	17210 kg
Out	12/01/2023 09:38:53	scale2-outEmily W			net	35430 kg
					* Manual Weight	metric ton 35.43 t
Inbound	gross	116050.14 lbs			tare	37941.17 lbs
					net	78108.98 l tons
						39.04 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		35.43	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641284

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23186 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57160 kg	
In	12/01/2023 10:07:08	scale1	Wendy B		tare	17960 kg	
Out	12/01/2023 10:50:05	scale2-out	Emily W		net	39200 kg	
					metric ton	39.20 t	
Inbound	gross	126014.94 lbs		tare	39594.62 lbs	net 86420.32 l tons	43.20 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	39.20	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641276

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33074 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	47640 kg	
In	12/01/2023 09:50:17	scale1	Wendy B		tare	18500 kg	
Out	12/01/2023 10:41:35	scale2-out	Emily W		net	29140 kg	
					metric ton	29.14 t	
Inbound	gross	105027.14 lbs		tare	40785.10 lbs	net 64242.04 l tons	32.11 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	29.14	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641285

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# TERRACLEAN818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23263 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	48850 kg	
In	12/01/2023 10:11:40	scale1	Wendy B		tare	17350 kg	
Out	12/01/2023 11:04:36	scale2-out	Emily W		net	31500 kg	
					metric ton	31.50 t	
Inbound	gross	107694.71 lbs		tare	38249.81 lbs	net 69444.90 l tons	34.71 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	31.50	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641292

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29633 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52180 kg	
In	12/01/2023 10:32:02	scale1	Wendy B		tare	18120 kg	
Out	12/01/2023 11:18:45	scale2-out	Emily W		net	34060 kg	
					metric ton	34.06 t	
Inbound	gross	115036.03 lbs		tare	39947.35 lbs	net 75088.68 l tons	37.53 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	34.06	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641299

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23207 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52880 kg	
In	12/01/2023 10:44:20	scale1	Wendy B		tare	17600 kg	
Out	12/01/2023 11:23:28	scale2-out	Emily W		net	35280 kg	
					metric ton	35.28 t	
Inbound	gross	116579.25 lbs		tare	38800.96 lbs	net 77778.29 l tons	38.88 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		35.28	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641301

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36182 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56290 kg	
In	12/01/2023 10:49:54	scale1	Wendy B		tare	18720 kg	
Out	12/01/2023 11:32:51	scale2-out	Emily W		net	37570 kg	
					metric ton	37.57 t	
Inbound	gross	124096.93 lbs		tare	41270.11 lbs	net 82826.82 l tons	41.40 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.57	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641316

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26967 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50470 kg
In	12/01/2023 11:11:36	scale1	Wendy B		tare	17470 kg
Out	12/01/2023 12:13:39	scale2-out	Emily W		net	33000 kg
					metric ton	33.00 t
Inbound	gross	111266.16 lbs	tare	38514.36 lbs	net	72751.80 l tons
						36.37 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	33.00	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641307

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# 883 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35814 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50090 kg	
In	12/01/2023 10:57:53	scale1	Wendy B		tare	17710 kg	
Out	12/01/2023 12:27:38	scale2-out	Emily W		net	32380 kg	
					metric ton	32.38 t	
Inbound	gross	110428.41 lbs		tare	39043.47 lbs	net 71384.95 l tons	35.68 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	32.38	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641325

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35695 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57390 kg
In	12/01/2023 11:44:13	scale1	Wendy B		tare	18210 kg
Out	12/01/2023 12:58:34	scale2-out	Emily W		net	39180 kg
					metric ton	39.18 t
Inbound	gross	126521.99 lbs		tare	40145.77 lbs	net 86376.23 l tons
						43.18 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.18	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641336

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# 4060 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26968 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55370 kg	
In	12/01/2023 12:17:14	scale1	Wendy B		tare	17530 kg	
Out	12/01/2023 13:22:36	scale2-out	Emily W		net	37840 kg	
					metric ton	37.84 t	
Inbound	gross	122068.70 lbs		tare	38646.64 lbs	net 83422.06 l tons	41.70 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.84	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641322

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30101 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58960 kg
In	12/01/2023 11:32:49	scale1	Wendy B		tare	17800 kg
Out	12/01/2023 12:15:04	scale2-out	Emily W		net	41160 kg
					metric ton	41.16 t
Inbound	gross	129983.22 lbs	tare	39241.88 lbs	net	90741.34 l tons
						45.36 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.16	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641347

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# EURO616 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35070 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	48240 kg	
In	12/01/2023 12:39:05	scale1	Wendy B		tare	17960 kg	
Out	12/01/2023 13:52:25	scale2-out	Emily W		net	30280 kg	
					metric ton	30.28 t	
Inbound	gross	106349.90 lbs		tare	39594.62 lbs	net 66755.29 l tons	33.37 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	30.28	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641331

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 4326 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54170 kg	
In	12/01/2023 12:03:53	scale1	Wendy B		tare	17950 kg	
Out	12/01/2023 13:06:45	scale2-out	Emily W		net	36220 kg	
					metric ton	36.22 t	
Inbound	gross	119423.18 lbs		tare	39572.57 lbs	net 79850.61 l tons	39.91 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	36.22	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641345

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/01/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26898 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50370 kg	
In	12/01/2023 12:32:36	scale1	Wendy B		tare	16890 kg	
Out	12/01/2023 13:24:00	scale2-out	Emily W		net	33480 kg	
					metric ton	33.48 t	
Inbound	gross	111045.70 lbs		tare	37235.69 lbs	net 73810.01 l tons	36.89 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	33.48	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 525.72 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641466

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29634 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57310 kg
In	12/04/2023 10:03:47	scale1	Wendy B		tare	18120 kg
Out	12/04/2023 10:03:47		Wendy B		net	39190 kg
					metric ton	39.19 t
Inbound	gross	126345.63 lbs	tare	39947.35 lbs	net	86398.27 l tons
						43.19 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.19	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641467

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33075 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53360 kg	
In	12/04/2023 10:06:22	scale1	Wendy B		tare	18450 kg	
Out	12/04/2023 12:08:07	scale2-out	Emily W		net	34910 kg	
					metric ton	34.91 t	
Inbound	gross	117637.46 lbs		tare	40674.87 lbs	net 76962.59 l tons	38.47 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	34.91	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641482

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 4331 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56620 kg
In	12/04/2023 10:34:14	scale1	Wendy B		tare	18200 kg
Out	12/04/2023 12:10:42	scale2-out	Emily W		net	38420 kg
					metric ton	38.42 t
Inbound	gross	124824.45 lbs		tare	40123.72 lbs	net 84700.73 l tons
						42.34 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.42	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641502

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# 4060 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26946 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59840 kg
In	12/04/2023 11:34:01	scale1	Wendy B		tare	17380 kg
Out	12/04/2023 13:00:11	scale2-out	Emily W		net	42460 kg
					metric ton	42.46 t
Inbound	gross	131923.26 lbs	tare	38315.95 lbs	net	93607.32 l tons
						46.79 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.46	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641495

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23264 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56970 kg	
In	12/04/2023 11:16:06	scale1	Wendy B		tare	17250 kg	
Out	12/04/2023 12:43:06	scale2-out	Emily W		net	39720 kg	
					metric ton	39.72 t	
Inbound	gross	125596.06 lbs		tare	38029.35 lbs	net 87566.71 l tons	43.77 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.72	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641501

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36185 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60520 kg
In	12/04/2023 11:30:46	scale1	Wendy B		tare	18620 kg
Out	12/04/2023 12:41:33	scale2-out	Emily W		net	41900 kg
					metric ton	41.90 t
Inbound	gross	133422.39 lbs		tare	41049.65 lbs	net 92372.74 l tons
						46.17 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	41.90	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641514

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# DIRTBOYS801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35802 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59050 kg
In	12/04/2023 11:59:41	scale1	Wendy B		tare	17650 kg
Out	12/04/2023 13:06:30	scale2-out	Emily W		net	41400 kg

Inbound	gross	130181.63 lbs	tare	38911.19 lbs	net	91270.44 l tons	45.62 T
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Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.40	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641520

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# DIRTYBOY1322 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35845 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57220 kg
In	12/04/2023 12:12:02	scale1	Wendy B		tare	18500 kg
Out	12/04/2023 13:09:23	scale2-out	Emily W		net	38720 kg
					metric ton	38.72 t
Inbound	gross	126147.21 lbs	tare	40785.10 lbs	net	85362.11 l tons
						42.67 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.72	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641532

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/04/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25840 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60300 kg
In	12/04/2023 12:47:16	scale1	Wendy B		tare	17990 kg
Out	12/04/2023 13:35:55	scale2-out	Emily W		net	42310 kg
					metric ton	42.31 t
Inbound	gross	132937.38 lbs	tare	39660.75 lbs	net	93276.63 l tons
						46.63 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.31	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 359.03 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641593

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33079 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52500 kg
In	12/05/2023 06:47:57	scale1	Wendy B		tare	18570 kg
Out	12/05/2023 08:35:55	scale2-out	Wendy B		net	33930 kg
					metric ton	33.93 t
Inbound	gross	115741.50 lbs		tare	40939.42 lbs	net 74802.08 l tons
						37.39 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		33.93	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641613

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29635 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57300 kg	
In	12/05/2023 07:46:52	scale1	Wendy B		tare	17880 kg	
Out	12/05/2023 09:12:55	scale2-out	Wendy B		net	39420 kg	
					metric ton	39.42 t	
Inbound	gross	126323.58 lbs		tare	39418.25 lbs	net 86905.33 l tons	43.44 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.42	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641616

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26902 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52760 kg
In	12/05/2023 08:19:07	scale1	Emily W		tare	16890 kg
Out	12/05/2023 08:19:07		Emily W		net	35870 kg
					metric ton	35.87 t
Inbound	gross	116314.70 lbs	tare	37235.69 lbs	net	79079.00 l tons
						39.53 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.87	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641606

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36186 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59940 kg	
In	12/05/2023 07:27:23	scale1	Wendy B		tare	18560 kg	
Out	12/05/2023 08:51:12	scale2-out	Wendy B		net	41380 kg	
					metric ton	41.38 t	
Inbound	gross	132143.72 lbs		tare	40917.38 lbs	net 91226.35 l tons	45.60 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		41.38	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641595

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23265 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58800 kg	
In	12/05/2023 06:59:11	scale1	Wendy B		tare	17200 kg	
Out	12/05/2023 08:43:14	scale2-out	Wendy B		net	41600 kg	
					metric ton	41.60 t	
Inbound	gross	129630.48 lbs		tare	37919.12 lbs	net 91711.36 l tons	45.84 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		41.60	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641632

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23187 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58180 kg	
In	12/05/2023 09:57:50	scale1	Emily W		tare	17940 kg	
Out	12/05/2023 11:38:55	scale2-out	Wendy B		net	40240 kg	
					metric ton	40.24 t	
Inbound	gross	128263.63 lbs		tare	39550.52 lbs	net 88713.10 l tons	44.34 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.24	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641633

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# HTR811 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23119 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58630 kg	
In	12/05/2023 09:59:30	scale1	Emily W		tare	18520 kg	
Out	12/05/2023 11:40:16	scale2-out	Wendy B		net	40110 kg	
					metric ton	40.11 t	
Inbound	gross	129255.70 lbs		tare	40829.19 lbs	net 88426.51 l tons	44.20 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.11	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641640

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# JOTBATH1324 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23121 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55280 kg
In	12/05/2023 10:10:04	scale1	Emily W		tare	18010 kg
Out	12/05/2023 12:23:21	scale2-out	Wendy B		net	37270 kg
					metric ton	37.27 t

Inbound gross 121870.29 lbs tare 39704.85 lbs net 82165.44 l tons 41.07 T
 Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		37.27	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641641

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25410 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53660 kg	
In	12/05/2023 10:11:50	scale1	Emily W		tare	18190 kg	
Out	12/05/2023 11:49:16	scale2-out	Wendy B		net	35470 kg	
					metric ton	35.47 t	
Inbound	gross	118298.84 lbs		tare	40101.67 lbs	net 78197.16 l tons	39.09 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.47	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641657

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35696 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59720 kg
In	12/05/2023 10:58:01	scale1	Emily W		tare	18190 kg
Out	12/05/2023 12:36:47	scale2-out	Wendy B		net	41530 kg

Inbound	gross	131658.71 lbs	tare	40101.67 lbs	net	91557.04 l tons	45.77 T
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Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.53	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641715

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33080 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55120 kg	
In	12/05/2023 13:18:38	scale1	Emily W		tare	18420 kg	
Out	12/05/2023 14:05:22	scale2-out	Wendy B		net	36700 kg	
					metric ton	36.70 t	
Inbound	gross	121517.55 lbs		tare	40608.73 lbs	net 80908.82 l tons	40.44 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	36.70	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641716

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36187 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59590 kg	
In	12/05/2023 13:20:08	scale1	Emily W		tare	18400 kg	
Out	12/05/2023 14:11:52	scale2-out	Wendy B		net	41190 kg	
					metric ton	41.19 t	
Inbound	gross	131372.11 lbs		tare	40564.64 lbs	net 90807.47 l tons	45.39 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.19	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641717

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23266 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55710 kg	
In	12/05/2023 13:21:54	scale1	Emily W		tare	17180 kg	
Out	12/05/2023 14:29:33	scale2-out	Wendy B		net	38530 kg	
					metric ton	38.53 t	
Inbound	gross	122818.27 lbs		tare	37875.03 lbs	net 84943.24 l tons	42.46 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		38.53	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641722

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26903 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55180 kg
In	12/05/2023 13:32:05	scale1	Emily W		tare	17340 kg
Out	12/05/2023 14:35:49	scale2-out	Emily W		net	37840 kg
					metric ton	37.84 t
Inbound	gross	121649.83 lbs	tare	38227.76 lbs	net	83422.06 l tons
						41.70 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.84	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641750

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/05/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29636 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53840 kg	
In	12/05/2023 15:25:41	scale1	Emily W		tare	18130 kg	
Out	12/05/2023 16:46:33	scale2-out	Emily W		net	35710 kg	
					metric ton	35.71 t	
Inbound	gross	118695.66 lbs		tare	39969.40 lbs	net 78726.27 l tons	39.35 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		35.71	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 576.79 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641795

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# HTR811 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23120 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57400 kg	
In	12/06/2023 07:45:32	scale1	Wendy B		tare	18120 kg	
Out	12/06/2023 10:54:37	scale2-out	Emily W		net	39280 kg	
					metric ton	39.28 t	
Inbound	gross	126544.04 lbs		tare	39947.35 lbs	net 86596.69 l tons	43.29 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		39.28	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641794

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23188 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56710 kg
In	12/06/2023 07:43:57	scale1	Wendy B		tare	18100 kg
Out	12/06/2023 10:47:30	scale2-out	Emily W		net	38610 kg
					metric ton	38.61 t
Inbound	gross	125022.87 lbs	tare	39903.26 lbs	net	85119.61 l tons
						42.55 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.61	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641800

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25411 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50370 kg
In	12/06/2023 07:57:43	scale1	Wendy B		tare	17950 kg
Out	12/06/2023 09:56:40	scale2-out	Emily W		net	32420 kg

Inbound	gross	111045.70 lbs	tare	39572.57 lbs	net	71473.13 l tons	35.73 T
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Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	32.42	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641784

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26979 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58220 kg	
In	12/06/2023 07:18:03	scale1	Wendy B		tare	17440 kg	
Out	12/06/2023 08:50:20	scale2-out	Emily W		net	40780 kg	
					metric ton	40.78 t	
Inbound	gross	128351.81 lbs		tare	38448.22 lbs	net 89903.59 l tons	44.94 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		40.78	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641808

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30104 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	63020 kg	
In	12/06/2023 08:43:35	scale1	Wendy B		tare	17790 kg	
Out	12/06/2023 09:44:58	scale2-out	Emily W		net	45230 kg	
					metric ton	45.23 t	
Inbound	gross	138933.89 lbs		tare	39219.83 lbs	net 99714.06 l tons	49.84 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	45.23	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641805

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35697 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60330 kg
In	12/06/2023 08:26:16	scale1	Wendy B		tare	18070 kg
Out	12/06/2023 09:32:45	scale2-out	Emily W		net	42260 kg
					metric ton	42.26 t

Inbound gross 133003.52 lbs tare 39837.12 lbs net 93166.40 l tons 46.57 T
 Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		42.26	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641809

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33081 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57470 kg	
In	12/06/2023 08:45:21	scale1	Wendy B		tare	18630 kg	
Out	12/06/2023 10:07:35	scale2-out	Emily W		net	38840 kg	
					metric ton	38.84 t	
Inbound	gross	126698.36 lbs		tare	41071.70 lbs	net 85626.66 l tons	42.80 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.84	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641863

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36189 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	61120 kg
In	12/06/2023 11:49:44	scale1	Wendy B		tare	18640 kg
Out	12/06/2023 12:16:31	scale2-out	Emily W		net	42480 kg
					metric ton	42.48 t
Inbound	gross	134745.15 lbs		tare	41093.74 lbs	net 93651.41 l tons
						46.81 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		42.48	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641879

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23210 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60430 kg	
In	12/06/2023 12:20:24	scale1	Wendy B		tare	17660 kg	
Out	12/06/2023 13:28:55	scale2-out	Emily W		net	42770 kg	
					metric ton	42.77 t	
Inbound	gross	133223.98 lbs		tare	38933.24 lbs	net 94290.74 l tons	47.13 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		42.77	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641873

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 4438 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59130 kg	
In	12/06/2023 12:10:30	scale1	Wendy B		tare	18080 kg	
Out	12/06/2023 13:06:05	scale2-out	Emily W		net	41050 kg	
					metric ton	41.05 t	
Inbound	gross	130358.00 lbs		tare	39859.17 lbs	net 90498.83 l tons	45.24 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		41.05	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641881

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# FLARE5012 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41045 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58070 kg	
In	12/06/2023 12:28:15	scale1	Wendy B		tare	16670 kg	
Out	12/06/2023 13:45:25	scale2-out	Emily W		net	41400 kg	
					metric ton	41.40 t	
Inbound	gross	128021.12 lbs		tare	36750.68 lbs	net 91270.44 l tons	45.62 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		41.40	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641901

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26980 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58160 kg	
In	12/06/2023 13:44:46	scale1	Wendy B		tare	17190 kg	
Out	12/06/2023 14:39:37	scale2-out	Emily W		net	40970 kg	
					metric ton	40.97 t	
Inbound	gross	128219.54 lbs		tare	37897.07 lbs	net 90322.46 l tons	45.15 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		40.97	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641918

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35698 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59290 kg
In	12/06/2023 14:28:08	scale1	Emily W		tare	17740 kg
Out	12/06/2023 15:16:01	scale2-out	Emily W		net	41550 kg
					metric ton	41.55 t
Inbound	gross	130710.73 lbs	tare	39109.60 lbs	net	91601.13 l tons
						45.79 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		41.55	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641925

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30105 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50130 kg
In	12/06/2023 14:47:55	scale1	Emily W		tare	17910 kg
Out	12/06/2023 15:22:14	scale2-out	Emily W		net	32220 kg
					metric ton	32.22 t
Inbound	gross	110516.60 lbs	tare	39484.39 lbs	net	71032.21 l tons
						35.51 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	32.22	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641920

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/06/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25412 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56870 kg	
In	12/06/2023 14:38:51	scale1	Emily W		tare	18190 kg	
Out	12/06/2023 15:05:05	scale2-out	Emily W		net	38680 kg	
					metric ton	38.68 t	
Inbound	gross	125375.60 lbs		tare	40101.67 lbs	net 85273.93 l tons	42.63 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.68	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature

Total: 598.54 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641974

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23192 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54880 kg	
In	12/07/2023 08:09:33	scale1	Wendy B		tare	18110 kg	
Out	12/07/2023 09:25:58	scale2-out	Emily W		net	36770 kg	
					metric ton	36.77 t	
Inbound	gross	120988.45 lbs		tare	39925.31 lbs	net 81063.14 l tons	40.52 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.77	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641959

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33083 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52570 kg	
In	12/07/2023 07:12:18	scale1	Wendy B		tare	18640 kg	
Out	12/07/2023 09:08:37	scale2-out	Emily W		net	33930 kg	
					metric ton	33.93 t	
Inbound	gross	115895.82 lbs		tare	41093.74 lbs	net 74802.08 l tons	37.39 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		33.93	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641984

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26905 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55490 kg	
In	12/07/2023 08:48:36	scale1	Wendy B		tare	17150 kg	
Out	12/07/2023 09:45:52	scale2-out	Emily W		net	38340 kg	
					metric ton	38.34 t	
Inbound	gross	122333.25 lbs		tare	37808.89 lbs	net 84524.36 l tons	42.25 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.34	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641969

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36190 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59180 kg	
In	12/07/2023 07:43:31	scale1	Wendy B		tare	18480 kg	
Out	12/07/2023 09:09:52	scale2-out	Emily W		net	40700 kg	
					metric ton	40.70 t	
Inbound	gross	130468.23 lbs		tare	40741.01 lbs	net 89727.22 l tons	44.85 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	40.70	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641983

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 4448 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55840 kg	
In	12/07/2023 08:40:09	scale1	Wendy B		tare	17940 kg	
Out	12/07/2023 09:39:22	scale2-out	Emily W		net	37900 kg	
					metric ton	37.90 t	
Inbound	gross	123104.86 lbs		tare	39550.52 lbs	net 83554.34 l tons	41.77 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.90	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641981

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29637 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56060 kg	
In	12/07/2023 08:37:11	scale1	Wendy B		tare	17850 kg	
Out	12/07/2023 09:36:58	scale2-out	Emily W		net	38210 kg	
					metric ton	38.21 t	
Inbound	gross	123589.88 lbs		tare	39352.11 lbs	net 84237.77 l tons	42.11 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		38.21	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641973

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23212 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52170 kg	
In	12/07/2023 08:07:47	scale1	Wendy B		tare	17260 kg	
Out	12/07/2023 09:19:30	scale2-out	Emily W		net	34910 kg	
					metric ton	34.91 t	
Inbound	gross	115013.98 lbs		tare	38051.40 lbs	net 76962.59 l tons	38.47 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	34.91	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 641997

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# FLARE5012 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41113 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56790 kg	
In	12/07/2023 09:46:42	scale1	Wendy B		tare	16790 kg	
Out	12/07/2023 10:36:34	scale2-out	Emily W		net	40000 kg	
					metric ton	40.00 t	
Inbound	gross	125199.23 lbs		tare	37015.23 lbs	net 88184.00 l tons	44.08 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.00	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642008

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# JOTBATH1324 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35803 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58220 kg
In	12/07/2023 10:15:22	scale1	Wendy B		tare	18130 kg
Out	12/07/2023 11:00:53	scale2-out	Emily W		net	40090 kg
					metric ton	40.09 t
Inbound	gross	128351.81 lbs	tare	39969.40 lbs	net	88382.41 l tons
						44.18 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.09	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642012

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25413 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	61670 kg	
In	12/07/2023 10:21:36	scale1	Wendy B		tare	17880 kg	
Out	12/07/2023 10:55:25	scale2-out	Emily W		net	43790 kg	
					metric ton	43.79 t	
Inbound	gross	135957.68 lbs	tare	39418.25 lbs	net	96539.43 l tons	48.26 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	43.79	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642025

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30106 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60940 kg	
In	12/07/2023 10:51:40	scale1	Wendy B		tare	17700 kg	
Out	12/07/2023 11:16:22	scale2-out	Emily W		net	43240 kg	
					metric ton	43.24 t	
Inbound	gross	134348.32 lbs		tare	39021.42 lbs	net 95326.90 l tons	47.65 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		43.24	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642096

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# 4060 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26949 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54850 kg
In	12/07/2023 13:56:53	scale1	Wendy B		tare	17340 kg
Out	12/07/2023 14:41:29	scale2-out	Emily W		net	37510 kg
					metric ton	37.51 t
Inbound	gross	120922.31 lbs	tare	38227.76 lbs	net	82694.55 l tons
						41.34 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.51	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642090

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33082 Grid

Destination CELL 4
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56980 kg	
In	12/07/2023 13:38:01	scale1	Wendy B		tare	18400 kg	
Out	12/07/2023 14:13:02	scale2-out	Emily W		net	38580 kg	
					metric ton	38.58 t	
Inbound	gross	125618.11 lbs		tare	40564.64 lbs	net 85053.47 l tons	42.52 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	38.58	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642094

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36191 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59340 kg	
In	12/07/2023 13:48:53	scale1	Wendy B		tare	18610 kg	
Out	12/07/2023 14:21:55	scale2-out	Emily W		net	40730 kg	
					metric ton	40.73 t	
Inbound	gross	130820.96 lbs		tare	41027.61 lbs	net 89793.36 l tons	44.88 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	40.73	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642101

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23193 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56120 kg
In	12/07/2023 14:18:16	scale1	Emily W		tare	17780 kg
Out	12/07/2023 15:13:34	scale2-out	Emily W		net	38340 kg
					metric ton	38.34 t
Inbound	gross	123722.15 lbs	tare	39197.79 lbs	net	84524.36 l tons
						42.25 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.34	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642102

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# HTR810 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23094 Grid

Destination CELL 4
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54160 kg
In	12/07/2023 14:19:45	scale1	Emily W		tare	17570 kg
Out	12/07/2023 15:12:03	scale2-out	Emily W		net	36590 kg
					metric ton	36.59 t
Inbound	gross	119401.14 lbs	tare	38734.82 lbs	net	80666.31 l tons
						40.32 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.59	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642114

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# NSGLOBAL2011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35934 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55400 kg
In	12/07/2023 15:09:06	scale1	Emily W		tare	17340 kg
Out	12/07/2023 15:46:43	scale2-out	Emily W		net	38060 kg
					metric ton	38.06 t
Inbound	gross	122134.84 lbs	tare	38227.76 lbs	net	83907.08 l tons
						41.94 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.06	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642106

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23216 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57990 kg
In	12/07/2023 14:32:32	scale1	Emily W		tare	17350 kg
Out	12/07/2023 15:10:32	scale2-out	Emily W		net	40640 kg
					metric ton	40.64 t
Inbound	gross	127844.75 lbs	tare	38249.81 lbs	net	89594.94 l tons
						44.79 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		40.64	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642110

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13761 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58510 kg
In	12/07/2023 14:50:03	scale1	Emily W		tare	18140 kg
Out	12/07/2023 15:14:26	scale2-out	Emily W		net	40370 kg
					metric ton	40.37 t
Inbound	gross	128991.15 lbs	tare	39991.44 lbs	net	88999.70 l tons
						44.49 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.37	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642116

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26906 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57620 kg	
In	12/07/2023 15:12:52	scale1	Emily W		tare	17350 kg	
Out	12/07/2023 15:53:30	scale2-out	Emily W		net	40270 kg	
					metric ton	40.27 t	
Inbound	gross	127029.05 lbs		tare	38249.81 lbs	net 88779.24 l tons	44.38 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		40.27	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642121

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29640 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52870 kg
In	12/07/2023 15:41:41	scale1	Emily W		tare	18120 kg
Out	12/07/2023 15:41:41		Emily W		net	34750 kg
					metric ton	34.75 t
Inbound	gross	116557.20 lbs	tare	39947.35 lbs	net	76609.85 l tons
						38.29 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	34.75	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642122

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# FLARE5012 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41046 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56010 kg
In	12/07/2023 15:43:33	scale1	Emily W		tare	16670 kg
Out	12/07/2023 15:43:33		Emily W		net	39340 kg
					metric ton	39.34 t
Inbound	gross	123479.65 lbs	tare	36750.68 lbs	net	86728.96 l tons
						43.35 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.34	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642123

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/07/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25414 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58820 kg
In	12/07/2023 16:15:46	scale1	Emily W		tare	18190 kg
Out	12/07/2023 16:15:46		Emily W		net	40630 kg
					metric ton	40.63 t
Inbound	gross	129674.57 lbs	tare	40101.67 lbs	net	89572.90 l tons
						44.77 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.63	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 893.69 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642182

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30107 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55230 kg
In	12/08/2023 08:59:18	scale1	Wendy B		tare	17590 kg
Out	12/08/2023 10:03:07	scale2-out	Emily W		net	37640 kg
					metric ton	37.64 t
Inbound	gross	121760.06 lbs	tare	38778.91 lbs	net	82981.14 l tons
						41.48 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.64	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642157

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23271 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57990 kg
In	12/08/2023 07:41:17	scale1	Wendy B		tare	17140 kg
Out	12/08/2023 08:20:27	scale2-out	Wendy B		net	40850 kg

Inbound	gross	127844.75 lbs	tare	37786.84 lbs	net	90057.91 l tons	45.02 T
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Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.85	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642172

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# HTR808 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23140 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	48080 kg	
In	12/08/2023 08:30:26	scale1	Wendy B		tare	17540 kg	
Out	12/08/2023 10:18:05	scale2-out	Emily W		net	30540 kg	
					metric ton	30.54 t	
Inbound	gross	105997.17 lbs		tare	38668.68 lbs	net 67328.48 l tons	33.66 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	30.54	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642184

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25837 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60660 kg	
In	12/08/2023 09:02:01	scale1	Wendy B		tare	18040 kg	
Out	12/08/2023 10:21:37	scale2-out	Emily W		net	42620 kg	
					metric ton	42.62 t	
Inbound	gross	133731.04 lbs		tare	39770.98 lbs	net 93960.05 l tons	46.97 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.62	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642170

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26981 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56400 kg	
In	12/08/2023 08:17:38	scale1	Wendy B		tare	17270 kg	
Out	12/08/2023 09:38:26	scale2-out	Emily W		net	39130 kg	
					metric ton	39.13 t	
Inbound	gross	124339.44 lbs		tare	38073.44 lbs	net 86266.00 l tons	43.12 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	39.13	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642153

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36192 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60390 kg	
In	12/08/2023 07:30:54	scale1	Wendy B		tare	19040 kg	
Out	12/08/2023 08:07:12	scale2-out	Wendy B		net	41350 kg	
					metric ton	41.35 t	
Inbound	gross	133135.79 lbs		tare	41975.58 lbs	net 91160.21 l tons	45.57 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		41.35	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642195

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# EURO604 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35734 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55450 kg
In	12/08/2023 09:41:42	scale1	Wendy B		tare	18120 kg
Out	12/08/2023 10:32:44	scale2-out	Emily W		net	37330 kg
					metric ton	37.33 t

Inbound gross 122245.07 lbs tare 39947.35 lbs net 82297.72 l tons 41.14 T
 Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		37.33	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642280

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# DIRTBOYS1323 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35846 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55930 kg
In	12/08/2023 14:37:32	scale1	Emily W		tare	18050 kg
Out	12/08/2023 15:21:29	scale2-out	Emily W		net	37880 kg

Inbound	gross	123303.28 lbs	tare	39793.03 lbs	net	83510.25 l tons	41.74 T
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Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.88	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642205

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25416 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62020 kg	
In	12/08/2023 10:09:11	scale1	Wendy B		tare	17940 kg	
Out	12/08/2023 10:33:48	scale2-out	Emily W		net	44080 kg	
					metric ton	44.08 t	
Inbound	gross	136729.29 lbs		tare	39550.52 lbs	net 97178.77 l tons	48.58 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	44.08	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642226

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# JOTBATH1324 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23211 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57980 kg	
In	12/08/2023 11:04:17	scale1	Wendy B		tare	18040 kg	
Out	12/08/2023 12:16:00	scale2-out	Emily W		net	39940 kg	
					metric ton	39.94 t	
Inbound	gross	127822.71 lbs		tare	39770.98 lbs	net 88051.72 l tons	44.01 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.94	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642227

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23215 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57230 kg	
In	12/08/2023 11:05:46	scale1	Wendy B		tare	17510 kg	
Out	12/08/2023 12:07:43	scale2-out	Emily W		net	39720 kg	
					metric ton	39.72 t	
Inbound	gross	126169.26 lbs		tare	38602.55 lbs	net 87566.71 l tons	43.77 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.72	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642235

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# STAR107 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 19726 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59310 kg	
In	12/08/2023 11:22:37	scale1	Wendy B		tare	16730 kg	
Out	12/08/2023 12:36:25	scale2-out	Emily W		net	42580 kg	
					metric ton	42.58 t	
Inbound	gross	130754.83 lbs		tare	36882.96 lbs	net 93871.87 l tons	46.92 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		42.58	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642255

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# 1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36193 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60560 kg	
In	12/08/2023 12:37:28	scale1	Wendy B		tare	18310 kg	
Out	12/08/2023 13:36:56	scale2-out	Emily W		net	42250 kg	
					metric ton	42.25 t	
Inbound	gross	133510.58 lbs		tare	40366.23 lbs	net 93144.35 l tons	46.56 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.25	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642261

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/08/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23272 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59050 kg
In	12/08/2023 13:01:31	scale1	Wendy B		tare	17090 kg
Out	12/08/2023 13:51:46	scale2-out	Emily W		net	41960 kg
					metric ton	41.96 t
Inbound	gross	130181.63 lbs	tare	37676.61 lbs	net	92505.02 l tons
						46.24 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.96	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 557.87 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642497

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33243 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57880 kg
In	12/12/2023 07:19:53	scale1	Wendy B		tare	18650 kg
Out	12/12/2023 08:08:01	scale2-out	Wendy B		net	39230 kg
					metric ton	39.23 t
Inbound	gross	127602.25 lbs	tare	41115.79 lbs	net	86486.46 l tons
						43.23 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.23	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642527

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29645 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53880 kg	
In	12/12/2023 08:44:23	scale1	Wendy B		tare	18120 kg	
Out	12/12/2023 08:44:23		Wendy B		net	35760 kg	
					metric ton	35.76 t	
Inbound	gross	118783.85 lbs		tare	39947.35 lbs	net 78836.50 l tons	39.41 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.76	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642512

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# DIRTBOYS1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36196 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55680 kg
In	12/12/2023 07:55:05	scale1	Wendy B		tare	18600 kg
Out	12/12/2023 08:26:34	scale2-out	Wendy B		net	37080 kg
					metric ton	37.08 t

Inbound gross 122752.13 lbs tare 41005.56 lbs net 81746.57 l tons 40.86 T
 Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		37.08	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642505

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13789 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	47180 kg	
In	12/12/2023 07:37:56	scale1	Wendy B		tare	17920 kg	
Out	12/12/2023 08:13:51	scale2-out	Wendy B		net	29260 kg	
					metric ton	29.26 t	
Inbound	gross	104013.03 lbs		tare	39506.43 lbs	net 64506.60 l tons	32.24 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	29.26	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642529

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26982 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55500 kg
In	12/12/2023 08:47:50	scale1	Wendy B		tare	17190 kg
Out	12/12/2023 08:47:50		Wendy B		net	38310 kg
					metric ton	38.31 t
Inbound	gross	122355.30 lbs	tare	37897.07 lbs	net	84458.23 l tons
						42.22 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.31	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642541

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# 1322 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 4512 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54300 kg	
In	12/12/2023 09:29:22	scale1	Wendy B		tare	18520 kg	
Out	12/12/2023 10:13:55	scale2-out	Wendy B		net	35780 kg	
					metric ton	35.78 t	
Inbound	gross	119709.78 lbs		tare	40829.19 lbs	net 78880.59 l tons	39.43 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.78	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642545

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25415 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60970 kg
In	12/12/2023 09:44:18	scale1	Wendy B		tare	18190 kg
Out	12/12/2023 09:44:18		Wendy B		net	42780 kg
					metric ton	42.78 t
Inbound	gross	134414.46 lbs	tare	40101.67 lbs	net	94312.79 l tons
						47.14 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.78	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642556

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# HTR810 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23026 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	48840 kg
In	12/12/2023 10:25:08	scale1	Wendy B		tare	17570 kg
Out	12/12/2023 10:25:08		Wendy B		net	31270 kg
					metric ton	31.27 t
Inbound	gross	107672.66 lbs	tare	38734.82 lbs	net	68937.84 l tons
						34.46 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	31.27	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642565

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30111 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60510 kg
In	12/12/2023 10:47:41	scale1	Wendy B		tare	17800 kg
Out	12/12/2023 10:47:41		Wendy B		net	42710 kg
					metric ton	42.71 t
Inbound	gross	133400.35 lbs	tare	39241.88 lbs	net	94158.47 l tons
						47.07 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.71	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642574

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# STAR107 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 19727 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54030 kg	
In	12/12/2023 11:06:00	scale1	Wendy B		tare	16820 kg	
Out	12/12/2023 11:46:42	scale2-out	Wendy B		net	37210 kg	
					metric ton	37.21 t	
Inbound	gross	119114.54 lbs	tare	37081.37 lbs	net	82033.17 l tons	41.01 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		37.21	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642586

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# JD825 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 17373 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59380 kg	
In	12/12/2023 11:31:10	scale1	Wendy B		tare	18310 kg	
Out	12/12/2023 11:52:00	scale2-out	Wendy B		net	41070 kg	
					metric ton	41.07 t	
Inbound	gross	130909.15 lbs		tare	40366.23 lbs	net 90542.92 l tons	45.26 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		41.07	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642605

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32907 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58300 kg
In	12/12/2023 12:08:05	scale1	Wendy B		tare	17960 kg
Out	12/12/2023 12:08:05		Wendy B		net	40340 kg
					metric ton	40.34 t
Inbound	gross	128528.18 lbs	tare	39594.62 lbs	net	88933.56 l tons
						44.45 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.34	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642640

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25841 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58580 kg
In	12/12/2023 13:16:13	scale1	Wendy B		tare	18210 kg
Out	12/12/2023 13:16:13		Wendy B		net	40370 kg
					metric ton	40.37 t
Inbound	gross	129145.47 lbs	tare	40145.77 lbs	net	88999.70 l tons
						44.49 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.37	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642636

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# DIRTBOYS1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36197 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62050 kg
In	12/12/2023 13:09:51	scale1	Wendy B		tare	18600 kg
Out	12/12/2023 13:09:51		Wendy B		net	43450 kg
					metric ton	43.45 t
Inbound	gross	136795.43 lbs	tare	41005.56 lbs	net	95789.87 l tons
						47.88 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	43.45	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642630

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13791 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58240 kg	
In	12/12/2023 13:01:22	scale1	Wendy B		tare	17950 kg	
Out	12/12/2023 14:10:40	scale2-out	Wendy B		net	40290 kg	
					metric ton	40.29 t	
Inbound	gross	128395.90 lbs	tare	39572.57 lbs	net	88823.33 l tons	44.40 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	40.29	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642627

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33242 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57570 kg
In	12/12/2023 12:56:01	scale1	Wendy B		tare	18500 kg
Out	12/12/2023 12:56:01		Wendy B		net	39070 kg
					metric ton	39.07 t
Inbound	gross	126918.82 lbs	tare	40785.10 lbs	net	86133.72 l tons
						43.06 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.07	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642662

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29646 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	65330 kg
In	12/12/2023 14:27:56	scale1	Wendy B		tare	18120 kg
Out	12/12/2023 14:27:56		Wendy B		net	47210 kg
					metric ton	47.21 t
Inbound	gross	144026.52 lbs		tare	39947.35 lbs	net 104079.17 tons
						52.03 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	47.21	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642670

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26983 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57320 kg
In	12/12/2023 14:50:33	scale1	Wendy B		tare	17190 kg
Out	12/12/2023 14:50:33		Wendy B		net	40130 kg
					metric ton	40.13 t
Inbound	gross	126367.67 lbs	tare	37897.07 lbs	net	88470.60 l tons
						44.22 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.13	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642666

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25417 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62060 kg
In	12/12/2023 14:42:23	scale1	Wendy B		tare	18190 kg
Out	12/12/2023 14:42:23		Wendy B		net	43870 kg
					metric ton	43.87 t
Inbound	gross	136817.48 lbs	tare	40101.67 lbs	net	96715.80 l tons
						48.34 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	43.87	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642685

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/12/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30112 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52680 kg
In	12/12/2023 15:42:10	scale1	Wendy B		tare	17800 kg
Out	12/12/2023 15:42:10		Wendy B		net	34880 kg
					metric ton	34.88 t
Inbound	gross	116138.33 lbs	tare	39241.88 lbs	net	76896.45 l tons
						38.44 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	34.88	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 780.07 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642719

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23280 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	63020 kg
In	12/13/2023 07:12:29	scale1	Wendy B		tare	17360 kg
Out	12/13/2023 08:29:19	scale2-out	Wendy B		net	45660 kg
					metric ton	45.66 t
Inbound	gross	138933.89 lbs		tare	38271.86 lbs	net 100662.04 tons
						50.32 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		45.66	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642722

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33241 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57630 kg	
In	12/13/2023 07:26:06	scale1	Wendy B		tare	18810 kg	
Out	12/13/2023 08:41:28	scale2-out	Wendy B		net	38820 kg	
					metric ton	38.82 t	
Inbound	gross	127051.10 lbs		tare	41468.53 lbs	net 85582.57 l tons	42.78 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		38.82	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642742

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13788 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58810 kg
In	12/13/2023 07:06:19	scale1	Wendy B		tare	18150 kg
Out	12/13/2023 08:37:22	scale2-out	Wendy B		net	40660 kg

Inbound	gross	129652.53 lbs	tare	40013.49 lbs	net	89639.04 l tons	44.81 T
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Comments REPLACEMENT TICKET FOR TICKET Nbr 642715

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.66	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642776

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# 1322 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 4555 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60770 kg
In	12/13/2023 10:01:02	scale1	Wendy B		tare	18520 kg
Out	12/13/2023 10:01:02		Wendy B		net	42250 kg
					metric ton	42.25 t
Inbound	gross	133973.54 lbs	tare	40829.19 lbs	net	93144.35 l tons
						46.56 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.25	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642781

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25418 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62260 kg
In	12/13/2023 10:08:49	scale1	Wendy B		tare	18190 kg
Out	12/13/2023 10:08:49		Wendy B		net	44070 kg
					metric ton	44.07 t
Inbound	gross	137258.40 lbs	tare	40101.67 lbs	net	97156.72 l tons
						48.57 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.07	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642792

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# JOTBATH1324 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32919 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58520 kg
In	12/13/2023 10:21:22	scale1	Wendy B		tare	18010 kg
Out	12/13/2023 10:21:22		Wendy B		net	40510 kg
					metric ton	40.51 t
Inbound	gross	129013.19 lbs	tare	39704.85 lbs	net	89308.35 l tons
						44.64 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.51	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642801

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32908 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55250 kg
In	12/13/2023 10:45:04	scale1	Wendy B		tare	17960 kg
Out	12/13/2023 10:45:04		Wendy B		net	37290 kg
					metric ton	37.29 t
Inbound	gross	121804.15 lbs	tare	39594.62 lbs	net	82209.53 l tons
						41.09 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.29	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642800

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32888 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54060 kg
In	12/13/2023 10:43:33	scale1	Wendy B		tare	17510 kg
Out	12/13/2023 10:43:33		Wendy B		net	36550 kg
					metric ton	36.55 t
Inbound	gross	119180.68 lbs	tare	38602.55 lbs	net	80578.13 l tons
						40.28 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.55	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642817

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26984 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58640 kg
In	12/13/2023 11:32:22	scale1	Wendy B		tare	17190 kg
Out	12/13/2023 11:32:22		Wendy B		net	41450 kg
					metric ton	41.45 t
Inbound	gross	129277.74 lbs	tare	37897.07 lbs	net	91380.67 l tons
						45.68 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.45	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642806

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# STAR107 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 03520 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56630 kg
In	12/13/2023 11:01:16	scale1	Wendy B		tare	16820 kg
Out	12/13/2023 11:01:16		Wendy B		net	39810 kg
					metric ton	39.81 t
Inbound	gross	124846.50 lbs	tare	37081.37 lbs	net	87765.13 l tons
						43.87 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.81	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642807

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30113 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60480 kg
In	12/13/2023 11:03:46	scale1	Wendy B		tare	17800 kg
Out	12/13/2023 11:03:46		Wendy B		net	42680 kg
					metric ton	42.68 t
Inbound	gross	133334.21 lbs	tare	39241.88 lbs	net	94092.33 l tons
						47.03 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.68	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642816

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# NS2011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35931 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59010 kg	
In	12/13/2023 11:30:13	scale1	Wendy B		tare	17480 kg	
Out	12/13/2023 13:01:27	scale2-out	Wendy B		net	41530 kg	
					metric ton	41.53 t	
Inbound	gross	130093.45 lbs		tare	38536.41 lbs	net 91557.04 l tons	45.77 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		41.53	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642820

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 27349 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	63860 kg
In	12/13/2023 11:39:09	scale1	Wendy B		tare	18210 kg
Out	12/13/2023 11:39:09		Wendy B		net	45650 kg
					metric ton	45.65 t
Inbound	gross	140785.76 lbs	tare	40145.77 lbs	net	100639.99 tons
						50.31 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	45.65	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642823

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26908 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	63280 kg
In	12/13/2023 11:44:59	scale1	Wendy B		tare	17350 kg
Out	12/13/2023 11:44:59		Wendy B		net	45930 kg
					metric ton	45.93 t
Inbound	gross	139507.09 lbs	tare	38249.81 lbs	net	101257.28 tons
						50.61 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	45.93	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642865

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23281 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	63520 kg
In	12/13/2023 13:25:09	scale1	Wendy B		tare	17180 kg
Out	12/13/2023 13:25:09		Wendy B		net	46340 kg
					metric ton	46.34 t
Inbound	gross	140036.19 lbs	tare	37875.03 lbs	net	102161.16 tons
						51.07 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	46.34	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642852

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# JD825 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 17374 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60530 kg
In	12/13/2023 12:56:57	scale1	Wendy B		tare	18310 kg
Out	12/13/2023 12:56:57		Wendy B		net	42220 kg
					metric ton	42.22 t
Inbound	gross	133444.44 lbs	tare	40366.23 lbs	net	93078.21 l tons
						46.53 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.22	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642855

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13792 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60810 kg
In	12/13/2023 12:59:55	scale1	Wendy B		tare	17950 kg
Out	12/13/2023 12:59:55		Wendy B		net	42860 kg
					metric ton	42.86 t
Inbound	gross	134061.73 lbs	tare	39572.57 lbs	net	94489.16 l tons
						47.23 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.86	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642864

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33239 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	63420 kg
In	12/13/2023 13:23:28	scale1	Wendy B		tare	18450 kg
Out	12/13/2023 13:59:17	scale2-out	Wendy B		net	44970 kg
					metric ton	44.97 t
Inbound	gross	139815.73 lbs		tare	40674.87 lbs	net 99140.86 l tons
						49.56 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.97	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642897

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25419 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62910 kg	
In	12/13/2023 15:10:54	scale1	Wendy B		tare	18190 kg	
Out	12/13/2023 15:10:54		Wendy B		net	44720 kg	
					metric ton	44.72 t	
Inbound	gross	138691.39 lbs		tare	40101.67 lbs	net 98589.71 l tons	49.28 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.72	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642903

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/13/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30114 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60100 kg
In	12/13/2023 16:03:23	scale1	Wendy B		tare	17800 kg
Out	12/13/2023 16:03:23		Wendy B		net	42300 kg
					metric ton	42.30 t
Inbound	gross	132496.46 lbs	tare	39241.88 lbs	net	93254.58 l tons
						46.61 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.30	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 846.27 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642940

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 27348 Grid
 Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	63180 kg
In	12/14/2023 08:01:54	scale1	Wendy B		tare	18210 kg
Out	12/14/2023 08:01:54		Wendy B		net	44970 kg
					metric ton	44.97 t
Inbound	gross	139286.63 lbs	tare	40145.77 lbs	net	99140.86 l tons
						49.56 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.97	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642959

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26909 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59240 kg
In	12/14/2023 09:01:19	scale1	Wendy B		tare	17350 kg
Out	12/14/2023 09:01:19		Wendy B		net	41890 kg
					metric ton	41.89 t
Inbound	gross	130600.50 lbs	tare	38249.81 lbs	net	92350.69 l tons
						46.16 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.89	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642945

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# JD825 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 17392 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	61110 kg	
In	12/14/2023 08:22:00	scale1	Wendy B		tare	18310 kg	
Out	12/14/2023 08:22:00		Wendy B		net	42800 kg	
					metric ton	42.80 t	
Inbound	gross	134723.11 lbs		tare	40366.23 lbs	net 94356.88 l tons	47.17 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		42.80	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642939

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13790 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62470 kg
In	12/14/2023 07:56:40	scale1	Wendy B		tare	17950 kg
Out	12/14/2023 07:56:40		Wendy B		net	44520 kg
					metric ton	44.52 t
Inbound	gross	137721.36 lbs	tare	39572.57 lbs	net	98148.79 l tons
						49.06 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.52	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642974

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# JOTBATH1324 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32921 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62960 kg
In	12/14/2023 09:43:07	scale1	Wendy B		tare	18010 kg
Out	12/14/2023 09:43:07		Wendy B		net	44950 kg
					metric ton	44.95 t
Inbound	gross	138801.62 lbs	tare	39704.85 lbs	net	99096.77 l tons
						49.53 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.95	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642983

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32909 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54530 kg	
In	12/14/2023 10:04:05	scale1	Wendy B		tare	17960 kg	
Out	12/14/2023 10:04:05		Wendy B		net	36570 kg	
					metric ton	36.57 t	
Inbound	gross	120216.84 lbs	tare	39594.62 lbs	net	80622.22 l tons	40.30 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.57	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642982

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# HTR810 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23236 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	51470 kg
In	12/14/2023 10:02:20	scale1	Wendy B		tare	17570 kg
Out	12/14/2023 10:02:20		Wendy B		net	33900 kg
					metric ton	33.90 t
Inbound	gross	113470.76 lbs	tare	38734.82 lbs	net	74735.94 l tons
						37.36 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	33.90	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643000

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26986 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62160 kg
In	12/14/2023 10:45:22	scale1	Wendy B		tare	17190 kg
Out	12/14/2023 10:45:22		Wendy B		net	44970 kg
					metric ton	44.97 t
Inbound	gross	137037.94 lbs	tare	37897.07 lbs	net	99140.86 l tons
						49.56 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.97	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643001

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# DIRTBOYS1323 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35844 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57890 kg
In	12/14/2023 10:50:52	scale1	Wendy B		tare	18050 kg
Out	12/14/2023 10:50:52		Wendy B		net	39840 kg
					metric ton	39.84 t
Inbound	gross	127624.29 lbs	tare	39793.03 lbs	net	87831.26 l tons
						43.90 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.84	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
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Reprint
 Ticket# 642992

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30115 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58830 kg
In	12/14/2023 10:29:12	scale1	Wendy B		tare	17800 kg
Out	12/14/2023 10:29:12		Wendy B		net	41030 kg
					metric ton	41.03 t
Inbound	gross	129696.62 lbs	tare	39241.88 lbs	net	90454.74 l tons
						45.22 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.03	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 642997

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# 518 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32821 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62100 kg	
In	12/14/2023 10:39:55	scale1	Wendy B		tare	18890 kg	
Out	12/14/2023 11:38:28	scale2-out	Wendy B		net	43210 kg	
					metric ton	43.21 t	
Inbound	gross	136905.66 lbs		tare	41644.89 lbs	net 95260.77 l tons	47.62 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	43.21	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
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Reprint
 Ticket# 643004

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29649 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55790 kg
In	12/14/2023 10:57:32	scale1	Wendy B		tare	18120 kg
Out	12/14/2023 10:57:32		Wendy B		net	37670 kg
					metric ton	37.67 t
Inbound	gross	122994.63 lbs	tare	39947.35 lbs	net	83047.28 l tons
						41.51 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.67	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
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Reprint
 Ticket# 643012

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# STAR107 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36376 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58610 kg
In	12/14/2023 11:17:18	scale1	Wendy B		tare	16990 kg
Out	12/14/2023 12:38:17	scale2-out	Wendy B		net	41620 kg
					metric ton	41.62 t
Inbound	gross	129211.61 lbs	tare	37456.15 lbs	net	91755.45 l tons
						45.87 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.62	t				HAMILTON

Total HST
 Total Ticket

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Reprint
 Ticket# 643013

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# STAR111 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36281 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	51750 kg	
In	12/14/2023 11:19:09	scale1	Wendy B		tare	17170 kg	
Out	12/14/2023 12:37:05	scale2-out	Wendy B		net	34580 kg	
					metric ton	34.58 t	
Inbound	gross	114088.05 lbs		tare	37852.98 lbs	net 76235.07 l tons	38.11 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		34.58	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
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Reprint
 Ticket# 643019

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# NS2011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35901 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55010 kg	
In	12/14/2023 11:29:07	scale1	Wendy B		tare	17480 kg	
Out	12/14/2023 12:14:11	scale2-out	Wendy B		net	37530 kg	
					metric ton	37.53 t	
Inbound	gross	121275.05 lbs		tare	38536.41 lbs	net 82738.64 l tons	41.36 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.53	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
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Reprint
 Ticket# 643028

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33224 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	61130 kg
In	12/14/2023 11:37:44	scale1	Wendy B		tare	18450 kg
Out	12/14/2023 11:37:44		Wendy B		net	42680 kg
					metric ton	42.68 t
Inbound	gross	134767.20 lbs	tare	40674.87 lbs	net	94092.33 l tons
						47.03 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.68	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
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Reprint
 Ticket# 643036

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23283 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62960 kg
In	12/14/2023 11:57:08	scale1	Wendy B		tare	17180 kg
Out	12/14/2023 11:57:08		Wendy B		net	45780 kg
					metric ton	45.78 t
Inbound	gross	138801.62 lbs	tare	37875.03 lbs	net	100926.59 tons
						50.45 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	45.78	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643056

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13790 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59520 kg
In	12/14/2023 12:55:47	scale1	Wendy B		tare	17950 kg
Out	12/14/2023 12:55:47		Wendy B		net	41570 kg
					metric ton	41.57 t
Inbound	gross	131217.79 lbs	tare	39572.57 lbs	net	91645.22 l tons
						45.81 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.57	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643054

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# JD825 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 17375 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59160 kg
In	12/14/2023 12:53:27	scale1	Wendy B		tare	18310 kg
Out	12/14/2023 12:53:27		Wendy B		net	40850 kg
					metric ton	40.85 t
Inbound	gross	130424.14 lbs	tare	40366.23 lbs	net	90057.91 l tons
						45.02 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.85	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643065

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 27340 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54810 kg
In	12/14/2023 13:41:34	scale1	Wendy B		tare	18210 kg
Out	12/14/2023 13:41:34		Wendy B		net	36600 kg
					metric ton	36.60 t
Inbound	gross	120834.13 lbs	tare	40145.77 lbs	net	80688.36 l tons
						40.33 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.60	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643067

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26910 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57190 kg
In	12/14/2023 13:57:59	scale1	Wendy B		tare	17350 kg
Out	12/14/2023 13:57:59		Wendy B		net	39840 kg
					metric ton	39.84 t
Inbound	gross	126081.07 lbs	tare	38249.81 lbs	net	87831.26 l tons
						43.90 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.84	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643087

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/14/2023 Vehicle# 826 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 30116 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	49190 kg	
In	12/14/2023 15:42:37	scale1	Julies		tare	17800 kg	
Out	12/14/2023 15:42:37		Julies		net	31390 kg	
					metric ton	31.39 t	
Inbound	gross	108444.27 lbs		tare	39241.88 lbs	net 69202.39 l tons	34.59 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	31.39	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 888.76 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643148

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# HTR810 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32859 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	51350 kg
In	12/15/2023 08:36:44	scale1	Wendy B		tare	17700 kg
Out	12/15/2023 09:58:31	scale2-out	Wendy B		net	33650 kg
					metric ton	33.65 t
Inbound	gross	113206.21 lbs	tare	39021.42 lbs	net	74184.79 l tons
						37.08 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	33.65	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643146

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32910 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55290 kg
In	12/15/2023 08:32:39	scale1	Wendy B		tare	17960 kg
Out	12/15/2023 08:32:39		Wendy B		net	37330 kg
					metric ton	37.33 t
Inbound	gross	121892.33 lbs	tare	39594.62 lbs	net	82297.72 l tons
						41.14 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.33	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643126

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26985 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56320 kg
In	12/15/2023 07:43:28	scale1	Wendy B		tare	17190 kg
Out	12/15/2023 07:43:28		Wendy B		net	39130 kg
					metric ton	39.13 t
Inbound	gross	124163.07 lbs	tare	37897.07 lbs	net	86266.00 l tons
						43.12 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.13	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643131

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# NS2011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35927 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	61670 kg
In	12/15/2023 07:51:09	scale1	Wendy B		tare	17480 kg
Out	12/15/2023 07:51:09		Wendy B		net	44190 kg
					metric ton	44.19 t
Inbound	gross	135957.68 lbs	tare	38536.41 lbs	net	97421.27 l tons
						48.70 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.19	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643151

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29650 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	49820 kg
In	12/15/2023 08:41:52	scale1	Wendy B		tare	18120 kg
Out	12/15/2023 08:41:52		Wendy B		net	31700 kg
					metric ton	31.70 t
Inbound	gross	109833.17 lbs	tare	39947.35 lbs	net	69885.82 l tons
						34.93 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	31.70	t				HAMILTON

Total HST
 Total Ticket

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 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643137

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13794 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57870 kg
In	12/15/2023 08:02:35	scale1	Wendy B		tare	17950 kg
Out	12/15/2023 08:02:35		Wendy B		net	39920 kg
					metric ton	39.92 t
Inbound	gross	127580.20 lbs	tare	39572.57 lbs	net	88007.63 l tons
						43.99 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.92	t				HAMILTON

Total HST
 Total Ticket

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 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643162

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# 1322 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 4400 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	64700 kg
In	12/15/2023 09:29:24	scale1	Wendy B		tare	18520 kg
Out	12/15/2023 09:29:24		Wendy B		net	46180 kg
					metric ton	46.18 t
Inbound	gross	142637.62 lbs	tare	40829.19 lbs	net	101808.43 tons
						50.89 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	46.18	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643170

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# HTR811 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23218 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60210 kg
In	12/15/2023 09:52:48	scale1	Wendy B		tare	18520 kg
Out	12/15/2023 09:52:48		Wendy B		net	41690 kg
					metric ton	41.69 t
Inbound	gross	132738.97 lbs	tare	40829.19 lbs	net	91909.77 l tons
						45.94 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.69	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643172

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25420 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59480 kg
In	12/15/2023 09:56:24	scale1	Wendy B		tare	18190 kg
Out	12/15/2023 09:56:24		Wendy B		net	41290 kg
					metric ton	41.29 t
Inbound	gross	131129.61 lbs	tare	40101.67 lbs	net	91027.93 l tons
						45.50 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.29	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643189

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32890 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56420 kg
In	12/15/2023 10:23:50	scale1	Wendy B		tare	17510 kg
Out	12/15/2023 10:23:50		Wendy B		net	38910 kg
					metric ton	38.91 t
Inbound	gross	124383.53 lbs	tare	38602.55 lbs	net	85780.99 l tons
						42.88 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.91	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643188

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# HTR808 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33020 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50780 kg
In	12/15/2023 10:22:06	scale1	Wendy B		tare	17460 kg
Out	12/15/2023 11:07:49	scale2-out	Wendy B		net	33320 kg
					metric ton	33.32 t
Inbound	gross	111949.59 lbs	tare	38492.32 lbs	net	73457.27 l tons
						36.72 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	33.32	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643204

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# 518 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32822 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62740 kg
In	12/15/2023 11:03:12	scale1	Wendy B		tare	18890 kg
Out	12/15/2023 11:03:12		Wendy B		net	43850 kg
					metric ton	43.85 t
Inbound	gross	138316.60 lbs	tare	41644.89 lbs	net	96671.71 l tons
						48.32 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	43.85	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643212

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/15/2023 Vehicle# STAR107 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32863 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55120 kg
In	12/15/2023 11:28:16	scale1	Wendy B		tare	16820 kg
Out	12/15/2023 11:28:16		Wendy B		net	38300 kg
					metric ton	38.30 t
Inbound	gross	121517.55 lbs	tare	37081.37 lbs	net	84436.18 l tons
						42.21 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.30	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 509.46 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643437

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23287 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58800 kg
In	12/18/2023 12:26:44	scale1	Wendy B		tare	17180 kg
Out	12/18/2023 12:26:44		Wendy B		net	41620 kg
					metric ton	41.62 t
Inbound	gross	129630.48 lbs	tare	37875.03 lbs	net	91755.45 l tons
						45.87 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.62	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643377

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33226 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59760 kg
In	12/18/2023 09:37:00	scale1	Wendy B		tare	17180 kg
Out	12/18/2023 09:37:00		Wendy B		net	42580 kg
					metric ton	42.58 t
Inbound	gross	131746.90 lbs	tare	37875.03 lbs	net	93871.87 l tons
						46.92 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.58	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643385

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# HTR808 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33021 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53520 kg
In	12/18/2023 10:08:23	scale1	Wendy B		tare	17460 kg
Out	12/18/2023 10:08:23		Wendy B		net	36060 kg
					metric ton	36.06 t
Inbound	gross	117990.19 lbs	tare	38492.32 lbs	net	79497.88 l tons
						39.74 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.06	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643384

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29651 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52690 kg
In	12/18/2023 10:06:23	scale1	Wendy B		tare	18120 kg
Out	12/18/2023 10:06:23		Wendy B		net	34570 kg
					metric ton	34.57 t
Inbound	gross	116160.37 lbs	tare	39947.35 lbs	net	76213.02 l tons
						38.10 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	34.57	t				HAMILTON

Total HST
 Total Ticket

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Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643396

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# 518 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29652 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54120 kg
In	12/18/2023 10:29:20	scale1	Wendy B		tare	18890 kg
Out	12/18/2023 10:29:20		Wendy B		net	35230 kg
					metric ton	35.23 t
Inbound	gross	119312.95 lbs	tare	41644.89 lbs	net	77668.06 l tons
						38.82 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.23	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE	TICKET # 1256658	CELL
WEIGHMASTER	Pam S.	
DATE/TIME IN	12/18/23 9:52 am	DATE/TIME OUT 12/18/23 10:18 am
VEHICLE	JECULP904	CONTAINER 600T
REFERENCE	N/A	
BILL OF LADING	INBOUND INVOICE	

SCALE IN GROSS WEIGHT 111,940 NET TONS 34.80
 SCALE OUT TARE WEIGHT 42,340 NET WEIGHT 69,600

QTY	UNIT	Tracking QTY	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
34.80	tn	SW-CONT SOIL	Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (04/19)

SIGNATURE _____

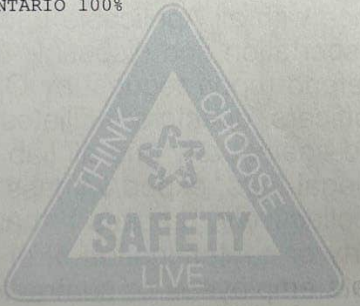
SITE NIAGARA FALLS LANDFILL 716-282-6381
5600 Niagara Falls Blvd -Niagara Falls, NY 14304

201777
CUSTOMER 957025 ONTARIO INC
14 PIRIE DRIVE
DUNDAS, ON L9H 6X5
Contract:42152318691
Generator:CITY OF HAMILTON

SITE	5B	TICKET #	1256661	CELL
WEIGHMASTER	Pam S.			
DATE/TIME IN	12/18/23	9:57 am	DATE/TIME OUT	12/18/23 10:29 am
VEHICLE	JECULP905		CONTAINER	600T
REFERENCE	N/A			
BILL OF LADING	N/A			

SCALE IN GROSS WEIGHT 94,820 NET TONS 22.81 INBOUND
SCALE OUT TARE WEIGHT 49,200 NET WEIGHT 45,620 INVOICE

QTY	UNIT	Tracking QTY	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
22.81	tn	SW-CONT SOIL	Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

SIGNATURE _____



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643430

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25844 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57950 kg
In	12/18/2023 11:53:54	scale1	Wendy B		tare	18210 kg
Out	12/18/2023 11:53:54		Wendy B		net	39740 kg
					metric ton	39.74 t
Inbound	gross	127756.57 lbs	tare	40145.77 lbs	net	87610.80 l tons
						43.79 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.74	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643458

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13770 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56640 kg	
In	12/18/2023 13:13:23	scale1	Wendy B		tare	17950 kg	
Out	12/18/2023 13:13:23		Wendy B		net	38690 kg	
					metric ton	38.69 t	
Inbound	gross	124868.54 lbs	tare	39572.57 lbs	net	85295.97 l tons	42.64 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		38.69	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE 5B	TICKET # 1256699	CELL
WEIGHMASTER Pam S.		
DATE/TIME IN 12/18/23 1:23 pm	DATE/TIME OUT 12/18/23 1:50 pm	
VEHICLE JECULP904	CONTAINER 600T	
REFERENCE		
BILL OF LADING N/A		

SCALE IN GROSS WEIGHT 96,280 NET TONS 26.38
 SCALE OUT TARE WEIGHT 43,520 NET WEIGHT 52,760

INBOUND
 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
60.00	YD	Tracking QTY				
26.38	tn	SW-CONT SOIL Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (04/19)

SIGNATURE _____



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643473

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# DIRTBOYS1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36208 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59280 kg
In	12/18/2023 14:19:28	scale1	Wendy B		tare	18600 kg
Out	12/18/2023 14:19:28		Wendy B		net	40680 kg
					metric ton	40.68 t
Inbound	gross	130688.69 lbs	tare	41005.56 lbs	net	89683.13 l tons
						44.83 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.68	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE ^{5B}	TICKET #	1256706	CELL
WEIGHMASTER		Pam S.	
DATE/TIME IN	12/18/23 1:43 pm	DATE/TIME OUT	12/18/23 2:15 pm
VEHICLE	JECULP905	CONTAINER	600T
REFERENCE			
BILL OF LADING	N/A		

SCALE IN GROSS WEIGHT 101,100 NET TONS 28.97 INBOUND
 SCALE OUT TARE WEIGHT 43,160 NET WEIGHT 57,940 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
60.00	YD	Tracking QTY				
28.97	tn	SW-CONT SOIL Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (04/19)

SIGNATURE _____



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643482

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33233 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58870 kg
In	12/18/2023 15:01:19	scale1	Emily W		tare	18450 kg
Out	12/18/2023 15:01:19		Emily W		net	40420 kg
					metric ton	40.42 t
Inbound	gross	129784.80 lbs	tare	40674.87 lbs	net	89109.93 l tons
						44.54 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.42	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643486

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/18/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29668 Grid

Destination CELL 4
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56280 kg
In	12/18/2023 15:15:01	scale1	Emily W		tare	18120 kg
Out	12/18/2023 15:15:01		Emily W		net	38160 kg
					metric ton	38.16 t
Inbound	gross	124074.89 lbs	tare	39947.35 lbs	net	84127.54 l tons
						42.05 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.16	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 490.23 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643544

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# HTR808 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33022 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	51600 kg
In	12/19/2023 09:13:11	scale1	Wendy B		tare	17460 kg
Out	12/19/2023 09:13:11		Wendy B		net	34140 kg
					metric ton	34.14 t
Inbound	gross	113757.36 lbs	tare	38492.32 lbs	net	75265.04 l tons
						37.62 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	34.14	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643531

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25845 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	61630 kg
In	12/19/2023 08:52:36	scale1	Wendy B		tare	18210 kg
Out	12/19/2023 08:52:36		Wendy B		net	43420 kg
					metric ton	43.42 t
Inbound	gross	135869.50 lbs	tare	40145.77 lbs	net	95723.73 l tons
						47.85 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	43.42	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643541

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13771 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59310 kg
In	12/19/2023 09:10:19	scale1	Wendy B		tare	17950 kg
Out	12/19/2023 09:10:19		Wendy B		net	41360 kg
					metric ton	41.36 t
Inbound	gross	130754.83 lbs	tare	39572.57 lbs	net	91182.26 l tons
						45.58 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.36	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643553

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25421 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56880 kg
In	12/19/2023 09:31:19	scale1	Wendy B		tare	18190 kg
Out	12/19/2023 09:31:19		Wendy B		net	38690 kg
					metric ton	38.69 t
Inbound	gross	125397.65 lbs	tare	40101.67 lbs	net	85295.97 l tons
						42.64 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.69	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643558

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# FLARE5012 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41097 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58020 kg
In	12/19/2023 09:44:02	scale1	Wendy B		tare	16670 kg
Out	12/19/2023 09:44:02		Wendy B		net	41350 kg
					metric ton	41.35 t
Inbound	gross	127910.89 lbs	tare	36750.68 lbs	net	91160.21 l tons
						45.57 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.35	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643562

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# HTR809 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32866 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60140 kg
In	12/19/2023 09:58:27	scale1	Wendy B		tare	17710 kg
Out	12/19/2023 10:51:35	scale2-out	Emily W		net	42430 kg
					metric ton	42.43 t
Inbound	gross	132584.64 lbs	tare	39043.47 lbs	net	93541.18 l tons
						46.76 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		42.43	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

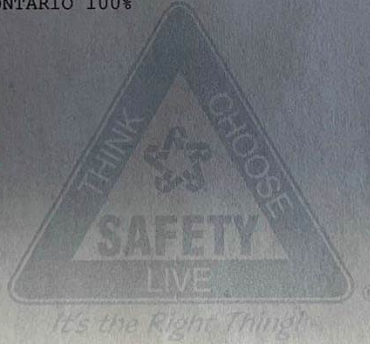
SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE	5B	TICKET #	1256748	CELL
WEIGHMASTER	Pam S.			
DATE/TIME IN	12/19/23	9:05 am	DATE/TIME OUT	12/19/23 9:38 am
VEHICLE	JECULP904		CONTAINER	600T
REFERENCE	N/A			
BILL OF LADING				

SCALE IN GROSS WEIGHT 105,560 NET TONS 30.89 INBOUND
 SCALE OUT TARE WEIGHT 43,780 NET WEIGHT 61,780 INVOICE

QTY	UNIT	Tracking QTY	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
30.89	tn	SW-CONT SOIL	Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

*904

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NET AMOUNT
TENDERED
CHANGE
CHECK#

SIGNATURE _____

SITE **NIAGARA FALLS LANDFILL 716-282-6381**
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

201777
 CUSTOMER 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE ^{5B} TICKET # **1256749** CELL
 WEIGHMASTER Pam S.
 DATE/TIME IN 12/19/23 9:15 am DATE/TIME OUT 12/19/23 9:49 am
 VEHICLE JECULP905 CONTAINER 600T
 REFERENCE
 BILL OF LADING N/A

SCALE IN GROSS WEIGHT 96,000 NET TONS 26.77 INBOUND
 SCALE OUT TARE WEIGHT 42,460 NET WEIGHT 53,540 INVOICE

QTY	UNIT	Tracking QTY	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
60.00	UMFD						
26.77	tn	SW-CONT SOIL	Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

2905-

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RS-F042UPR (04/19)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643573

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# 1323 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36306 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57490 kg	
In	12/19/2023 10:38:46	scale1	Wendy B		tare	17870 kg	
Out	12/19/2023 11:31:48	scale2-out	Emily W		net	39620 kg	
					metric ton	39.62 t	
Inbound	gross	126742.45 lbs		tare	39396.20 lbs	net 87346.25 l tons	43.66 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		39.62	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643575

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# 518 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 29653 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58990 kg
In	12/19/2023 10:44:07	scale1	Wendy B		tare	18890 kg
Out	12/19/2023 10:44:07		Wendy B		net	40100 kg
					metric ton	40.10 t
Inbound	gross	130049.35 lbs	tare	41644.89 lbs	net	88404.46 l tons
						44.19 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.10	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643592

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# 2132935-1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36210 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60470 kg
In	12/19/2023 11:29:24	scale1	Wendy B		tare	18520 kg
Out	12/19/2023 12:27:17	scale2-out	Emily W		net	41950 kg
					metric ton	41.95 t
Inbound	gross	133312.16 lbs		tare	40829.19 lbs	net 92482.97 l tons
						46.23 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.95	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643602

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# STAR111 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36282 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	48840 kg
In	12/19/2023 11:50:31	scale1	Wendy B		tare	17170 kg
Out	12/19/2023 11:50:31		Wendy B		net	31670 kg
					metric ton	31.67 t
Inbound	gross	107672.66 lbs	tare	37852.98 lbs	net	69819.68 l tons
						34.90 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	31.67	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643610

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32892 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59760 kg
In	12/19/2023 12:01:58	scale1	Wendy B		tare	17510 kg
Out	12/19/2023 12:01:58		Wendy B		net	42250 kg
					metric ton	42.25 t
Inbound	gross	131746.90 lbs	tare	38602.55 lbs	net	93144.35 l tons
						46.56 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.25	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643640

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# HTR811 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23220 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58370 kg	
In	12/19/2023 13:29:03	scale1	Wendy B		tare	18520 kg	
Out	12/19/2023 13:29:03		Wendy B		net	39850 kg	
					metric ton	39.85 t	
Inbound	gross	128682.50 lbs		tare	40829.19 lbs	net 87853.31 l tons	43.91 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.85	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643661

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26988 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59380 kg
In	12/19/2023 14:36:08	scale1	Emily W		tare	17190 kg
Out	12/19/2023 14:36:08		Emily W		net	42190 kg
					metric ton	42.19 t
Inbound	gross	130909.15 lbs	tare	37897.07 lbs	net	93012.07 l tons
						46.49 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.19	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643652

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# SAMRA559 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 11645 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56720 kg
In	12/19/2023 14:03:02	scale1	Wendy B		tare	18000 kg
Out	12/19/2023 14:36:41	scale2-out	Emily W		net	38720 kg
					metric ton	38.72 t
Inbound	gross	125044.91 lbs	tare	39682.80 lbs	net	85362.11 l tons
						42.67 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.72	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

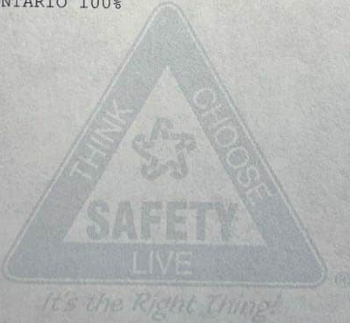
SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE	TICKET # 1256779	CELL
WEIGHMASTER	Pam S.	
DATE/TIME IN	12/19/23 1:02 pm	DATE/TIME OUT 12/19/23 1:24 pm
VEHICLE	JECULP904	CONTAINER 600T
REFERENCE	N/A	
BILL OF LADING		

SCALE IN GROSS WEIGHT 101,980 NET TONS 28.26 INBOUND
 SCALE OUT TARE WEIGHT 45,460 NET WEIGHT 56,520 INVOICE

QTY	UNIT	Tracking ID	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
28.26	tn	SW-CONT SOIL	Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (04/19)

SIGNATURE _____

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE 5B	TICKET # 1256783	CELL
WEIGHMASTER Pam S.		
DATE/TIME IN 12/19/23 1:11 pm	DATE/TIME OUT 12/19/23 1:32 pm	
VEHICLE JECULP905	CONTAINER 600T	
REFERENCE		
BILL OF LADING N/A		

SCALE IN GROSS WEIGHT 109,380 NET TONS 32.97
 SCALE OUT TARE WEIGHT 43,440 NET WEIGHT 65,940

INBOUND
 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
32.97	tn	Tracking QTY SW-CONT SOIL Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

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SIGNATURE _____



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643672

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/19/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 13768 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	63050 kg
In	12/19/2023 15:06:42	scale1	Emily W		tare	17950 kg
Out	12/19/2023 15:06:42		Emily W		net	45100 kg
					metric ton	45.10 t
Inbound	gross	139000.03 lbs	tare	39572.57 lbs	net	99427.46 l tons
						49.70 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	45.10	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

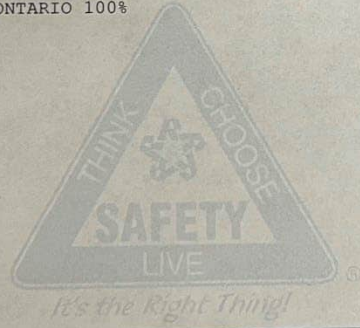
SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE ^{5B}	TICKET # 1256803	CELL
WEIGHMASTER Stephanie H.		
DATE/TIME IN 12/19/23 4:36 pm	DATE/TIME OUT 12/19/23 4:58 pm	
VEHICLE JECULP905	CONTAINER 600T	
REFERENCE		
BILL OF LADING 18691-01		

SCALE IN GROSS WEIGHT 103,280 NET TONS 28.55 INBOUND
 SCALE OUT TARE WEIGHT 46,180 NET WEIGHT 57,100 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
60.00	YD	Tracking QTY				
28.55	tn	SW-CONT SOIL Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

SIGNATURE _____

Total: 736.60 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643728

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25422 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	61600 kg	
In	12/20/2023 08:18:33	scale1	Emily W		tare	18140 kg	
Out	12/20/2023 09:06:15	scale2-out	Wendy B		net	43460 kg	
					metric ton	43.46 t	
Inbound	gross	135803.36 lbs		tare	39991.44 lbs	net 95811.92 l tons	47.89 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	43.46	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

COPY 2

SITE NIAGARA FALLS LANDFILL 716-282-6381
5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
957025 ONTARIO INC
14 PIRIE DRIVE
DUNDAS, ON L9H 6X5
Contract:42152318691
Generator:CITY OF HAMILTON

SITE	TICKET #	CELL
WEIGHMASTER	Pam S.	
DATE/TIME IN	12/20/23 7:38 am	DATE/TIME OUT 12/20/23 8:21 am
VEHICLE	JECULP 927	CONTAINER 600T
REFERENCE	N/A	
BILL OF LADING		

SCALE IN GROSS WEIGHT	101,660	NET TONS	29.69	INBOUND
SCALE OUT TARE WEIGHT	42,280	NET WEIGHT	59,380	INVOICE

QTY	UNIT	Tracking QTY	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
29.69	tn		SW-CONT SOIL Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

S-F042UPR (04/19)

SIGNATURE _____

City, Province Postal Code

SIG De N Soil nents tative arrier: ed abc - CAI



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643762

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26989 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60110 kg
In	12/20/2023 09:57:09	scale1	Emily W		tare	17190 kg
Out	12/20/2023 09:57:09		Emily W		net	42920 kg
					metric ton	42.92 t
Inbound	gross	132518.51 lbs	tare	37897.07 lbs	net	94621.43 l tons
						47.30 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	42.92	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643756

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# HTR811 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23221 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62860 kg
In	12/20/2023 09:48:39	scale1	Emily W		tare	18520 kg
Out	12/20/2023 09:48:39		Emily W		net	44340 kg
					metric ton	44.34 t
Inbound	gross	138581.16 lbs	tare	40829.19 lbs	net	97751.96 l tons
						48.86 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.34	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643757

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# HTR809 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32865 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54110 kg
In	12/20/2023 09:50:26	scale1	Emily W		tare	17710 kg
Out	12/20/2023 09:50:26		Emily W		net	36400 kg
					metric ton	36.40 t
Inbound	gross	119290.91 lbs	tare	39043.47 lbs	net	80247.44 l tons
						40.11 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		36.40	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643759

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# EURO604 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35735 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57070 kg
In	12/20/2023 09:53:11	scale1	Emily W		tare	18120 kg
Out	12/20/2023 09:53:11		Emily W		net	38950 kg
					metric ton	38.95 t
Inbound	gross	125816.52 lbs	tare	39947.35 lbs	net	85869.17 l tons
						42.92 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.95	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643772

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# FLARE5012 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41047 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57040 kg
In	12/20/2023 10:13:30	scale1	Emily W		tare	16670 kg
Out	12/20/2023 10:13:30		Emily W		net	40370 kg
					metric ton	40.37 t
Inbound	gross	125750.38 lbs	tare	36750.68 lbs	net	88999.70 l tons
						44.49 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		40.37	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643777

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# SINGH9192 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41096 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59000 kg	
In	12/20/2023 10:34:03	scale1	Emily W		tare	17350 kg	
Out	12/20/2023 12:09:35	scale2-out	Wendy B		net	41650 kg	
					metric ton	41.65 t	
Inbound	gross	130071.40 lbs		tare	38249.81 lbs	net 91821.59 l tons	45.90 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.65	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643784

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# 1323 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36303 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58500 kg
In	12/20/2023 10:47:15	scale1	Emily W		tare	17870 kg
Out	12/20/2023 10:47:15		Emily W		net	40630 kg
					metric ton	40.63 t
Inbound	gross	128969.10 lbs	tare	39396.20 lbs	net	89572.90 l tons
						44.77 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.63	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

MATERIAL DESIGNATION SLIP



MECI # 04 (03-12)

4077

SITE NIAGARA FALLS LANDFILL 716-282-6381
5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
957025 ONTARIO INC
14 PIRIE DRIVE
DUNDAS, ON L9H 6X5
Contract:42152318691
Generator:CITY OF HAMILTON

SITE 5B **TICKET #** 1256831 **CELL**

WEIGHMASTER Pam S.

DATE/TIME IN 12/20/23 9:50 am **DATE/TIME OUT** 12/20/23 10:19 am

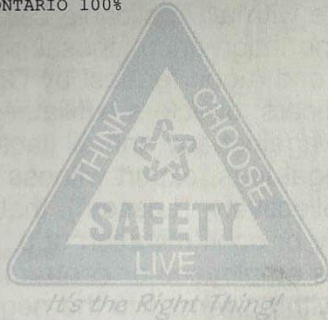
VEHICLE JECULP904 **CONTAINER** 600T

REFERENCE

BILL OF LADING N/A

SCALE IN GROSS WEIGHT	111,440	NET TONS	34.05	INBOUND
SCALE OUT TARE WEIGHT	43,340	NET WEIGHT	68,100	INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
34.05	tn	SW-CONT SOIL Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (04/19)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#

TRANSPORTER			
Transport Company	Address	City, Province	Postal Code
TERRACLEAN CONSULTANTS INC	35...		



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643791

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# STAR111 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36283 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	52360 kg
In	12/20/2023 11:01:45	scale1	Emily W		tare	17170 kg
Out	12/20/2023 11:01:45		Emily W		net	35190 kg
					metric ton	35.19 t
Inbound	gross	115432.86 lbs	tare	37852.98 lbs	net	77579.87 l tons
						38.78 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.19	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643809

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# 2132935-1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36213 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57850 kg
In	12/20/2023 11:48:33	scale1	Emily W		tare	18520 kg
Out	12/20/2023 11:48:33		Emily W		net	39330 kg
					metric ton	39.33 t
Inbound	gross	127536.11 lbs	tare	40829.19 lbs	net	86706.92 l tons
						43.34 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.33	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643814

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# HTR805 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32904 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53620 kg
In	12/20/2023 12:02:14	scale1	Emily W		tare	17510 kg
Out	12/20/2023 12:02:14		Emily W		net	36110 kg
					metric ton	36.11 t
Inbound	gross	118210.65 lbs	tare	38602.55 lbs	net	79608.11 l tons
						39.79 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.11	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

MATERIAL DESIGNATION SLIP



4081

- Soil
 Concrete
 Demo Debris
 Asphalt
 Other _____

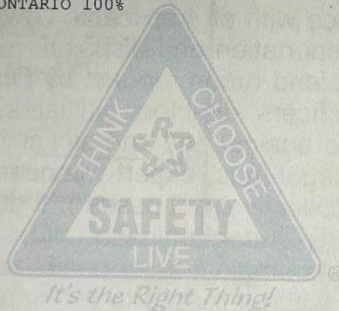
SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE ^{5B} **TICKET #** 1256853 **CELL**
WEIGHMASTER Pam S.
DATE/TIME IN 12/20/23 11:32 am **DATE/TIME OUT** 12/20/23 12:04 pm
VEHICLE JECULP 927 **CONTAINER** 600T
REFERENCE
BILL OF LADING 18691-01

SCALE IN GROSS WEIGHT 102,880 NET TONS 30.35 INBOUND
 SCALE OUT TARE WEIGHT 42,180 NET WEIGHT 60,700 INVOICE

QTY	UNIT	Tracking	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
30.35	tn	SW-CONT SOIL	Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (04/19)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#

ENVIRONMENTAL CONSULTANTS INC. 3 Ferndale Cres. Brampton, ON L6W 1E8
Driver Name: JAN VAN HEUSE
License Plate #: PA 83030 **Tel:** 905-870-8343
RECEIVER **Email (optional):**



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643840

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/20/2023 Vehicle# SAMRA559 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 10837 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57240 kg
In	12/20/2023 13:28:21	scale1	Emily W		tare	18000 kg
Out	12/20/2023 13:28:21		Emily W		net	39240 kg
					metric ton	39.24 t
Inbound	gross	126191.30 lbs	tare	39682.80 lbs	net	86508.50 l tons
						43.24 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.24	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

5B TICKET # 1256870 CELL

WEIGHMASTER Pam S.

DATE/TIME IN 12/20/23 1:38 pm DATE/TIME OUT 12/20/23 2:20 pm

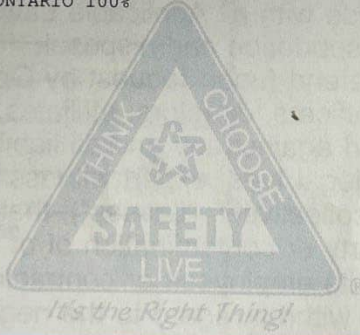
VEHICLE JECULP904 CONTAINER 600T

REFERENCE N/A

BILL OF LADING

SCALE IN GROSS WEIGHT 104,580 NET TONS 30.72 INBOUND
 SCALE OUT TARE WEIGHT 43,140 NET WEIGHT 61,440 INVOICE

QTY	UNIT	Tracking QTY	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
30.72	tn	SW-CONT SOIL	Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (04/19)

SIGNATURE _____

NET AMOUNT

TENDERED

CHANGE

CHECK#

Quantity Loaded

Contact Name: Jared Ehgoetz
 (For soil quality info)

Tel: 519.897.3918

Email:

TRANSPORTER

MECI # 04 (03-12)

Milestone

SITE NIAGARA FALLS LANDFILL 716-282-6381
5600 Niagara Falls Blvd -Niagara Falls, NY 14304

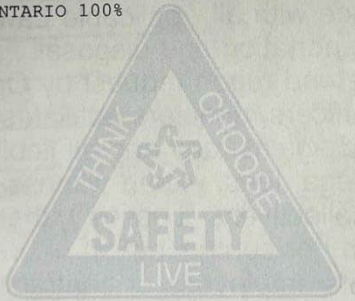
CUSTOMER 201777
957025 ONTARIO INC
14 PIRIE DRIVE
DUNDAS, ON L9H 6X5
Contract:42152318691
Generator:CITY OF HAMILTON

SITE 5B	TICKET # 1256879	CELL
WEIGHMASTER Stephanie H.		
DATE/TIME IN 12/20/23 3:17 pm	DATE/TIME OUT 12/20/23 3:49 pm	
VEHICLE JECULP 927	CONTAINER 600T	
REFERENCE		
BILL OF LADING N/A		

SCALE IN GROSS WEIGHT	107,120	NET TONS	32.66
SCALE OUT TARE WEIGHT	41,800	NET WEIGHT	65,320

INBOUND
INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
32.66	tn	Tracking QTY SW-CONT SOIL Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT

TENDERED

CHANGE

CHECK#

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RS-F042UPR (04/19)

SIGNATURE _____

Contact Name: _____
(For soil quality info)

tel: 519.897.5910

TRANSPORTER

Postal Code

Total: 621.44 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643902

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25423 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55870 kg	
In	12/21/2023 08:13:46	scale1	Wendy B		tare	18190 kg	
Out	12/21/2023 08:13:46		Wendy B		net	37680 kg	
					metric ton	37.68 t	
Inbound	gross	123171.00 lbs	tare	40101.67 lbs	net	83069.33 l tons	41.52 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.68	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643899

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26990 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58900 kg
In	12/21/2023 07:56:50	scale1	Wendy B		tare	17190 kg
Out	12/21/2023 07:56:50		Wendy B		net	41710 kg
					metric ton	41.71 t
Inbound	gross	129850.94 lbs	tare	37897.07 lbs	net	91953.87 l tons
						45.96 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.71	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644234

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# DIRTBOYS1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36215 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59520 kg	
In	12/21/2023 07:32:14	scale1	Emily W		tare	18780 kg	
Out	12/21/2023 09:18:28	scale2-out	Emily W		net	40740 kg	
					metric ton	40.74 t	
Inbound	gross	131217.79 lbs	tare	41402.39 lbs	net	89815.40 l tons	44.90 T

Comments REPLACEMENT TICKET FOR TICKET Nbr 643891

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	40.74	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643944

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# SINGH9192 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41114 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57050 kg
In	12/21/2023 10:15:05	scale1	Wendy B		tare	17350 kg
Out	12/21/2023 10:15:05		Wendy B		net	39700 kg
					metric ton	39.70 t
Inbound	gross	125772.43 lbs	tare	38249.81 lbs	net	87522.62 l tons
						43.75 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.70	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643936

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# FLARE5012 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41048 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53050 kg
In	12/21/2023 09:50:01	scale1	Wendy B		tare	16670 kg
Out	12/21/2023 09:50:01		Wendy B		net	36380 kg
					metric ton	36.38 t
Inbound	gross	116954.03 lbs	tare	36750.68 lbs	net	80203.35 l tons
						40.09 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.38	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 957025 ONTARIO INC
 201777
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SCALE IN GROSS WEIGHT 102,340 NET TONS 29.41
 SCALE OUT TARE WEIGHT 43,520 NET WEIGHT 58,820

OT60.00 UNMD Tracking Qty DESCRIPTION Origin:ONTARIO 100%

Have a nice day. Thank you for your business!



5B TICKET # 1256924 CELL
 WEIGHMASTER Pam S.
 DATE/TIME IN 12/21/23 9:09 am DATE/TIME OUT 12/21/23 9:37 am
 VEHICLE JECULP904 CONTAINER 600T
 REFERENCE N/A
 BILL OF LADING INBOUND INVOICE

RS-F042UPR (04/19)

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SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SCALE IN GROSS WEIGHT 102,900 NET TONS 30.20
 SCALE OUT TARE WEIGHT 42,500 NET WEIGHT 60,400

SITE^{5B} TICKET # 1256932

WEIGHMASTER Pam S.

DATE/TIME IN 12/21/23 9:31 am DATE/TIME OUT 12/21/23 10:14 am

VEHICLE JEGUHP 927 CONTAINER 600T

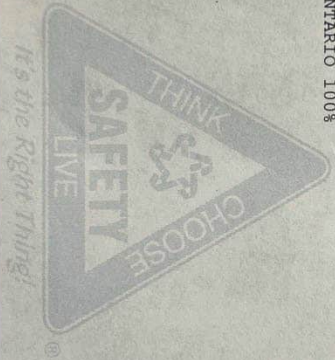
REFERENCE

BILL OF LADING N/A

INBOUND
 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
30.20	tn	Tracking QTY SW-CONT SOIL Origin:ONTARIO 100%				

Have a nice day. Thank you for your business!



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RS-F042UPR (04/19)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643951

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# HTR808 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33023 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	44300 kg
In	12/21/2023 10:29:01	scale1	Wendy B		tare	17460 kg
Out	12/21/2023 10:29:01		Wendy B		net	26840 kg
					metric ton	26.84 t
Inbound	gross	97663.78 lbs	tare	38492.32 lbs	net	59171.46 l tons
						29.58 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	26.84	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644235

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 24367 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54810 kg
In	12/21/2023 10:41:10	scale1	Emily W		tare	18120 kg
Out	12/21/2023 10:41:10		Emily W		net	36690 kg
					metric ton	36.69 t
Inbound	gross	120834.13 lbs	tare	39947.35 lbs	net	80886.77 l tons
						40.43 T

Comments REPLACEMENT TICKET FOR TICKET Nbr 643957

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.69	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 643978

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# STAR111 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36289 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58350 kg
In	12/21/2023 11:33:01	scale1	Wendy B		tare	17170 kg
Out	12/21/2023 11:33:01		Wendy B		net	41180 kg
					metric ton	41.18 t
Inbound	gross	128638.41 lbs	tare	37852.98 lbs	net	90785.43 l tons
						45.38 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.18	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

SITE **NIAGARA FALLS LANDFILL 716-282-6381**
5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER **201777**
957025 ONTARIO INC
14 PIRIE DRIVE
DUNDAS, ON L9H 6X5
Contract:42152318691
Generator:CITY OF HAMILTON

SCALE IN GROSS WEIGHT **105,720** NET TONS **30.10**
 SCALE OUT TARE WEIGHT **45,520** NET WEIGHT **60,200**

INBOUND
 INVOICE

SITE ^{5B}	TICKET #	1256973	CELL
WEIGHMASTER	Perm S.		
DATE/TIME IN	12/21/23 12:18 pm	DATE/TIME OUT	12/21/23 12:40 pm
VEHICLE	JEGUJPP904	CONTAINER	600T
REFERENCE	N/A		
BILL OF LADING			

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
30.10	tn	Tracking QTY SW-CONT SOIL Origin:ONTARIO 100%				

Have a nice day. Thank you for your business!



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RS-F042UPR (04/19)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644021

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# DIRTBOYS1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36216 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57370 kg
In	12/21/2023 13:42:57	scale1	Wendy B		tare	18780 kg
Out	12/21/2023 13:42:57		Wendy B		net	38590 kg
					metric ton	38.59 t
Inbound	gross	126477.90 lbs	tare	41402.39 lbs	net	85075.51 l tons
						42.53 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.59	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature

SITE: **NIMNICK FALLS LANDFILL 716-262-6381**
5600 Niagara Falls Blvd - Niagara Falls, NY 14304

CUSTOMER: 957025 ONTARIO INC
 14 FIRIE DRIVE
 BURDAS, ON L3H 6X5
 CONTACT: 42152318691
 OPERATOR: CITY OF HAMILTON

SCALE IN: 69000-WEIGHT 117.560 NET WEIGHT 69.760
 SCALE OUT: TARE WEIGHT 41.800 NET WEIGHT 69.760

SITE: B TICKET # 1086994 CELL
 WEIGHMASTER Form 5-
 DATE/TIME IN: 12/21/23 1:10 PM DATE/TIME OUT: 1:40 PM
 VEHICLE: SPILLER-901 CONTAINER: 6002
 REFERENCE: N/A
 BILL OF LADING: N/A
 ISSUED INVOICE

QTY	UNIT	TRACKING	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
34.88	SH	SR-COIT 501L	ORFLD:ONTARIO 100S				

Have a nice day. Thank you for your business!



The undersigned hereby certifies the accuracy of the information on this document and certifies that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-10423PR (04/18)

SIGNATURE _____

NET AMOUNT
TENDERED:
CHANGE
CHECKS



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644025

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26934 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	57840 kg
In	12/21/2023 13:54:51	scale1	Wendy B		tare	17350 kg
Out	12/21/2023 13:54:51		Wendy B		net	40490 kg
					metric ton	40.49 t
Inbound	gross	127514.06 lbs	tare	38249.81 lbs	net	89264.25 l tons
						44.62 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.49	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644041

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26991 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58700 kg
In	12/21/2023 14:46:12	scale1	Wendy B		tare	17190 kg
Out	12/21/2023 14:46:12		Wendy B		net	41510 kg
					metric ton	41.51 t
Inbound	gross	129410.02 lbs	tare	37897.07 lbs	net	91512.95 l tons
						45.74 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.51	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644042

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# DBHELA105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26926 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55630 kg
In	12/21/2023 14:48:01	scale1	Wendy B		tare	18210 kg
Out	12/21/2023 14:48:01		Wendy B		net	37420 kg
					metric ton	37.42 t
Inbound	gross	122641.90 lbs	tare	40145.77 lbs	net	82496.13 l tons
						41.24 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.42	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644043

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/21/2023 Vehicle# TERRACLEAN5011 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 25424 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	54100 kg
In	12/21/2023 14:49:43	scale1	Emily W		tare	18190 kg
Out	12/21/2023 14:49:43		Emily W		net	35910 kg
					metric ton	35.91 t
Inbound	gross	119268.86 lbs	tare	40101.67 lbs	net	79167.19 l tons
						39.57 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.91	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

SITE: **NIAGARA FALLS CANEYVILLE 716-202-6301**
5400 Niagara Falls Blvd - Niagara Falls, NY 14304

Contractor: **357025 ORPHEUS LLC**
14 PEARL DRIVE
PO BOX 608, LAMAR, NY 14305
CONTACT: 441-5031090
DEPARTMENT OF TRANSPORTATION

STATE OF NEW YORK STATE OF NEW YORK
 SCALE OF TAX RATES 11,440 NET WEIGHT 27,418
 NET WEIGHT 24,500

SITE'S WEIGHT: **125,000** GROSS WEIGHT: **125,000**
 WEIGHTS: **1000**
 DATE OF MANUFACTURE: **01/27/2015** SERIAL NUMBER: **1137100**
 VEHICLE IDENTIFICATION: **CONCRETE TRUCK**
 MAKE: **ORPHEUS**
 MODEL: **ORPHEUS**

QTY	UNIT	DESCRIPTION	DATE	EXTENSION	TAX	TOTAL
1	EA	CONCRETE TRUCK 1000				

Have a new idea. Thank you for your business!



The undersigned individual agrees this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the attached form and that he or she has the authority to sign the document on behalf of the customer.

Signature: _____

Signature: _____

NET WEIGHT

WEIGHT	125,000
WEIGHT	125,000
WEIGHT	125,000

Total: 632.76 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644116

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# FLARE5012 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 41049 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58410 kg
In	12/22/2023 08:46:28	scale1	Emily W		tare	16670 kg
Out	12/22/2023 08:46:28		Emily W		net	41740 kg
					metric ton	41.74 t
Inbound	gross	128770.69 lbs	tare	36750.68 lbs	net	92020.00 l tons
						46.00 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.74	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644107

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# HTR811 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23224 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50170 kg
In	12/22/2023 08:30:06	scale1	Wendy B		tare	18520 kg
Out	12/22/2023 08:30:06		Wendy B		net	31650 kg
					metric ton	31.65 t
Inbound	gross	110604.78 lbs	tare	40829.19 lbs	net	69775.59 l tons
						34.88 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	31.65	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644091

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# DIRTBOYS1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36217 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53620 kg
In	12/22/2023 07:34:47	scale1	Wendy B		tare	18780 kg
Out	12/22/2023 07:34:47		Wendy B		net	34840 kg
					metric ton	34.84 t

Inbound gross 118210.65 lbs tare 41402.39 lbs net 76808.26 l tons 38.39 T
 Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr 100		34.84	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644134

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33219 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59200 kg
In	12/22/2023 09:38:35	scale1	Emily W		tare	18450 kg
Out	12/22/2023 09:38:35		Emily W		net	40750 kg
					metric ton	40.75 t
Inbound	gross	130512.32 lbs	tare	40674.87 lbs	net	89837.45 l tons
						44.91 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.75	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644145

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# HTR801 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 32911 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	51630 kg
In	12/22/2023 10:19:59	scale1	Emily W		tare	17960 kg
Out	12/22/2023 10:19:59		Emily W		net	33670 kg
					metric ton	33.67 t
Inbound	gross	113823.50 lbs		tare	39594.62 lbs	net 74228.88 l tons
						37.10 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	33.67	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201727
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

TICKET # 1257052 CELL
 WEIGHMASTER Pam S.
 DATE/TIME IN 12/22/23 9:23 AM DATE/TIME OUT 12/22/23 9:40 AM
 VEHICLE JBC01P304 CONTAINER 600T
 REFERENCE
 BILL OF LADING N/A

SCALE IN GROSS WEIGHT 39,400 NET TONS 26.84
 SCALE OUT TARE WEIGHT 45,720 NET WEIGHT 53,680

INCLUDED
 INVOICE

QTY	UNIT	Tracking QTY	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
26.84	tn		SN-CONT SOIL Origin:ONTARIO 1004				



Have a nice day. Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR2 (12-20)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECKS

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5500 Niagara Falls Blvd -Niagara Falls, NY 14304

SITE# TICKET # 1257068 CELL

CUSTOMER 201773
 957025 ONTARIO INC
 14 FIRIE DRIVE
 DONNAS, ON L9B 6X5
 Contract:42152316691
 Generator:CITY OF HAMILTON

WEIGHMASTER Pam B.
 DATE/TIME IN:12/22/23 10:54 AM DATE/TIME OUT:12 11:22 AM
 VEHICLE JG011LP904 CONTAINER 8001
 REFERENCE
 BILL OF LADING W/A

SCALE IN GROSS WEIGHT 101,960 NET TONS 29.40 INBOUND
 SCALE OUT TARE WEIGHT 43,160 NET WEIGHT 58,800 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
29.40	tn	TRACKING CTY SW-CONT SOIL Origin:ONTARIO 1004				



Have a nice day...Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR2 (12-20)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644149

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# HTR809 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23245 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	42160 kg
In	12/22/2023 10:29:29	scale1	Emily W		tare	17710 kg
Out	12/22/2023 10:29:29		Emily W		net	24450 kg
					metric ton	24.45 t
Inbound	gross	92945.94 lbs	tare	39043.47 lbs	net	53902.47 l tons
						26.94 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	24.45	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644181

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26992 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56250 kg
In	12/22/2023 11:35:54	scale1	Emily W		tare	17190 kg
Out	12/22/2023 11:35:54		Emily W		net	39060 kg
					metric ton	39.06 t
Inbound	gross	124008.75 lbs	tare	37897.07 lbs	net	86111.68 l tons
						43.04 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	39.06	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644182

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 24368 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	59940 kg
In	12/22/2023 11:37:27	scale1	Emily W		tare	18120 kg
Out	12/22/2023 11:37:27		Emily W		net	41820 kg
					metric ton	41.82 t
Inbound	gross	132143.72 lbs	tare	39947.35 lbs	net	92196.37 l tons
						46.09 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	41.82	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644198

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# GREATNORTH818 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23295 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	65030 kg
In	12/22/2023 12:23:34	scale1	Emily W		tare	17180 kg
Out	12/22/2023 12:23:34		Emily W		net	47850 kg
					metric ton	47.85 t
Inbound	gross	143365.14 lbs	tare	37875.03 lbs	net	105490.11 tons
						52.73 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	47.85	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE TICKET # 1257098 CELL
 WEIGHMASTER PIRIE D.
 DATE/TIME IN 2/22/23 2:49 PM DATE/TIME OUT 23 3:03 PM
 VEHICLE JECULF304 CONTAINER 6007
 REFERENCE
 BILL OF LADING N/A

SCALE IN GROSS WEIGHT 98,240 NET TONS 27.89 ISSUING
 SCALE OUT TARE WEIGHT 42,460 NET WEIGHT 55,780 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
27.89	tn	Tracking Qty SW-COYT SOIL Origin:ONTARIO 1004				

Have a nice day. Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (04/19)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#

NAME
 NOM



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644231

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# STAR111 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36285 Grid

Destination CELL 4
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	60560 kg
In	12/22/2023 14:28:58	scale1	Emily W		tare	17170 kg
Out	12/22/2023 14:28:58		Emily W		net	43390 kg
					metric ton	43.39 t
Inbound	gross	133510.58 lbs	tare	37852.98 lbs	net	95657.59 l tons
						47.82 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	43.39	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644233

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# STAR105 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36284 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62060 kg
In	12/22/2023 14:30:43	scale1	Emily W		tare	17150 kg
Out	12/22/2023 15:26:25	scale2-out	Emily W		net	44910 kg
					metric ton	44.91 t
Inbound	gross	136817.48 lbs	tare	37808.89 lbs	net	99008.59 l tons
						49.49 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.91	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644245

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/22/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35586 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	66360 kg
In	12/22/2023 15:05:06	scale1	Emily W		tare	17950 kg
Out	12/22/2023 15:05:06		Emily W		net	48410 kg
					metric ton	48.41 t
Inbound	gross	146297.26 lbs	tare	39572.57 lbs	net	106724.69 tons
						53.35 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	48.41	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

Total: 548.86 MT

816 NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 261927
 857025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE # TICKET # 1257176 CELL
 WEIGHMASTER T-10
 DATE/TIME IN 7/27/23 07:58 AM DATE/TIME OUT 8/1/23 3:12 PM
 VEHICLE 2E002804 CONTAINER #
 REFERENCE
 BILL OF LADING N/A

SCALE IN BRUSH WEIGHT 106.780 NET TONG 22.41
 SCALE OUT TARE WEIGHT 81.980 NET WEIGHT 44.800

ISSUING
 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
32.40	tn	34-CONT COLL Origin:ONTARIO 1864				



Have a nice day. Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F04ZUPR2 (12-20)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECKS



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644373

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/27/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33218 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58540 kg
In	12/27/2023 10:50:14	scale1	Wendy B		tare	18450 kg
Out	12/27/2023 10:50:14		Wendy B		net	40090 kg
					metric ton	40.09 t
Inbound	gross	129057.28 lbs	tare	40674.87 lbs	net	88382.41 l tons
						44.18 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.09	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644381

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/27/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 24369 Grid

Destination CELL 4
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53670 kg
In	12/27/2023 11:13:27	scale1	Wendy B		tare	18190 kg
Out	12/27/2023 12:04:05	scale2-out	Emily W		net	35480 kg

Inbound	gross	118320.88 lbs	tare	40101.67 lbs	net	78219.21 l tons	39.10 T
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Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.48	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644410

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/27/2023 Vehicle# HTR811 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 23225 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	77700 kg
In	12/27/2023 12:22:19	scale1	Wendy B		tare	18520 kg
Out	12/27/2023 12:22:19		Wendy B		net	59180 kg
					metric ton	59.18 t
Inbound	gross	171297.42 lbs	tare	40829.19 lbs	net	130468.23 tons
						65.22 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	59.18	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644424

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/27/2023 Vehicle# HTR808 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33024 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50970 kg
In	12/27/2023 12:50:39	scale1	Wendy B		tare	17460 kg
Out	12/27/2023 12:50:39		Wendy B		net	33510 kg
					metric ton	33.51 t
Inbound	gross	112368.46 lbs	tare	38492.32 lbs	net	73876.15 l tons
						36.93 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	33.51	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644438

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/27/2023 Vehicle# 4060 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26993 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	58120 kg
In	12/27/2023 13:45:28	scale1	Wendy B		tare	17380 kg
Out	12/27/2023 13:45:28		Wendy B		net	40740 kg
					metric ton	40.74 t
Inbound	gross	128131.35 lbs	tare	38315.95 lbs	net	89815.40 l tons
						44.90 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	40.74	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644444

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/27/2023 Vehicle# 1596 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35581 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	53370 kg
In	12/27/2023 14:19:18	scale1	Wendy B		tare	17950 kg
Out	12/27/2023 14:19:18		Wendy B		net	35420 kg
					metric ton	35.42 t
Inbound	gross	117659.50 lbs	tare	39572.57 lbs	net	78086.93 l tons
						39.03 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	35.42	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

NAME
NO.

SITE NIAGARA FALLS LANDFILL 716-282-6381
5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER
957025 ONTARIO INC
14 FIRIE DRIVE
DUNDAS, ON L9H 6K5
Contract:42152318691
Generator:CITY OF HAMILTON

SITE # TICKET # 1257218 CELL
WEIGHMASTER PGM #
DATE/TIME IN 11/27/11 3:10 PM DATE/TIME OUT 3:18 PM
VEHICLE VEHICLE304 CONTAINER FOOT
REFERENCE
BILL OF LADING 117

RANCAL IN GROSS WEIGHT 104,800 NET TONS 30.81 TARE WEIGHT 43,180 NET WEIGHT 61,620

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
30.81	TON	SW-CONT SOIL Origin:ONTARIO 1004				



Have a nice day Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

F043UPR2 (12-20)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#

Total: 301.76 MT



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644483

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/28/2023 Vehicle# 5090 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 27002 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	68920 kg
In	12/28/2023 07:44:02	scale1	Wendy B		tare	17190 kg
Out	12/28/2023 07:44:02		Wendy B		net	51730 kg
					metric ton	51.73 t
Inbound	gross	151941.03 lbs	tare	37897.07 lbs	net	114043.96 tons
						57.01 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	51.73	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644491

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/28/2023 Vehicle# GN118 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33217 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	62450 kg
In	12/28/2023 08:22:56	scale1	Emily W		tare	18450 kg
Out	12/28/2023 08:22:56		Emily W		net	44000 kg
					metric ton	44.00 t
Inbound	gross	137677.27 lbs	tare	40674.87 lbs	net	97002.40 l tons
						48.49 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	44.00	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644497

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/28/2023 Vehicle# TERRACLEAN10 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 24370 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56280 kg
In	12/28/2023 08:43:06	scale1	Emily W		tare	18120 kg
Out	12/28/2023 08:43:06		Emily W		net	38160 kg
					metric ton	38.16 t
Inbound	gross	124074.89 lbs	tare	39947.35 lbs	net	84127.54 l tons
						42.05 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	38.16	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644498

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 12/28/2023 Vehicle# HTR808 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 33025 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55160 kg
In	12/28/2023 08:48:25	scale1	Emily W		tare	17460 kg
Out	12/28/2023 08:48:25		Emily W		net	37700 kg
					metric ton	37.70 t
Inbound	gross	121605.74 lbs	tare	38492.32 lbs	net	83113.42 l tons
						41.55 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	37.70	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature

SITE NIAGARA FALLS LANDFILL 716-282-6381
5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201777
957025 ONTARIO INC
14 FIRIE DRIVE
DONDAS, ON L9H 6X5
Contract:42152318691
Generator:CITY OF HAMILTON

WTE#00 TICKET # 1257279 CELL
WEIGHMASTER STEPHEN H.
DATE/TIME IN 12/28/23 2:00 PM DATE/TIME OUT 2:14 PM
VEHICLE JACOBS 921 CONTAINER 8001
REFERENCE
BILL OF LADING 18691-01

SCALE IN GROSS WEIGHT 108,700 NET TONS 33.46
SCALE OUT TARE WEIGHT 41,780 NET WEIGHT 66,920

INBOUND
INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
33.46	LN	ORIGIN:ONTARIO 1009				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

SIGNATURE _____

SITE NIAGARA FALLS LANDFILL 716-282-6361
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 161777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE# TICKET # 1257249 CELL

WEIGHMASTER Stephanie H.

DATE/TIME IN 12/28/23 10:06 AM DATE/TIME OUT 23 10:41 AM

VEHICLE JECULP 927 CONTAINER 8001

REFERENCE

BILL OF LADING 18691-01

INBOUND INVOICE

SCALE IN GROSS WEIGHT 111,900 NET TONS 34.76
 SCALE OUT TARE WEIGHT 42,340 NET WEIGHT 69,560

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
34.76	tn	Tracking Off SW-CONT SOIL Origin:ONTARIO 1004				



Have a nice day. Thank you for your business!

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SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#

Total: 233.50 MT

SITE NIAGARA FALLS LANDFILL 716-282-6381
5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 001972
951025-ONTARIO INC
14 PIRIE DRIVE
DONORA, ON L9H 6K5
Contract:42152318691
Generator:CITY OF HAMILTON

SITE # TICKET # 1287292 CELL
WEIGHMASTER Stephanie J.
DATE/TIME IN 11/29/11 9:09 AM DATE/TIME OUT 11 11:11 AM
VEHICLE JBC016 527 CONTAINER 8001
REFERENCE
BILL OF LADING 18801-01

SCALE IN GROSS WEIGHT 101,700 NET TONS 29.84 SHIPPING
SCALE OUT TARE WEIGHT 42,020 NET WEIGHT 59,680 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
29.84	TS	Tracking off HW-COIT SOIL Origin:ONTARIO 1004				



Have a nice day. Thank you for your business!

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NET AMOUNT
TENDERED
CHANGE
CHECK#

SITE NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd -Niagara Falls, NY 14304

CUSTOMER 201733
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE # TICKET # 1257313 CELL

WEIGHMASTER STEPHANIE H.

DATE/TIME IN 12/29/23 1:02 PM DATE/TIME OUT 1:34 PM

VEHICLE JACOBS 927 CONTAINER SOIL

REFERENCE

BILL OF LADING 18691-01

SCALE IN GROSS WEIGHT 104.800 NET TONS 31.49 INBOUND
 SCALE OUT TAKE WEIGHT 41.820 NET WEIGHT 62.980 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
31.49	to	Processing Unit SW-CONT SOIL Origin:ONTARIO 100%				



Have a nice day. Thank you for your business!

NET AMOUNT
TENDERED
CHANGE
CHECK#

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RS-F04ZUPR2 (12-20)

SIGNATURE _____

Total: 55.64 MT

SITE
 NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd Niagara Falls, NY 14304

CUSTOMER
 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SITE TICKET #
 5B 1257328

WEIGHMASTER
 Pam S.

DATE/TIME IN 1/2/24 7:42 am
DATE/TIME OUT 1/2/24 8:24 am

VEHICLE JECULP 927
CONTAINER 60CT

REFERENCE
 N/A

BILL OF LADING N/A

INBOUND INVOICE

SCALE IN GROSS WEIGHT	101,900	NET TONS	29.78
SCALE OUT TARE WEIGHT	42,340	NET WEIGHT	59,560

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
60.00	YD	Tracking QTY				
29.78	tn	SW-CONT SOIL Origin:ONTARIO 1008				



Have a nice day. Thank you for your business!

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SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#

SITE
 NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd Niagara Falls, NY 14304

SITE	TICKET #	CELL
50	1257324	
WEIGHMASTER		
DATE/TIME IN	Pam 5.	DATE/TIME OUT
VEHICLE	1/2/24 7:38 AM	1/2/24 8:10 AM
REFERENCE	TEC012904	CONTAINER
		600T
BILL OF LADING		
N/A		

CUSTOMER
 201777
 957025 ONTARIO INC
 14 PIRIE DRIVE
 DUNDAS, ON L9H 6X5
 Contract:42152318691
 Generator:CITY OF HAMILTON

SCALE IN GROSS WEIGHT 109,540 NET TONS 31.34
 SCALE OUT TARE WEIGHT 45,860 NET WEIGHT 62,680

INBOUND
 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
60.00	YD	Tracking QTY				
31.34	ton	SW-COAT SOIL Origin:ONTARIO 1004				



Have a nice day. Thank you for your business!

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NET AMOUNT
TENDERED
CHANGE
CHECK#



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644842

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier TERRA CLEAN TERRA CLEAN
 Ticket Date 01/02/2024 Vehicle# DIRTBOY1593 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 35853 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	56280 kg	
In	01/02/2024 08:48:31	scale1	Wendy B		tare	19300 kg	
Out	01/02/2024 09:18:49	scale2-out	Emily W		net	36980 kg	
					metric ton	36.98 t	
Inbound	gross	124074.89 lbs		tare	42548.78 lbs	net 81526.11 l tons	40.75 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.98	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644828

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier SOIL AND EARTH SOIL AND EARTH
 Ticket Date 01/02/2024 Vehicle# 1598 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 22183 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	50400 kg
In	01/02/2024 07:46:16	scale1	Wendy B		tare	17350 kg
Out	01/02/2024 07:46:16		Wendy B		net	33050 kg
					metric ton	33.05 t
Inbound	gross	111111.84 lbs	tare	38249.81 lbs	net	72862.03 l tons
						36.42 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	33.05	t				HAMILTON

Total HST
 Total Ticket

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Driver`s Signature



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644846

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier TERRA CLEAN TERRA CLEAN
 Ticket Date 01/02/2024 Vehicle# 4060 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 26994 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

In	01/02/2024 08:59:18	scale1	Wendy B	Inbound	gross	57940 kg	
Out	01/02/2024 10:08:52	scale2-out	Emily W		tare	17170 kg	
					net	40770 kg	
					metric ton	40.77 t	
Inbound	gross	127734.52 lbs		tare	37852.98 lbs	net 89881.54 l tons	44.93 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 Cont Soil RCG-Metr	100	40.77	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature

SITE
 NIAGARA FALLS LANDFILL 716-282-6381
 5600 Niagara Falls Blvd Niagara Falls, NY 14304

CUSTOMER
 301777
 857025 ONTARIO INC
 14 FIRK DRIVE
 DUNDAS, ON L9N 6K5
 CONTACT: 42152318691
 DEMONSTRATOR: CITY OF HAMILTON

SITE **TICKET #** **CELL**
 50 1257321

WEIGHMASTER

DATE/TIME IN **DATE/TIME OUT**
 1/2/24 7:36 am 1/2/24

VEHICLE **CONTAINER**
 JECULPT34 6007

REFERENCE

REL OF LADING N/A

SCALE IN GROSS WEIGHT 99,820 NET TONS 30.67 INBOUND
 SCALE OUT TARE WEIGHT 38,480 NET WEIGHT 61,340 INVOICE

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAX
25.74	YD	Trunking QTY			
12.67	tn	SP-COMB SOIL Origin: ONTARIO 1309			



Please a nice day. Thank you for your business!

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

[Handwritten Signature]



Twin Creeks Landfill
 RR #4 (Second line South), 5768 Nauvoo Rd
 Watford, ON, N0M 2S0
 Ph: 519-849-5810

Reprint
 Ticket# 644849

Customer Name MILESTONEENVIRONMENTAL 106926 Carrier TERRA CLEAN TERRA CLEAN
 Ticket Date 01/02/2024 Vehicle# DIRTBOY1595 Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0003968
 State Waste Code Gen EPA ID
 Manifest 36310 Grid

Destination DAILY COVER
 PO 01220228-75
 Profile 106926ON (CONTAMINATED SEDIMENTS)
 Generator 199-CITYOFHAMILTON200 200 MACKLIN ST N

	Time	Scale	Operator	Inbound	gross	55670 kg	
In	01/02/2024 09:07:07	scale1	Wendy B		tare	18940 kg	
Out	01/02/2024 09:55:16	scale2-out	Emily W		net	36730 kg	
					metric ton	36.73 t	
Inbound	gross	122730.08 lbs		tare	41755.12 lbs	net 80974.96 l tons	40.48 T

Comments

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil RCG-Metr 100	36.73	t				HAMILTON

Total HST
 Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:

"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature

Total: 230.80 MT

K.2

TCLP Report





CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

<p>Work Order : WT2336751</p> <p>Client : EXP Services Inc.</p> <p>Contact : Jared Ehgoetz</p> <p>Address : 405 Maple Grove Road Unit 6 Cambridge ON Canada N3E 1B6</p> <p>Telephone : 519 650 4918</p> <p>Project : KCH-22020234-AO</p> <p>PO : ----</p> <p>C-O-C number : 20-1083700</p> <p>Sampler : J. Ellis</p> <p>Site : ----</p> <p>Quote number : SOA</p> <p>No. of samples received : 6</p> <p>No. of samples analysed : 6</p>	<p>Page : 1 of 7</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Gayle Braun</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 09-Nov-2023 17:55</p> <p>Date Analysis Commenced : 10-Nov-2023</p> <p>Issue Date : 14-Nov-2023 19:44</p>
--	---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Tristan Stapells		Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario



No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	no units
°C	degrees celsius
m/sec	metres per second
mg/L	milligrams per litre
mm/sec	millimetres per second
pH units	pH units
sec	seconds

>: greater than.

<: less than.

Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.



Analytical Results Evaluation

				Client sample ID	Bag 1	Bag 3	Bag 4	Bag 5	Bag 6	Bag 8	----
Matrix: Soil				Sampling date/time	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	----
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
Analyte	CAS Number	Method/Lab	Unit	WT2336751-001	WT2336751-002	WT2336751-003	WT2336751-004	WT2336751-005	WT2336751-006	-----	
Physical Tests											
Ignitability	----	E209/WT	-	Negative	Negative	Negative	Negative	Negative	Negative	Negative	----
Sample comment	----	E209/WT	-	BROWN CLAY LOAM	BROWN CLAY LOAM	BROWN CLAY LOAM	BROWN SANDY LOAM	BROWN SANDY LOAM WITH ROCKS	BROWN SANDY LOAM	BROWN SANDY LOAM	----
Time to ignition	----	E209/WT	sec	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	----
Burning rate	----	E209/WT	mm/sec	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	----
Temperature of test material	----	E209/WT	°C	19.5	19.5	19.5	19.5	19.5	19.5	19.5	----
Air velocity, fume hood	----	E209/WT	m/sec	0.44	0.44	0.44	0.44	0.44	0.44	0.44	----
TCLP Extractables											
Aroclor 1016, TCLP	12674-11-2	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1221, TCLP	11104-28-2	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1232, TCLP	11141-16-5	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1242, TCLP	53469-21-9	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1248, TCLP	12672-29-6	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1254, TCLP	11097-69-1	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1260, TCLP	11096-82-5	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1262, TCLP	37324-23-5	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1268, TCLP	11100-14-4	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Benzo(a)pyrene, TCLP	50-32-8	E644/WT	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	----
Decachlorobiphenyl, TCLP	2051-24-3	E688A/WT	%	88.2	101	83.7	90.1	81.9	97.1	97.1	----
Tetrachloro-m-xylene, TCLP	877-09-8	E688A/WT	%	69.1	80.7	63.5	75.2	70.5	77.2	77.2	----
TCLP Extractables Surrogates											
Chrysene-d12, TCLP	1719-03-5	E644/WT	%	118	129	114	122	123	115	115	----
Naphthalene-d8, TCLP	1146-65-2	E644/WT	%	105	116	106	113	116	108	108	----
Phenanthrene-d10, TCLP	1517-22-2	E644/WT	%	112	124	111	119	121	110	110	----
TCLP Metals											
Arsenic, TCLP	7440-38-2	E444/WT	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	----
pH, TCLP 1st preliminary	----	EPP444/WT	pH units	8.44	8.41	8.35	8.94	8.88	9.00	9.00	----



Analytical Results Evaluation

				Client sample ID	Bag 1	Bag 3	Bag 4	Bag 5	Bag 6	Bag 8	----
Matrix: Soil				Sampling date/time	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	----
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
Analyte	CAS Number	Method/Lab	Unit	WT2336751-001	WT2336751-002	WT2336751-003	WT2336751-004	WT2336751-005	WT2336751-006	-----	
TCLP Metals											
pH, TCLP 2nd preliminary	----	EPP444/WT	pH units	5.72	5.74	5.78	5.30	5.41	5.29	----	
pH, TCLP extraction fluid initial	----	EPP444/WT	pH units	2.87	2.87	2.87	2.87	2.87	2.87	----	
pH, TCLP final	----	EPP444/WT	pH units	5.04	4.97	4.77	5.67	5.60	5.66	----	
Barium, TCLP	7440-39-3	E444/WT	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	----	
Boron, TCLP	7440-42-8	E444/WT	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	----	
Cadmium, TCLP	7440-43-9	E444/WT	mg/L	0.071	0.050	0.084	<0.050	<0.050	<0.050	----	
Chromium, TCLP	7440-47-3	E444/WT	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	----	
Lead, TCLP	7439-92-1	E444/WT	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	----	
Selenium, TCLP	7782-49-2	E444/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----	
Silver, TCLP	7440-22-4	E444/WT	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----	
Uranium, TCLP	7440-61-1	E444/WT	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	----	
Mercury, TCLP	7439-97-6	E512/WT	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	----	
TCLP VOCs											
Benzene, TCLP	71-43-2	E615B/WT	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	----	
Carbon tetrachloride, TCLP	56-23-5	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Chlorobenzene, TCLP	108-90-7	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Chloroform, TCLP	67-66-3	E615B/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----	
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Dichloroethane, 1,2-, TCLP	107-06-2	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Dichloromethane, TCLP	75-09-2	E615B/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----	
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----	
Tetrachloroethylene, TCLP	127-18-4	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Trichloroethylene, TCLP	79-01-6	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Vinyl chloride, TCLP	75-01-4	E615B/WT	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----	
TCLP VOCs Surrogates											
Bromofluorobenzene, 4-, TCLP	460-00-4	E615B/WT	%	84.8	83.5	84.0	84.7	98.2	97.9	----	



Analytical Results Evaluation

				Client sample ID	Bag 1	Bag 3	Bag 4	Bag 5	Bag 6	Bag 8	----
Matrix: Soil				Sampling date/time	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	----
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
Analyte	CAS Number	Method/Lab	Unit	WT2336751-001	WT2336751-002	WT2336751-003	WT2336751-004	WT2336751-005	WT2336751-006	-----	
TCLP VOCs Surrogates											
Difluorobenzene, 1,4-, TCLP	540-36-3	E615B/WT	%	96.5	97.1	96.7	97.2	98.4	98.1	----	
Polychlorinated Biphenyls											
Polychlorinated biphenyls [PCBs], total, TCLP	----	E688A/WT	mg/L	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	----	

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



Summary of Guideline Limits

Analyte	CAS Number	Unit	ONWCR Sch. 4						
Physical Tests									
Air velocity, fume hood	----	m/sec	--						
Burning rate	----	mm/sec	--						
Ignitability	----	-	--						
Sample comment	----	-	--						
Temperature of test material	----	°C	--						
Time to ignition	----	sec	--						
TCLP Extractables									
Aroclor 1016, TCLP	12674-11-2	mg/L	--						
Aroclor 1221, TCLP	11104-28-2	mg/L	--						
Aroclor 1232, TCLP	11141-16-5	mg/L	--						
Aroclor 1242, TCLP	53469-21-9	mg/L	--						
Aroclor 1248, TCLP	12672-29-6	mg/L	--						
Aroclor 1254, TCLP	11097-69-1	mg/L	--						
Aroclor 1260, TCLP	11096-82-5	mg/L	--						
Aroclor 1262, TCLP	37324-23-5	mg/L	--						
Aroclor 1268, TCLP	11100-14-4	mg/L	--						
Benzo(a)pyrene, TCLP	50-32-8	mg/L	0.001 mg/L						
Decachlorobiphenyl, TCLP	2051-24-3	%							
Tetrachloro-m-xylene, TCLP	877-09-8	%							
TCLP Extractables Surrogates									
Chrysene-d12, TCLP	1719-03-5	%							
Naphthalene-d8, TCLP	1146-65-2	%							
Phenanthrene-d10, TCLP	1517-22-2	%							
TCLP Metals									
Arsenic, TCLP	7440-38-2	mg/L	2.5 mg/L						
Barium, TCLP	7440-39-3	mg/L	100 mg/L						
Boron, TCLP	7440-42-8	mg/L	500 mg/L						
Cadmium, TCLP	7440-43-9	mg/L	0.5 mg/L						
Chromium, TCLP	7440-47-3	mg/L	5 mg/L						
Lead, TCLP	7439-92-1	mg/L	5 mg/L						
Mercury, TCLP	7439-97-6	mg/L	0.1 mg/L						
pH, TCLP 1st preliminary	----	pH units	--						
pH, TCLP 2nd preliminary	----	pH units	--						
pH, TCLP extraction fluid initial	----	pH units	--						
pH, TCLP final	----	pH units	--						
Selenium, TCLP	7782-49-2	mg/L	1 mg/L						
Silver, TCLP	7440-22-4	mg/L	5 mg/L						



Analyte	CAS Number	Unit	ONWCR Sch. 4						
TCLP Metals - Continued									
Uranium, TCLP	7440-61-1	mg/L	10 mg/L						
TCLP VOCs									
Benzene, TCLP	71-43-2	mg/L	0.5 mg/L						
Carbon tetrachloride, TCLP	56-23-5	mg/L	0.5 mg/L						
Chlorobenzene, TCLP	108-90-7	mg/L	8 mg/L						
Chloroform, TCLP	67-66-3	mg/L	10 mg/L						
Dichlorobenzene, 1,2-, TCLP	95-50-1	mg/L	20 mg/L						
Dichlorobenzene, 1,4-, TCLP	106-46-7	mg/L	0.5 mg/L						
Dichloroethane, 1,2-, TCLP	107-06-2	mg/L	0.5 mg/L						
Dichloroethylene, 1,1-, TCLP	75-35-4	mg/L	1.4 mg/L						
Dichloromethane, TCLP	75-09-2	mg/L	5 mg/L						
Methyl ethyl ketone [MEK], TCLP	78-93-3	mg/L	200 mg/L						
Tetrachloroethylene, TCLP	127-18-4	mg/L	3 mg/L						
Trichloroethylene, TCLP	79-01-6	mg/L	5 mg/L						
Vinyl chloride, TCLP	75-01-4	mg/L	0.2 mg/L						
Bromofluorobenzene, 4-, TCLP	460-00-4	%							
Difluorobenzene, 1,4-, TCLP	540-36-3	%							
Polychlorinated Biphenyls									
Polychlorinated biphenyls [PCBs], total, TCLP	----	mg/L	0.3 mg/L						

Please refer to the General Comments section for an explanation of any qualifiers detected.

Key:

ONWCR

Ontario MECP, General Waste Control Regulation No. 347/90,558/00

Sch. 4

Schedule 4 Leachate Quality Criteria

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2336751</p> <p>Client : EXP Services Inc.</p> <p>Contact : Jared Ehgoetz</p> <p>Address : 405 Maple Grove Road Unit 6 Cambridge ON Canada N3E 1B6</p> <p>Telephone : 519 650 4918</p> <p>Project : KCH-22020234-AO</p> <p>PO : ---</p> <p>C-O-C number : 20-1083700</p> <p>Sampler : J. Ellis</p> <p>Site : ---</p> <p>Quote number : SOA</p> <p>No. of samples received : 6</p> <p>No. of samples analysed : 6</p>	<p>Page : 1 of 12</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Gayle Braun</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 09-Nov-2023 17:55</p> <p>Issue Date : 14-Nov-2023 19:44</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
TCLP Extractables	QC-1235100-002	----	Aroclor 1248, TCLP	12672-29-6	E688A	62.4 % ^{LCS-L}	65.0-130%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 1	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 3	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 4	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 5	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 6	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 8	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 1	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✔	14-Nov-2023	18 days	6 days	✔



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 3	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 4	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 5	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 6	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 8	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
TCLP Extractables : PAHs by GC-MS (TCLP)											
Amber glass/Teflon lined cap (sodium bisulfate) Bag 1	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓	
TCLP Extractables : PAHs by GC-MS (TCLP)											
Amber glass/Teflon lined cap (sodium bisulfate) Bag 3	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓	
TCLP Extractables : PAHs by GC-MS (TCLP)											
Amber glass/Teflon lined cap (sodium bisulfate) Bag 4	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓	
TCLP Extractables : PAHs by GC-MS (TCLP)											
Amber glass/Teflon lined cap (sodium bisulfate) Bag 5	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓	



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Extractables : PAHs by GC-MS (TCLP)										
Amber glass/Teflon lined cap (sodium bisulfate) Bag 6	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓
TCLP Extractables : PAHs by GC-MS (TCLP)										
Amber glass/Teflon lined cap (sodium bisulfate) Bag 8	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 1	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 3	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 4	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 5	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 6	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 8	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) Bag 1	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 3	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 4	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 5	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 6	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 8	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 1	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 3	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 4	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 5	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 6	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 8	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 1	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 3	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 4	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 5	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 6	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 8	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓	
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)											
Glass vial (sodium bisulfate) Bag 1	E615B	10-Nov-2023	11-Nov-2023	16 days	4 days	✓	11-Nov-2023	16 days	4 days	✓	



Matrix: **Soil/Solid**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)											
Glass vial (sodium bisulfate) Bag 3	E615B	10-Nov-2023	11-Nov-2023	16 days	4 days	✓	11-Nov-2023	16 days	4 days	✓	
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)											
Glass vial (sodium bisulfate) Bag 4	E615B	10-Nov-2023	11-Nov-2023	16 days	4 days	✓	11-Nov-2023	16 days	4 days	✓	
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)											
Glass vial (sodium bisulfate) Bag 5	E615B	10-Nov-2023	11-Nov-2023	16 days	4 days	✓	11-Nov-2023	16 days	4 days	✓	
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)											
Glass vial (sodium bisulfate) Bag 6	E615B	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	13-Nov-2023	18 days	6 days	✓	
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)											
Glass vial (sodium bisulfate) Bag 8	E615B	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	13-Nov-2023	18 days	6 days	✓	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Mercury by CVAAS (TCLP)	E512	1235053	1	15	6.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1235007	1	13	7.6	5.0	✓
PAHs by GC-MS (TCLP)	E644	1235111	1	9	11.1	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1235100	1	8	12.5	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1233991	2	9	22.2	5.0	✓
Laboratory Control Samples (LCS)							
Mercury by CVAAS (TCLP)	E512	1235053	1	15	6.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1235007	1	13	7.6	5.0	✓
PAHs by GC-MS (TCLP)	E644	1235111	1	9	11.1	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1235100	1	8	12.5	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1233991	2	9	22.2	5.0	✓
Method Blanks (MB)							
Mercury by CVAAS (TCLP)	E512	1235053	1	15	6.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1235007	1	13	7.6	5.0	✓
PAHs by GC-MS (TCLP)	E644	1235111	1	9	11.1	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1235100	1	8	12.5	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1233991	2	9	22.2	5.0	✓
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	1235053	1	15	6.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1235007	1	13	7.6	5.0	✓
PAHs by GC-MS (TCLP)	E644	1235111	1	9	11.1	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1235100	1	8	12.5	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1233991	2	9	22.2	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ignitability (O. Reg. 347/558)	E209 ALS Environmental - Waterloo	Soil/Solid	EPA 1030 (mod)	Ignitability is determined by placing a sample on a ceramic tile and formed into a test strip. One end of the strip is then heated with a torch. Any burn rate for non-metallic samples that exceeds 2.2 mm/sec is considered to have a positive result. For metals, a burn rate of more than 0.17 mm/sec is considered to have a positive result.
Metals by CRC ICPMS (TCLP)	E444 ALS Environmental - Waterloo	Soil/Solid	EPA 1311/6020B (mod)	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by Collision/Reaction Cell ICPMS.
Mercury by CVAAS (TCLP)	E512 ALS Environmental - Waterloo	Soil/Solid	SW 846 -1311/245.1 CVAA ON TCLP LEACHATE	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by CVAAS.
VOCs by Headspace GC-MS (TCLP)	E615B ALS Environmental - Waterloo	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by GC-MS (TCLP)	E644 ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
PCB Aroclors by GC-MS (TCLP)	E688A ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis (TCLP)	EP582 ALS Environmental - Waterloo	Soil/Solid	EPA 5021A (mod)	Liquid obtained after the TCLP process is prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Extraction (TCLP)	EP602 ALS Environmental - Waterloo	Soil/Solid	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction (TCLP)	EP661 ALS Environmental - Waterloo	Soil/Solid	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444 ALS Environmental - Waterloo	Soil/Solid	EPA 1311	Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample involves particle size reduction, homogenization, then determination of appropriate extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle with the appropriate extraction fluid then tumbled in a rotary extractor for 18+/- 2 hours at 23 +/- 2 C. The liquid leachate is filtered to separate from solids then bottled and prepared for analytical tests.
TCLP Leachate Preparation (VOCs)	EPP582 ALS Environmental - Waterloo	Soil/Solid	EPA 1311	An extract produced by the Toxicity Characteristic Leaching Procedure (TCLP) as per EPA 1311.

QUALITY CONTROL REPORT

Work Order : **WT2336751**
Client : EXP Services Inc.
Contact : Jared Ehgoetz
Address : 405 Maple Grove Road Unit 6
 Cambridge ON Canada N3E 1B6
Telephone :
Project : KCH-22020234-AO
PO : ---
C-O-C number : 20-1083700
Sampler : J. Ellis 519 650 4918
Site : ---
Quote number : SOA
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 10
Laboratory : ALS Environmental - Waterloo
Account Manager : Gayle Braun
Address : 60 Northland Road, Unit 1
 Waterloo, Ontario Canada N2V 2B8
Telephone : +1 519 886 6910
Date Samples Received : 09-Nov-2023 17:55
Date Analysis Commenced : 10-Nov-2023
Issue Date : 14-Nov-2023 19:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Tristan Stapells		Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

Page : 2 of 10
Work Order : WT2336751
Client : EXP Services Inc.
Project : KCH-22020234-AO



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
TCLP Extractables (QC Lot: 1235100)											
WT2336605-005	Anonymous	Aroclor 1016, TCLP	12674-11-2	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1221, TCLP	11104-28-2	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1232, TCLP	11141-16-5	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1242, TCLP	53469-21-9	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1248, TCLP	12672-29-6	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1254, TCLP	11097-69-1	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1260, TCLP	11096-82-5	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1262, TCLP	37324-23-5	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1268, TCLP	11100-14-4	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
TCLP Extractables (QC Lot: 1235111)											
WT2336387-001	Anonymous	Benzo(a)pyrene, TCLP	50-32-8	E644	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	---
TCLP Metals (QC Lot: 1235007)											
WT2336715-001	Anonymous	Arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	---
		Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	0	Diff <2x LOR	---
		Boron, TCLP	7440-42-8	E444	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	---
		Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	---
		Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	---
		Selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	---
		Silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	---
		Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	0	Diff <2x LOR	---
TCLP Metals (QC Lot: 1235053)											
WT2336700-001	Anonymous	Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	---
TCLP VOCs (QC Lot: 1233991)											
WT2336751-001	Bag 1	Benzene, TCLP	71-43-2	E615B	5.0	µg/L	<0.0050 mg/L	<5.0	0	Diff <2x LOR	---
		Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	---



Sub-Matrix: Soil/Solid					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
TCLP VOCs (QC Lot: 1233991) - continued											
WT2336751-001	Bag 1	Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Chloroform, TCLP	67-66-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<0.050 mg/L	<50	0	Diff <2x LOR	----
TCLP VOCs (QC Lot: 1235043)											
WT2336605-005	Anonymous	Benzene, TCLP	71-43-2	E615B	5.0	µg/L	<0.0050 mg/L	<5.0	0	Diff <2x LOR	----
		Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Chloroform, TCLP	67-66-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<0.050 mg/L	<50	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
TCLP Extractables (QCLot: 1235100)						
Aroclor 1016, TCLP	12674-11-2	E688A	0.2	µg/L	<0.20	----
Aroclor 1221, TCLP	11104-28-2	E688A	0.2	µg/L	<0.20	----
Aroclor 1232, TCLP	11141-16-5	E688A	0.2	µg/L	<0.20	----
Aroclor 1242, TCLP	53469-21-9	E688A	0.2	µg/L	<0.20	----
Aroclor 1248, TCLP	12672-29-6	E688A	0.2	µg/L	<0.20	----
Aroclor 1254, TCLP	11097-69-1	E688A	0.2	µg/L	<0.20	----
Aroclor 1260, TCLP	11096-82-5	E688A	0.2	µg/L	<0.20	----
Aroclor 1262, TCLP	37324-23-5	E688A	0.2	µg/L	<0.20	----
Aroclor 1268, TCLP	11100-14-4	E688A	0.2	µg/L	<0.20	----
TCLP Extractables (QCLot: 1235111)						
Benzo(a)pyrene, TCLP	50-32-8	E644	0.5	µg/L	<0.50	----
TCLP Metals (QCLot: 1235007)						
Arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	----
Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	----
Boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	----
Cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	----
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	----
Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	----
Selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	----
Silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	----
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	<0.20	----
TCLP Metals (QCLot: 1235053)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP VOCs (QCLot: 1233991)						
Benzene, TCLP	71-43-2	E615B	5	µg/L	<5.0	----
Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	<25	----
Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<25	----
Chloroform, TCLP	67-66-3	E615B	100	µg/L	<100	----
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	<25	----
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	<25	----
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<25	----
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	<25	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
TCLP VOCs (QCLot: 1233991) - continued						
Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	<100	----
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<100	----
Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<25	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<25	----
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<50	----
TCLP VOCs (QCLot: 1235043)						
Benzene, TCLP	71-43-2	E615B	5	µg/L	<5.0	----
Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	<25	----
Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<25	----
Chloroform, TCLP	67-66-3	E615B	100	µg/L	<100	----
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	<25	----
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	<25	----
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<25	----
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	<25	----
Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	<100	----
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<100	----
Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<25	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<25	----
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<50	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
TCLP Extractables (QCLot: 1235100)									
Aroclor 1016, TCLP	12674-11-2	E688A	0.2	µg/L	0.2 µg/L	73.6	65.0	130	----
Aroclor 1221, TCLP	11104-28-2	E688A	0.2	µg/L	0.2 µg/L	73.6	65.0	130	----
Aroclor 1232, TCLP	11141-16-5	E688A	0.2	µg/L	0.2 µg/L	73.6	65.0	130	----
Aroclor 1242, TCLP	53469-21-9	E688A	0.2	µg/L	0.2 µg/L	73.6	65.0	130	----
Aroclor 1248, TCLP	12672-29-6	E688A	0.2	µg/L	0.2 µg/L	# 62.4	65.0	130	LCS-L
Aroclor 1254, TCLP	11097-69-1	E688A	0.2	µg/L	0.2 µg/L	70.1	65.0	130	----
Aroclor 1260, TCLP	11096-82-5	E688A	0.2	µg/L	0.2 µg/L	66.5	65.0	130	----
Aroclor 1262, TCLP	37324-23-5	E688A	0.2	µg/L	0.2 µg/L	66.5	65.0	130	----
Aroclor 1268, TCLP	11100-14-4	E688A	0.2	µg/L	0.2 µg/L	66.5	65.0	130	----
TCLP Extractables (QCLot: 1235111)									
Benzo(a)pyrene, TCLP	50-32-8	E644	0.5	µg/L	0.5263 µg/L	98.2	60.0	140	----
TCLP Metals (QCLot: 1235007)									
Arsenic, TCLP	7440-38-2	E444	1	mg/L	0.05 mg/L	110	70.0	130	----
Barium, TCLP	7440-39-3	E444	2.5	mg/L	0.0125 mg/L	105	70.0	130	----
Boron, TCLP	7440-42-8	E444	0.5	mg/L	0.05 mg/L	98.1	70.0	130	----
Cadmium, TCLP	7440-43-9	E444	0.05	mg/L	0.005 mg/L	104	70.0	130	----
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	0.0125 mg/L	105	70.0	130	----
Lead, TCLP	7439-92-1	E444	0.25	mg/L	0.025 mg/L	104	70.0	130	----
Selenium, TCLP	7782-49-2	E444	0.1	mg/L	0.05 mg/L	105	70.0	130	----
Silver, TCLP	7440-22-4	E444	0.05	mg/L	0.005 mg/L	96.2	70.0	130	----
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	0.00025 mg/L	105	70.0	130	----
TCLP Metals (QCLot: 1235053)									
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	0.0001 mg/L	99.4	70.0	130	----
TCLP VOCs (QCLot: 1233991)									
Benzene, TCLP	71-43-2	E615B	5	µg/L	250 µg/L	99.2	70.0	130	----
Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	250 µg/L	93.9	60.0	140	----
Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	250 µg/L	99.6	70.0	130	----
Chloroform, TCLP	67-66-3	E615B	100	µg/L	250 µg/L	100	70.0	130	----
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	250 µg/L	100	70.0	130	----
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	250 µg/L	98.3	70.0	130	----
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	250 µg/L	113	70.0	130	----



Sub-Matrix: Soil/Solid

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
TCLP VOCs (QCLot: 1233991) - continued									
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	250 µg/L	96.9	70.0	130	----
Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	250 µg/L	107	70.0	130	----
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	250 µg/L	114	50.0	150	----
Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	250 µg/L	89.5	70.0	130	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	250 µg/L	92.4	70.0	130	----
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	250 µg/L	91.6	60.0	130	----
TCLP VOCs (QCLot: 1235043)									
Benzene, TCLP	71-43-2	E615B	5	µg/L	250 µg/L	92.0	70.0	130	----
Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	250 µg/L	98.6	60.0	140	----
Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	250 µg/L	93.4	70.0	130	----
Chloroform, TCLP	67-66-3	E615B	100	µg/L	250 µg/L	96.1	70.0	130	----
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	250 µg/L	93.6	70.0	130	----
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	250 µg/L	95.6	70.0	130	----
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	250 µg/L	98.9	70.0	130	----
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	250 µg/L	90.5	70.0	130	----
Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	250 µg/L	100	70.0	130	----
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	250 µg/L	85.3	50.0	150	----
Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	250 µg/L	88.1	70.0	130	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	250 µg/L	91.3	70.0	130	----
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	250 µg/L	83.2	60.0	130	----

Qualifiers

Qualifier	Description
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Soil/Solid

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
TCLP Extractables (QCLot: 1235100)										
WT2336605-005	Anonymous	Aroclor 1016, TCLP	12674-11-2	E688A	0.17 µg/L	0.2 µg/L	83.6	50.0	150	---
		Aroclor 1221, TCLP	11104-28-2	E688A	0.17 µg/L	0.2 µg/L	83.6	50.0	150	---
		Aroclor 1232, TCLP	11141-16-5	E688A	0.17 µg/L	0.2 µg/L	83.6	50.0	150	---
		Aroclor 1242, TCLP	53469-21-9	E688A	0.16 µg/L	0.2 µg/L	82.2	50.0	150	---
		Aroclor 1248, TCLP	12672-29-6	E688A	0.17 µg/L	0.2 µg/L	83.6	50.0	150	---
		Aroclor 1254, TCLP	11097-69-1	E688A	0.15 µg/L	0.2 µg/L	76.0	50.0	150	---
		Aroclor 1260, TCLP	11096-82-5	E688A	0.17 µg/L	0.2 µg/L	84.8	50.0	150	---
		Aroclor 1262, TCLP	37324-23-5	E688A	0.17 µg/L	0.2 µg/L	85.1	50.0	150	---
		Aroclor 1268, TCLP	11100-14-4	E688A	0.17 µg/L	0.2 µg/L	85.1	50.0	150	---
TCLP Extractables (QCLot: 1235111)										
WT2336387-001	Anonymous	Benzo(a)pyrene, TCLP	50-32-8	E644	0.50 µg/L	0.5263 µg/L	94.3	50.0	140	---
TCLP Metals (QCLot: 1235007)										
WT2336715-001	Anonymous	Arsenic, TCLP	7440-38-2	E444	5.3 mg/L	5 mg/L	106	50.0	140	---
		Barium, TCLP	7440-39-3	E444	12.8 mg/L	12.5 mg/L	102	50.0	140	---
		Boron, TCLP	7440-42-8	E444	9.40 mg/L	10 mg/L	94.0	50.0	140	---
		Cadmium, TCLP	7440-43-9	E444	0.251 mg/L	0.25 mg/L	100	50.0	140	---
		Chromium, TCLP	7440-47-3	E444	1.27 mg/L	1.25 mg/L	101	50.0	140	---
		Lead, TCLP	7439-92-1	E444	9.82 mg/L	10 mg/L	98.2	50.0	140	---
		Selenium, TCLP	7782-49-2	E444	5.24 mg/L	5 mg/L	105	50.0	140	---
		Silver, TCLP	7440-22-4	E444	0.087 mg/L	0.1 mg/L	87.4	50.0	140	---
		Uranium, TCLP	7440-61-1	E444	5.05 mg/L	5 mg/L	101	50.0	140	---
TCLP Metals (QCLot: 1235053)										
WT2336700-001	Anonymous	Mercury, TCLP	7439-97-6	E512	0.0029 mg/L	0.003 mg/L	98.0	50.0	140	---
TCLP VOCs (QCLot: 1233991)										
WT2336751-001	Bag 1	Benzene, TCLP	71-43-2	E615B	227 µg/L	250 µg/L	90.9	50.0	140	---
		Carbon tetrachloride, TCLP	56-23-5	E615B	210 µg/L	250 µg/L	84.0	50.0	140	---
		Chlorobenzene, TCLP	108-90-7	E615B	232 µg/L	250 µg/L	92.6	50.0	140	---
		Chloroform, TCLP	67-66-3	E615B	230 µg/L	250 µg/L	91.6	50.0	140	---
		Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	237 µg/L	250 µg/L	94.9	50.0	140	---
		Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	227 µg/L	250 µg/L	90.8	50.0	140	---



Sub-Matrix: Soil/Solid

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	
TCLP VOCs (QCLot: 1233991) - continued										
WT2336751-001	Bag 1	Dichloroethane, 1,2-, TCLP	107-06-2	E615B	267 µg/L	250 µg/L	107	50.0	140	----
		Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	217 µg/L	250 µg/L	86.8	50.0	140	----
		Dichloromethane, TCLP	75-09-2	E615B	250 µg/L	250 µg/L	99.2	50.0	140	----
		Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	270 µg/L	250 µg/L	110	50.0	140	----
		Tetrachloroethylene, TCLP	127-18-4	E615B	202 µg/L	250 µg/L	80.9	50.0	140	----
		Trichloroethylene, TCLP	79-01-6	E615B	210 µg/L	250 µg/L	83.9	50.0	140	----
		Vinyl chloride, TCLP	75-01-4	E615B	203 µg/L	250 µg/L	81.2	50.0	140	----
TCLP VOCs (QCLot: 1235043)										
WT2336605-005	Anonymous	Benzene, TCLP	71-43-2	E615B	232 µg/L	250 µg/L	92.7	50.0	140	----
		Carbon tetrachloride, TCLP	56-23-5	E615B	234 µg/L	250 µg/L	93.8	50.0	140	----
		Chlorobenzene, TCLP	108-90-7	E615B	234 µg/L	250 µg/L	93.4	50.0	140	----
		Chloroform, TCLP	67-66-3	E615B	250 µg/L	250 µg/L	99.2	50.0	140	----
		Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	236 µg/L	250 µg/L	94.2	50.0	140	----
		Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	232 µg/L	250 µg/L	92.7	50.0	140	----
		Dichloroethane, 1,2-, TCLP	107-06-2	E615B	277 µg/L	250 µg/L	111	50.0	140	----
		Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	218 µg/L	250 µg/L	87.2	50.0	140	----
		Dichloromethane, TCLP	75-09-2	E615B	270 µg/L	250 µg/L	106	50.0	140	----
		Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	290 µg/L	250 µg/L	115	50.0	140	----
		Tetrachloroethylene, TCLP	127-18-4	E615B	202 µg/L	250 µg/L	81.0	50.0	140	----
		Trichloroethylene, TCLP	79-01-6	E615B	220 µg/L	250 µg/L	88.1	50.0	140	----
		Vinyl chloride, TCLP	75-01-4	E615B	202 µg/L	250 µg/L	80.8	50.0	140	----

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1083700

Environmental Division
Waterloo
Work Order Reference
WT2336751



Telephones : +1 519 866 6910

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [F4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [F3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [F2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional may apply to rush requests on weekends, statutory holidays and non-rout.

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please con

Analysis Requ

Indicate Filtered (F), Preserved (P) or filtered and Preserved (F/P) below

Reports / Receipts

Select Report Format: PDF EXCEL EBD (DIGITAL)

Merge QC/QCI Reports with COA YES NO N/A

Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: EMAIL MAIL FAX

Email 1 or Fax: **Jared. Ellys@exfg.com**

Email 2: **Jordan. Ellys@exfg.com**

Email 3: **AF@exfg.com**

Select Invoice Distribution: EMAIL MAIL FAX

Email 1 or Fax: **AF@exfg.com**

Project Information

ALS Account # / Quote #: **KCH-220234-A0**

Job #: **WT2336751 FH**

PO / AFE: **WT2336751 FH**

ALS Lab Work Order # (ALS use only): **WT2336751 FH**

ALS Sample # (ALS use only): **WT2336751 FH**

Number of Containers

TCBP Metals	2
TCBP VOCs	2
TCBP Ignitability	2
TCBP PCBs	2
TCBP B(a)P	2

SAMPLES ON HOLD

EXTENDED STORAGE REQUIRED

SUSPECTED HAZARD (see notes)

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (h:mm)	Sample Type	NUMBER OF CONTAINERS
Bag 1		08-Nov-23	AM	S	2
Bag 3					2
Bag 4					2
Bag 5					2
Bag 6					2
Bag 8					2

Drinking Water (DW) Samples' (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: **Jordan Ellys** Date: **Nov 9 2023** Time: **4:47pm**

Received by: _____ Date: _____ Time: _____

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: **MT** Date: **11/09/23** Time: **17:55**

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: **H.S** Date: _____ Time: _____

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Cooling Method: NONE ICE ICE PACKS FROZEN COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: YES NO

Cooler Custody Seals Intact: YES N/A NO

INITIAL COOLER TEMPERATURES °C: _____

FINAL COOLER TEMPERATURES °C: _____

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

7-877,878

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form. Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

<p>Work Order : WT2336751</p> <p>Amendment : 1</p> <p>Client : EXP Services Inc.</p> <p>Contact : Jared Ehgoetz</p> <p>Address : 405 Maple Grove Road Unit 6 Cambridge ON Canada N3E 1B6</p> <p>Telephone : 519 650 4918</p> <p>Project : KCH-22020234-AO</p> <p>PO : ----</p> <p>C-O-C number : 20-1083700</p> <p>Sampler : J, Ellis</p> <p>Site : ----</p> <p>Quote number : SOA</p> <p>No. of samples received : 6</p> <p>No. of samples analysed : 6</p>	<p>Page : 1 of 8</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Gayle Braun</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 09-Nov-2023 17:55</p> <p>Date Analysis Commenced : 10-Nov-2023</p> <p>Issue Date : 16-Nov-2023 17:23</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Tristan Stapells		Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario



No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	no units
°C	degrees celsius
m/sec	metres per second
mg/L	milligrams per litre
mm/sec	millimetres per second
pH units	pH units
sec	seconds

>: greater than.

<: less than.

Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.



Workorder Comments

Amendment (15/11/2023): This report has been amended and re-released to allow the reporting of additional analytical data.



Analytical Results Evaluation

				Client sample ID	Bag 1	Bag 3	Bag 4	Bag 5	Bag 6	Bag 8	----
Matrix: Soil				Sampling date/time	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	----
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
Analyte	CAS Number	Method/Lab	Unit	WT2336751-001	WT2336751-002	WT2336751-003	WT2336751-004	WT2336751-005	WT2336751-006	-----	
Physical Tests											
Ignitability	----	E209/WT	-	Negative	Negative	Negative	Negative	Negative	Negative	Negative	----
Sample comment	----	E209/WT	-	BROWN CLAY LOAM	BROWN CLAY LOAM	BROWN CLAY LOAM	BROWN SANDY LOAM	BROWN SANDY LOAM WITH ROCKS	BROWN SANDY LOAM	BROWN SANDY LOAM	----
Time to ignition	----	E209/WT	sec	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	----
Burning rate	----	E209/WT	mm/sec	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined	----
Temperature of test material	----	E209/WT	°C	19.5	19.5	19.5	19.5	19.5	19.5	19.5	----
Air velocity, fume hood	----	E209/WT	m/sec	0.44	0.44	0.44	0.44	0.44	0.44	0.44	----
TCLP Anions & Nutrients											
Fluoride, TCLP	16984-48-8	E240.F/WT	mg/L	<10	<10	<10	<10	<10	<10	<10	----
Nitrate (as N), TCLP	14797-55-8	E240.NO3/WT	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	----
Nitrite (as N), TCLP	14797-65-0	E240.NO2/WT	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	----
Nitrate + Nitrite (as N), TCLP	----	EC240.N+N/WT	mg/L	<7.50	<7.50	<7.50	<7.50	<7.50	<7.50	<7.50	----
TCLP Extractables											
Aroclor 1016, TCLP	12674-11-2	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1221, TCLP	11104-28-2	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1232, TCLP	11141-16-5	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1242, TCLP	53469-21-9	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1248, TCLP	12672-29-6	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1254, TCLP	11097-69-1	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1260, TCLP	11096-82-5	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1262, TCLP	37324-23-5	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Aroclor 1268, TCLP	11100-14-4	E688A/WT	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	----
Benzo(a)pyrene, TCLP	50-32-8	E644/WT	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	----
Cyanide, weak acid dissociable, TCLP	----	E337A/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Decachlorobiphenyl, TCLP	2051-24-3	E688A/WT	%	88.2	101	83.7	90.1	81.9	97.1	97.1	----
Tetrachloro-m-xylene, TCLP	877-09-8	E688A/WT	%	69.1	80.7	63.5	75.2	70.5	77.2	77.2	----
TCLP Extractables Surrogates											



Analytical Results Evaluation

				Client sample ID	Bag 1	Bag 3	Bag 4	Bag 5	Bag 6	Bag 8	----
Matrix: Soil											
				Sampling date/time	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	----
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
Analyte	CAS Number	Method/Lab	Unit	WT2336751-001	WT2336751-002	WT2336751-003	WT2336751-004	WT2336751-005	WT2336751-006	-----	
TCLP Extractables Surrogates											
Chrysene-d12, TCLP	1719-03-5	E644/WT	%	118	129	114	122	123	115	----	
Naphthalene-d8, TCLP	1146-65-2	E644/WT	%	105	116	106	113	116	108	----	
Phenanthrene-d10, TCLP	1517-22-2	E644/WT	%	112	124	111	119	121	110	----	
TCLP Metals											
Arsenic, TCLP	7440-38-2	E444/WT	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	----	
pH, TCLP 1st preliminary	----	EPP444/WT	pH units	8.44	8.41	8.35	8.94	8.88	9.00	----	
pH, TCLP 2nd preliminary	----	EPP444/WT	pH units	5.72	5.74	5.78	5.30	5.41	5.29	----	
pH, TCLP extraction fluid initial	----	EPP444/WT	pH units	2.87	2.87	2.87	2.87	2.87	2.87	----	
pH, TCLP final	----	EPP444/WT	pH units	5.04	4.97	4.77	5.67	5.60	5.66	----	
Barium, TCLP	7440-39-3	E444/WT	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	----	
Boron, TCLP	7440-42-8	E444/WT	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	----	
Cadmium, TCLP	7440-43-9	E444/WT	mg/L	0.071	0.050	0.084	<0.050	<0.050	<0.050	----	
Chromium, TCLP	7440-47-3	E444/WT	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	----	
Lead, TCLP	7439-92-1	E444/WT	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	----	
Selenium, TCLP	7782-49-2	E444/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----	
Silver, TCLP	7440-22-4	E444/WT	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----	
Uranium, TCLP	7440-61-1	E444/WT	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	----	
Mercury, TCLP	7439-97-6	E512/WT	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	----	
TCLP VOCs											
Benzene, TCLP	71-43-2	E615B/WT	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	----	
Carbon tetrachloride, TCLP	56-23-5	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Chlorobenzene, TCLP	108-90-7	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Chloroform, TCLP	67-66-3	E615B/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----	
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Dichloroethane, 1,2-, TCLP	107-06-2	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----	
Dichloromethane, TCLP	75-09-2	E615B/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----	



Analytical Results Evaluation

				Client sample ID	Bag 1	Bag 3	Bag 4	Bag 5	Bag 6	Bag 8	----
Matrix: Soil				Sampling date/time	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	----
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
Analyte	CAS Number	Method/Lab	Unit	WT2336751-001	WT2336751-002	WT2336751-003	WT2336751-004	WT2336751-005	WT2336751-006	-----	
TCLP VOCs											
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B/WT	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Tetrachloroethylene, TCLP	127-18-4	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----
Trichloroethylene, TCLP	79-01-6	E615B/WT	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	----
Vinyl chloride, TCLP	75-01-4	E615B/WT	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
TCLP VOCs Surrogates											
Bromofluorobenzene, 4-, TCLP	460-00-4	E615B/WT	%	84.8	83.5	84.0	84.7	98.2	97.9	97.9	----
Difluorobenzene, 1,4-, TCLP	540-36-3	E615B/WT	%	96.5	97.1	96.7	97.2	98.4	98.1	98.1	----
Polychlorinated Biphenyls											
Polychlorinated biphenyls [PCBs], total, TCLP	----	E688A/WT	mg/L	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



Summary of Guideline Limits

Analyte	CAS Number	Unit	ONWCR Sch. 4						
Physical Tests									
Air velocity, fume hood	----	m/sec	--						
Burning rate	----	mm/sec	--						
Ignitability	----	-	--						
Sample comment	----	-	--						
Temperature of test material	----	°C	--						
Time to ignition	----	sec	--						
TCLP Anions & Nutrients									
Fluoride, TCLP	16984-48-8	mg/L	150 mg/L						
Nitrate (as N), TCLP	14797-55-8	mg/L	--						
Nitrate + Nitrite (as N), TCLP	----	mg/L	1000 mg/L						
Nitrite (as N), TCLP	14797-65-0	mg/L	--						
TCLP Extractables									
Aroclor 1016, TCLP	12674-11-2	mg/L	--						
Aroclor 1221, TCLP	11104-28-2	mg/L	--						
Aroclor 1232, TCLP	11141-16-5	mg/L	--						
Aroclor 1242, TCLP	53469-21-9	mg/L	--						
Aroclor 1248, TCLP	12672-29-6	mg/L	--						
Aroclor 1254, TCLP	11097-69-1	mg/L	--						
Aroclor 1260, TCLP	11096-82-5	mg/L	--						
Aroclor 1262, TCLP	37324-23-5	mg/L	--						
Aroclor 1268, TCLP	11100-14-4	mg/L	--						
Benzo(a)pyrene, TCLP	50-32-8	mg/L	0.001 mg/L						
Cyanide, weak acid dissociable, TCLP	----	mg/L	--						
Decachlorobiphenyl, TCLP	2051-24-3	%							
Tetrachloro-m-xylene, TCLP	877-09-8	%							
TCLP Extractables Surrogates									
Chrysene-d12, TCLP	1719-03-5	%							
Naphthalene-d8, TCLP	1146-65-2	%							
Phenanthrene-d10, TCLP	1517-22-2	%							
TCLP Metals									
Arsenic, TCLP	7440-38-2	mg/L	2.5 mg/L						
Barium, TCLP	7440-39-3	mg/L	100 mg/L						
Boron, TCLP	7440-42-8	mg/L	500 mg/L						
Cadmium, TCLP	7440-43-9	mg/L	0.5 mg/L						
Chromium, TCLP	7440-47-3	mg/L	5 mg/L						
Lead, TCLP	7439-92-1	mg/L	5 mg/L						
Mercury, TCLP	7439-97-6	mg/L	0.1 mg/L						



Analyte	CAS Number	Unit	ONWCR Sch. 4						
TCLP Metals - Continued									
pH, TCLP 1st preliminary	----	pH units	--						
pH, TCLP 2nd preliminary	----	pH units	--						
pH, TCLP extraction fluid initial	----	pH units	--						
pH, TCLP final	----	pH units	--						
Selenium, TCLP	7782-49-2	mg/L	1 mg/L						
Silver, TCLP	7440-22-4	mg/L	5 mg/L						
Uranium, TCLP	7440-61-1	mg/L	10 mg/L						
TCLP VOCs									
Benzene, TCLP	71-43-2	mg/L	0.5 mg/L						
Carbon tetrachloride, TCLP	56-23-5	mg/L	0.5 mg/L						
Chlorobenzene, TCLP	108-90-7	mg/L	8 mg/L						
Chloroform, TCLP	67-66-3	mg/L	10 mg/L						
Dichlorobenzene, 1,2-, TCLP	95-50-1	mg/L	20 mg/L						
Dichlorobenzene, 1,4-, TCLP	106-46-7	mg/L	0.5 mg/L						
Dichloroethane, 1,2-, TCLP	107-06-2	mg/L	0.5 mg/L						
Dichloroethylene, 1,1-, TCLP	75-35-4	mg/L	1.4 mg/L						
Dichloromethane, TCLP	75-09-2	mg/L	5 mg/L						
Methyl ethyl ketone [MEK], TCLP	78-93-3	mg/L	200 mg/L						
Tetrachloroethylene, TCLP	127-18-4	mg/L	3 mg/L						
Trichloroethylene, TCLP	79-01-6	mg/L	5 mg/L						
Vinyl chloride, TCLP	75-01-4	mg/L	0.2 mg/L						
Bromofluorobenzene, 4-, TCLP	460-00-4	%							
Difluorobenzene, 1,4-, TCLP	540-36-3	%							
Polychlorinated Biphenyls									
Polychlorinated biphenyls [PCBs], total, TCLP	----	mg/L	0.3 mg/L						

Please refer to the General Comments section for an explanation of any qualifiers detected.

Key:

ONWCR

Sch. 4

Ontario MECP, General Waste Control Regulation No. 347/90,558/00

Schedule 4 Leachate Quality Criteria

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2336751</p> <p>Amendment : 1</p> <p>Client : EXP Services Inc.</p> <p>Contact : Jared Ehgoetz</p> <p>Address : 405 Maple Grove Road Unit 6 Cambridge ON Canada N3E 1B6</p> <p>Telephone : 519 650 4918</p> <p>Project : KCH-22020234-AO</p> <p>PO : ---</p> <p>C-O-C number : 20-1083700</p> <p>Sampler : J. Ellis</p> <p>Site : ---</p> <p>Quote number : SOA</p> <p>No. of samples received : 6</p> <p>No. of samples analysed : 6</p>	<p style="text-align: right;">Page : 1 of 16</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Gayle Braun</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : +1 519 886 6910</p> <p>Date Samples Received : 09-Nov-2023 17:55</p> <p>Issue Date : 16-Nov-2023 17:12</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
TCLP Extractables	QC-1235100-002	----	Aroclor 1248, TCLP	12672-29-6	E688A	62.4 % ^{LCS-L}	65.0-130%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 1	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 3	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 4	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 5	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 6	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap [ON MECP] Bag 8	E209	08-Nov-2023	---	---	---		13-Nov-2023	30 days	5 days	✔
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 1	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✔	14-Nov-2023	18 days	6 days	✔



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 3	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 4	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 5	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 6	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)											
Amber glass/Teflon lined cap [ON MECP] Bag 8	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓	
TCLP Extractables : Fluoride by IC (TCLP)											
HDPE Bag 1	E240.F	08-Nov-2023	15-Nov-2023	28 days	8 days	✓	15-Nov-2023	28 days	8 days	✓	
TCLP Extractables : Fluoride by IC (TCLP)											
HDPE Bag 3	E240.F	08-Nov-2023	15-Nov-2023	28 days	8 days	✓	15-Nov-2023	28 days	8 days	✓	
TCLP Extractables : Fluoride by IC (TCLP)											
HDPE Bag 4	E240.F	08-Nov-2023	15-Nov-2023	28 days	8 days	✓	15-Nov-2023	28 days	8 days	✓	
TCLP Extractables : Fluoride by IC (TCLP)											
HDPE Bag 5	E240.F	08-Nov-2023	15-Nov-2023	28 days	8 days	✓	15-Nov-2023	28 days	8 days	✓	



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Extractables : Fluoride by IC (TCLP)											
HDPE Bag 6	E240.F	08-Nov-2023	15-Nov-2023	28 days	8 days	✓	15-Nov-2023	28 days	8 days	✓	
TCLP Extractables : Fluoride by IC (TCLP)											
HDPE Bag 8	E240.F	08-Nov-2023	15-Nov-2023	28 days	8 days	✓	15-Nov-2023	28 days	8 days	✓	
TCLP Extractables : Nitrate by IC (TCLP)											
HDPE Bag 1	E240.NO3	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrate by IC (TCLP)											
HDPE Bag 3	E240.NO3	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrate by IC (TCLP)											
HDPE Bag 4	E240.NO3	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrate by IC (TCLP)											
HDPE Bag 5	E240.NO3	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrate by IC (TCLP)											
HDPE Bag 6	E240.NO3	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrate by IC (TCLP)											
HDPE Bag 8	E240.NO3	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrite by IC (TCLP)											
HDPE Bag 1	E240.NO2	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Extractables : Nitrite by IC (TCLP)											
HDPE Bag 3	E240.NO2	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrite by IC (TCLP)											
HDPE Bag 4	E240.NO2	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrite by IC (TCLP)											
HDPE Bag 5	E240.NO2	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrite by IC (TCLP)											
HDPE Bag 6	E240.NO2	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : Nitrite by IC (TCLP)											
HDPE Bag 8	E240.NO2	08-Nov-2023	15-Nov-2023	3 days	7 days	* EHT	15-Nov-2023	3 days	7 days	* EHT	
TCLP Extractables : PAHs by GC-MS (TCLP)											
Amber glass/Teflon lined cap (sodium bisulfate) Bag 1	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓	
TCLP Extractables : PAHs by GC-MS (TCLP)											
Amber glass/Teflon lined cap (sodium bisulfate) Bag 3	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓	
TCLP Extractables : PAHs by GC-MS (TCLP)											
Amber glass/Teflon lined cap (sodium bisulfate) Bag 4	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓	
TCLP Extractables : PAHs by GC-MS (TCLP)											
Amber glass/Teflon lined cap (sodium bisulfate) Bag 5	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓	



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Extractables : PAHs by GC-MS (TCLP)										
Amber glass/Teflon lined cap (sodium bisulfate) Bag 6	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓
TCLP Extractables : PAHs by GC-MS (TCLP)										
Amber glass/Teflon lined cap (sodium bisulfate) Bag 8	E644	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	40 days	1 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 1	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 3	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 4	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 5	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 6	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap [ON MECP] Bag 8	E688A	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	14-Nov-2023	18 days	6 days	✓
TCLP Extractables : WAD Cyanide (TCLP)										
UV-inhibited HDPE - total (lab preserved) Bag 1	E337A	08-Nov-2023	15-Nov-2023	14 days	8 days	✓	15-Nov-2023	14 days	8 days	✓



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Extractables : WAD Cyanide (TCLP)											
UV-inhibited HDPE - total (lab preserved) Bag 3	E337A	08-Nov-2023	15-Nov-2023	14 days	8 days	✓	15-Nov-2023	14 days	8 days	✓	
TCLP Extractables : WAD Cyanide (TCLP)											
UV-inhibited HDPE - total (lab preserved) Bag 4	E337A	08-Nov-2023	15-Nov-2023	14 days	8 days	✓	15-Nov-2023	14 days	8 days	✓	
TCLP Extractables : WAD Cyanide (TCLP)											
UV-inhibited HDPE - total (lab preserved) Bag 5	E337A	08-Nov-2023	15-Nov-2023	14 days	8 days	✓	15-Nov-2023	14 days	8 days	✓	
TCLP Extractables : WAD Cyanide (TCLP)											
UV-inhibited HDPE - total (lab preserved) Bag 6	E337A	08-Nov-2023	15-Nov-2023	14 days	8 days	✓	15-Nov-2023	14 days	8 days	✓	
TCLP Extractables : WAD Cyanide (TCLP)											
UV-inhibited HDPE - total (lab preserved) Bag 8	E337A	08-Nov-2023	15-Nov-2023	14 days	8 days	✓	15-Nov-2023	14 days	8 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 1	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 3	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 4	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 5	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 6	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) Bag 8	E512	12-Nov-2023	13-Nov-2023	32 days	6 days	✓	14-Nov-2023	32 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 1	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 3	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 4	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 5	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 6	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - dissolved (lab preserved) Bag 8	E444	12-Nov-2023	13-Nov-2023	184 days	6 days	✓	13-Nov-2023	184 days	6 days	✓	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 1	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓	



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 3	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 4	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 5	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 6	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) Bag 8	EPP444	08-Nov-2023	12-Nov-2023	----	----		----	14 days	4 days	✓
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)										
Glass vial (sodium bisulfate) Bag 1	E615B	10-Nov-2023	11-Nov-2023	16 days	4 days	✓	11-Nov-2023	16 days	4 days	✓
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)										
Glass vial (sodium bisulfate) Bag 3	E615B	10-Nov-2023	11-Nov-2023	16 days	4 days	✓	11-Nov-2023	16 days	4 days	✓
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)										
Glass vial (sodium bisulfate) Bag 4	E615B	10-Nov-2023	11-Nov-2023	16 days	4 days	✓	11-Nov-2023	16 days	4 days	✓
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)										
Glass vial (sodium bisulfate) Bag 5	E615B	10-Nov-2023	11-Nov-2023	16 days	4 days	✓	11-Nov-2023	16 days	4 days	✓



Matrix: **Soil/Solid**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)										
Glass vial (sodium bisulfate) Bag 6	E615B	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	13-Nov-2023	18 days	6 days	✓
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)										
Glass vial (sodium bisulfate) Bag 8	E615B	12-Nov-2023	13-Nov-2023	18 days	6 days	✓	13-Nov-2023	18 days	6 days	✓

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Fluoride by IC (TCLP)	E240.F	1237906	1	12	8.3	5.0	✓
Mercury by CVAAS (TCLP)	E512	1235053	1	15	6.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1235007	1	13	7.6	5.0	✓
Nitrate by IC (TCLP)	E240.NO3	1237907	1	12	8.3	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	1237908	1	12	8.3	5.0	✓
PAHs by GC-MS (TCLP)	E644	1235111	1	9	11.1	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1235100	1	8	12.5	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1233991	2	9	22.2	5.0	✓
WAD Cyanide (TCLP)	E337A	1237820	1	6	16.6	5.0	✓
Laboratory Control Samples (LCS)							
Fluoride by IC (TCLP)	E240.F	1237906	1	12	8.3	5.0	✓
Mercury by CVAAS (TCLP)	E512	1235053	1	15	6.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1235007	1	13	7.6	5.0	✓
Nitrate by IC (TCLP)	E240.NO3	1237907	1	12	8.3	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	1237908	1	12	8.3	5.0	✓
PAHs by GC-MS (TCLP)	E644	1235111	1	9	11.1	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1235100	1	8	12.5	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1233991	2	9	22.2	5.0	✓
WAD Cyanide (TCLP)	E337A	1237820	1	6	16.6	5.0	✓
Method Blanks (MB)							
Fluoride by IC (TCLP)	E240.F	1237906	1	12	8.3	5.0	✓
Mercury by CVAAS (TCLP)	E512	1235053	1	15	6.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1235007	1	13	7.6	5.0	✓
Nitrate by IC (TCLP)	E240.NO3	1237907	1	12	8.3	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	1237908	1	12	8.3	5.0	✓
PAHs by GC-MS (TCLP)	E644	1235111	1	9	11.1	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1235100	1	8	12.5	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1233991	2	9	22.2	5.0	✓
WAD Cyanide (TCLP)	E337A	1237820	1	6	16.6	5.0	✓
Matrix Spikes (MS)							
Fluoride by IC (TCLP)	E240.F	1237906	1	12	8.3	5.0	✓
Mercury by CVAAS (TCLP)	E512	1235053	1	15	6.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1235007	1	13	7.6	5.0	✓
Nitrate by IC (TCLP)	E240.NO3	1237907	1	12	8.3	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	1237908	1	12	8.3	5.0	✓



Matrix: **Soil/Solid**

Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
Matrix Spikes (MS) - Continued							
PAHs by GC-MS (TCLP)	E644	1235111	1	9	11.1	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1235100	1	8	12.5	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1233991	2	9	22.2	5.0	✓
WAD Cyanide (TCLP)	E337A	1237820	1	6	16.6	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ignitability (O. Reg. 347/558)	E209 ALS Environmental - Waterloo	Soil/Solid	EPA 1030 (mod)	Ignitability is determined by placing a sample on a ceramic tile and formed into a test strip. One end of the strip is then heated with a torch. Any burn rate for non-metallic samples that exceeds 2.2 mm/sec is considered to have a positive result. For metals, a burn rate of more than 0.17 mm/sec is considered to have a positive result.
Fluoride by IC (TCLP)	E240.F ALS Environmental - Waterloo	Soil/Solid	EPA 1311/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite by IC (TCLP)	E240.NO2 ALS Environmental - Waterloo	Soil/Solid	EPA 1311/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate by IC (TCLP)	E240.NO3 ALS Environmental - Waterloo	Soil/Solid	EPA 1311/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
WAD Cyanide (TCLP)	E337A ALS Environmental - Waterloo	Soil/Solid	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Metals by CRC ICPMS (TCLP)	E444 ALS Environmental - Waterloo	Soil/Solid	EPA 1311/6020B (mod)	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by Collision/Reaction Cell ICPMS.
Mercury by CVAAS (TCLP)	E512 ALS Environmental - Waterloo	Soil/Solid	SW 846 -1311/245.1 CVAA ON TCLP LEACHATE	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by CVAAS.
VOCs by Headspace GC-MS (TCLP)	E615B ALS Environmental - Waterloo	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by GC-MS (TCLP)	E644 ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
PCB Aroclors by GC-MS (TCLP)	E688A ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Nitrate and Nitrite (as N), (TCLP) (Calculation)	EC240.N+N ALS Environmental - Waterloo	Soil/Solid	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis (TCLP)	EP582 ALS Environmental - Waterloo	Soil/Solid	EPA 5021A (mod)	Liquid obtained after the TCLP process is prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Extraction (TCLP)	EP602 ALS Environmental - Waterloo	Soil/Solid	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction (TCLP)	EP661 ALS Environmental - Waterloo	Soil/Solid	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444 ALS Environmental - Waterloo	Soil/Solid	EPA 1311	Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample involves particle size reduction, homogenization, then determination of appropriate extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle with the appropriate extraction fluid then tumbled in a rotary extractor for 18+/- 2 hours at 23 +/- 2 C. The liquid leachate is filtered to separate from solids then bottled and prepared for analytical tests.
TCLP Leachate Preparation (VOCs)	EPP582 ALS Environmental - Waterloo	Soil/Solid	EPA 1311	An extract produced by the Toxicity Characteristic Leaching Procedure (TCLP) as per EPA 1311.

QUALITY CONTROL REPORT

Work Order	: WT2336751	Page	: 1 of 10
Amendment	: 1		
Client	: EXP Services Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Jared Ehgoetz	Account Manager	: Gayle Braun
Address	: 405 Maple Grove Road Unit 6 Cambridge ON Canada N3E 1B6	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: KCH-22020234-AO	Date Samples Received	: 09-Nov-2023 17:55
PO	: ---	Date Analysis Commenced	: 10-Nov-2023
C-O-C number	: 20-1083700	Issue Date	: 16-Nov-2023 17:17
Sampler	: J. Ellis 519 650 4918		
Site	: ---		
Quote number	: SOA		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
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Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
TCLP Extractables (QC Lot: 1235100)											
WT2336605-005	Anonymous	Aroclor 1016, TCLP	12674-11-2	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1221, TCLP	11104-28-2	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1232, TCLP	11141-16-5	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1242, TCLP	53469-21-9	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1248, TCLP	12672-29-6	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1254, TCLP	11097-69-1	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1260, TCLP	11096-82-5	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1262, TCLP	37324-23-5	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
		Aroclor 1268, TCLP	11100-14-4	E688A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	---
TCLP Extractables (QC Lot: 1235111)											
WT2336387-001	Anonymous	Benzo(a)pyrene, TCLP	50-32-8	E644	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	---
TCLP Extractables (QC Lot: 1237820)											
WT2336751-001	Bag 1	Cyanide, weak acid dissociable, TCLP	---	E337A	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	---
TCLP Extractables (QC Lot: 1237906)											
WT2336402-001	Anonymous	Fluoride, TCLP	16984-48-8	E240.F	10	mg/L	<10	<10	0	Diff <2x LOR	---
TCLP Extractables (QC Lot: 1237907)											
WT2336402-001	Anonymous	Nitrate (as N), TCLP	14797-55-8	E240.NO3	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	---
TCLP Extractables (QC Lot: 1237908)											
WT2336402-001	Anonymous	Nitrite (as N), TCLP	14797-65-0	E240.NO2	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	---
TCLP Metals (QC Lot: 1235007)											
WT2336715-001	Anonymous	Arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	---
		Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	0	Diff <2x LOR	---
		Boron, TCLP	7440-42-8	E444	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	---
		Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	---



Sub-Matrix: Soil/Solid					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
TCLP Metals (QC Lot: 1235007) - continued											
WT2336715-001	Anonymous	Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	0	Diff <2x LOR	----
TCLP Metals (QC Lot: 1235053)											
WT2336700-001	Anonymous	Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
TCLP VOCs (QC Lot: 1233991)											
WT2336751-001	Bag 1	Benzene, TCLP	71-43-2	E615B	5.0	µg/L	<0.0050 mg/L	<5.0	0	Diff <2x LOR	----
		Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Chloroform, TCLP	67-66-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----		
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<0.050 mg/L	<50	0	Diff <2x LOR	----		
TCLP VOCs (QC Lot: 1235043)											
WT2336605-005	Anonymous	Benzene, TCLP	71-43-2	E615B	5.0	µg/L	<0.0050 mg/L	<5.0	0	Diff <2x LOR	----
		Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Chloroform, TCLP	67-66-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----		
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<0.050 mg/L	<50	0	Diff <2x LOR	----		



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
TCLP Extractables (QCLot: 1235100)						
Aroclor 1016, TCLP	12674-11-2	E688A	0.2	µg/L	<0.20	----
Aroclor 1221, TCLP	11104-28-2	E688A	0.2	µg/L	<0.20	----
Aroclor 1232, TCLP	11141-16-5	E688A	0.2	µg/L	<0.20	----
Aroclor 1242, TCLP	53469-21-9	E688A	0.2	µg/L	<0.20	----
Aroclor 1248, TCLP	12672-29-6	E688A	0.2	µg/L	<0.20	----
Aroclor 1254, TCLP	11097-69-1	E688A	0.2	µg/L	<0.20	----
Aroclor 1260, TCLP	11096-82-5	E688A	0.2	µg/L	<0.20	----
Aroclor 1262, TCLP	37324-23-5	E688A	0.2	µg/L	<0.20	----
Aroclor 1268, TCLP	11100-14-4	E688A	0.2	µg/L	<0.20	----
TCLP Extractables (QCLot: 1235111)						
Benzo(a)pyrene, TCLP	50-32-8	E644	0.5	µg/L	<0.50	----
TCLP Extractables (QCLot: 1237820)						
Cyanide, weak acid dissociable, TCLP	----	E337A	0.1	mg/L	<0.10	----
TCLP Extractables (QCLot: 1237906)						
Fluoride, TCLP	16984-48-8	E240.F	10	mg/L	<10	----
TCLP Extractables (QCLot: 1237907)						
Nitrate (as N), TCLP	14797-55-8	E240.NO3	5	mg/L	<5.0	----
TCLP Extractables (QCLot: 1237908)						
Nitrite (as N), TCLP	14797-65-0	E240.NO2	5	mg/L	<5.0	----
TCLP Metals (QCLot: 1235007)						
Arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	----
Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	----
Boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	----
Cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	----
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	----
Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	----
Selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	----
Silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	----
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	<0.20	----
TCLP Metals (QCLot: 1235053)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
TCLP VOCs (QCLot: 1233991)						
Benzene, TCLP	71-43-2	E615B	5	µg/L	<5.0	----
Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	<25	----
Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<25	----
Chloroform, TCLP	67-66-3	E615B	100	µg/L	<100	----
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	<25	----
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	<25	----
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<25	----
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	<25	----
Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	<100	----
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<100	----
Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<25	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<25	----
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<50	----
TCLP VOCs (QCLot: 1235043)						
Benzene, TCLP	71-43-2	E615B	5	µg/L	<5.0	----
Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	<25	----
Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<25	----
Chloroform, TCLP	67-66-3	E615B	100	µg/L	<100	----
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	<25	----
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	<25	----
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<25	----
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	<25	----
Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	<100	----
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<100	----
Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<25	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<25	----
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<50	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
TCLP Extractables (QCLot: 1235100)									
Aroclor 1016, TCLP	12674-11-2	E688A	0.2	µg/L	0.2 µg/L	73.6	65.0	130	----
Aroclor 1221, TCLP	11104-28-2	E688A	0.2	µg/L	0.2 µg/L	73.6	65.0	130	----
Aroclor 1232, TCLP	11141-16-5	E688A	0.2	µg/L	0.2 µg/L	73.6	65.0	130	----
Aroclor 1242, TCLP	53469-21-9	E688A	0.2	µg/L	0.2 µg/L	73.6	65.0	130	----
Aroclor 1248, TCLP	12672-29-6	E688A	0.2	µg/L	0.2 µg/L	# 62.4	65.0	130	LCS-L
Aroclor 1254, TCLP	11097-69-1	E688A	0.2	µg/L	0.2 µg/L	70.1	65.0	130	----
Aroclor 1260, TCLP	11096-82-5	E688A	0.2	µg/L	0.2 µg/L	66.5	65.0	130	----
Aroclor 1262, TCLP	37324-23-5	E688A	0.2	µg/L	0.2 µg/L	66.5	65.0	130	----
Aroclor 1268, TCLP	11100-14-4	E688A	0.2	µg/L	0.2 µg/L	66.5	65.0	130	----
TCLP Extractables (QCLot: 1235111)									
Benzo(a)pyrene, TCLP	50-32-8	E644	0.5	µg/L	0.5263 µg/L	98.2	60.0	140	----
TCLP Extractables (QCLot: 1237820)									
Cyanide, weak acid dissociable, TCLP	----	E337A	0.1	mg/L	6.25 mg/L	92.7	70.0	130	----
TCLP Extractables (QCLot: 1237906)									
Fluoride, TCLP	16984-48-8	E240.F	10	mg/L	1 mg/L	87.3	70.0	130	----
TCLP Extractables (QCLot: 1237907)									
Nitrate (as N), TCLP	14797-55-8	E240.NO3	5	mg/L	2.5 mg/L	96.8	70.0	130	----
TCLP Extractables (QCLot: 1237908)									
Nitrite (as N), TCLP	14797-65-0	E240.NO2	5	mg/L	0.5 mg/L	95.3	70.0	130	----
TCLP Metals (QCLot: 1235007)									
Arsenic, TCLP	7440-38-2	E444	1	mg/L	0.05 mg/L	110	70.0	130	----
Barium, TCLP	7440-39-3	E444	2.5	mg/L	0.0125 mg/L	105	70.0	130	----
Boron, TCLP	7440-42-8	E444	0.5	mg/L	0.05 mg/L	98.1	70.0	130	----
Cadmium, TCLP	7440-43-9	E444	0.05	mg/L	0.005 mg/L	104	70.0	130	----
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	0.0125 mg/L	105	70.0	130	----
Lead, TCLP	7439-92-1	E444	0.25	mg/L	0.025 mg/L	104	70.0	130	----
Selenium, TCLP	7782-49-2	E444	0.1	mg/L	0.05 mg/L	105	70.0	130	----
Silver, TCLP	7440-22-4	E444	0.05	mg/L	0.005 mg/L	96.2	70.0	130	----
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	0.00025 mg/L	105	70.0	130	----
TCLP Metals (QCLot: 1235053)									
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	0.0001 mg/L	99.4	70.0	130	----



Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
TCLP VOCs (QCLot: 1233991)									
Benzene, TCLP	71-43-2	E615B	5	µg/L	250 µg/L	99.2	70.0	130	----
Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	250 µg/L	93.9	60.0	140	----
Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	250 µg/L	99.6	70.0	130	----
Chloroform, TCLP	67-66-3	E615B	100	µg/L	250 µg/L	100	70.0	130	----
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	250 µg/L	100	70.0	130	----
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	250 µg/L	98.3	70.0	130	----
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	250 µg/L	113	70.0	130	----
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	250 µg/L	96.9	70.0	130	----
Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	250 µg/L	107	70.0	130	----
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	250 µg/L	114	50.0	150	----
Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	250 µg/L	89.5	70.0	130	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	250 µg/L	92.4	70.0	130	----
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	250 µg/L	91.6	60.0	130	----
TCLP VOCs (QCLot: 1235043)									
Benzene, TCLP	71-43-2	E615B	5	µg/L	250 µg/L	92.0	70.0	130	----
Carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	250 µg/L	98.6	60.0	140	----
Chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	250 µg/L	93.4	70.0	130	----
Chloroform, TCLP	67-66-3	E615B	100	µg/L	250 µg/L	96.1	70.0	130	----
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	250 µg/L	93.6	70.0	130	----
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	250 µg/L	95.6	70.0	130	----
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	250 µg/L	98.9	70.0	130	----
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	250 µg/L	90.5	70.0	130	----
Dichloromethane, TCLP	75-09-2	E615B	100	µg/L	250 µg/L	100	70.0	130	----
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	250 µg/L	85.3	50.0	150	----
Tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	250 µg/L	88.1	70.0	130	----
Trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	250 µg/L	91.3	70.0	130	----
Vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	250 µg/L	83.2	60.0	130	----

Qualifiers

Qualifier	Description
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Soil/Solid

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
TCLP Extractables (QCLot: 1235100)										
WT2336605-005	Anonymous	Aroclor 1016, TCLP	12674-11-2	E688A	0.17 µg/L	0.2 µg/L	83.6	50.0	150	----
		Aroclor 1221, TCLP	11104-28-2	E688A	0.17 µg/L	0.2 µg/L	83.6	50.0	150	----
		Aroclor 1232, TCLP	11141-16-5	E688A	0.17 µg/L	0.2 µg/L	83.6	50.0	150	----
		Aroclor 1242, TCLP	53469-21-9	E688A	0.16 µg/L	0.2 µg/L	82.2	50.0	150	----
		Aroclor 1248, TCLP	12672-29-6	E688A	0.17 µg/L	0.2 µg/L	83.6	50.0	150	----
		Aroclor 1254, TCLP	11097-69-1	E688A	0.15 µg/L	0.2 µg/L	76.0	50.0	150	----
		Aroclor 1260, TCLP	11096-82-5	E688A	0.17 µg/L	0.2 µg/L	84.8	50.0	150	----
		Aroclor 1262, TCLP	37324-23-5	E688A	0.17 µg/L	0.2 µg/L	85.1	50.0	150	----
		Aroclor 1268, TCLP	11100-14-4	E688A	0.17 µg/L	0.2 µg/L	85.1	50.0	150	----
TCLP Extractables (QCLot: 1235111)										
WT2336387-001	Anonymous	Benzo(a)pyrene, TCLP	50-32-8	E644	0.50 µg/L	0.5263 µg/L	94.3	50.0	140	----
TCLP Extractables (QCLot: 1237820)										
WT2336751-001	Bag 1	Cyanide, weak acid dissociable, TCLP	----	E337A	5.54 mg/L	6.25 mg/L	88.6	50.0	140	----
TCLP Extractables (QCLot: 1237906)										
WT2336402-001	Anonymous	Fluoride, TCLP	16984-48-8	E240.F	17 mg/L	20 mg/L	85.4	50.0	150	----
TCLP Extractables (QCLot: 1237907)										
WT2336402-001	Anonymous	Nitrate (as N), TCLP	14797-55-8	E240.NO3	48.2 mg/L	50 mg/L	96.4	50.0	150	----
TCLP Extractables (QCLot: 1237908)										
WT2336402-001	Anonymous	Nitrite (as N), TCLP	14797-65-0	E240.NO2	10.0 mg/L	10 mg/L	99.5	50.0	150	----
TCLP Metals (QCLot: 1235007)										
WT2336715-001	Anonymous	Arsenic, TCLP	7440-38-2	E444	5.3 mg/L	5 mg/L	106	50.0	140	----
		Barium, TCLP	7440-39-3	E444	12.8 mg/L	12.5 mg/L	102	50.0	140	----
		Boron, TCLP	7440-42-8	E444	9.40 mg/L	10 mg/L	94.0	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.251 mg/L	0.25 mg/L	100	50.0	140	----
		Chromium, TCLP	7440-47-3	E444	1.27 mg/L	1.25 mg/L	101	50.0	140	----
		Lead, TCLP	7439-92-1	E444	9.82 mg/L	10 mg/L	98.2	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	5.24 mg/L	5 mg/L	105	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.087 mg/L	0.1 mg/L	87.4	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	5.05 mg/L	5 mg/L	101	50.0	140	----



Sub-Matrix: Soil/Solid

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	
TCLP Metals (QCLot: 1235053)										
WT2336700-001	Anonymous	Mercury, TCLP	7439-97-6	E512	0.0029 mg/L	0.003 mg/L	98.0	50.0	140	----
TCLP VOCs (QCLot: 1233991)										
WT2336751-001	Bag 1	Benzene, TCLP	71-43-2	E615B	227 µg/L	250 µg/L	90.9	50.0	140	----
		Carbon tetrachloride, TCLP	56-23-5	E615B	210 µg/L	250 µg/L	84.0	50.0	140	----
		Chlorobenzene, TCLP	108-90-7	E615B	232 µg/L	250 µg/L	92.6	50.0	140	----
		Chloroform, TCLP	67-66-3	E615B	230 µg/L	250 µg/L	91.6	50.0	140	----
		Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	237 µg/L	250 µg/L	94.9	50.0	140	----
		Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	227 µg/L	250 µg/L	90.8	50.0	140	----
		Dichloroethane, 1,2-, TCLP	107-06-2	E615B	267 µg/L	250 µg/L	107	50.0	140	----
		Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	217 µg/L	250 µg/L	86.8	50.0	140	----
		Dichloromethane, TCLP	75-09-2	E615B	250 µg/L	250 µg/L	99.2	50.0	140	----
		Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	270 µg/L	250 µg/L	110	50.0	140	----
		Tetrachloroethylene, TCLP	127-18-4	E615B	202 µg/L	250 µg/L	80.9	50.0	140	----
Trichloroethylene, TCLP	79-01-6	E615B	210 µg/L	250 µg/L	83.9	50.0	140	----		
Vinyl chloride, TCLP	75-01-4	E615B	203 µg/L	250 µg/L	81.2	50.0	140	----		
TCLP VOCs (QCLot: 1235043)										
WT2336605-005	Anonymous	Benzene, TCLP	71-43-2	E615B	232 µg/L	250 µg/L	92.7	50.0	140	----
		Carbon tetrachloride, TCLP	56-23-5	E615B	234 µg/L	250 µg/L	93.8	50.0	140	----
		Chlorobenzene, TCLP	108-90-7	E615B	234 µg/L	250 µg/L	93.4	50.0	140	----
		Chloroform, TCLP	67-66-3	E615B	250 µg/L	250 µg/L	99.2	50.0	140	----
		Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	236 µg/L	250 µg/L	94.2	50.0	140	----
		Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	232 µg/L	250 µg/L	92.7	50.0	140	----
		Dichloroethane, 1,2-, TCLP	107-06-2	E615B	277 µg/L	250 µg/L	111	50.0	140	----
		Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	218 µg/L	250 µg/L	87.2	50.0	140	----
		Dichloromethane, TCLP	75-09-2	E615B	270 µg/L	250 µg/L	106	50.0	140	----
		Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	290 µg/L	250 µg/L	115	50.0	140	----
		Tetrachloroethylene, TCLP	127-18-4	E615B	202 µg/L	250 µg/L	81.0	50.0	140	----
		Trichloroethylene, TCLP	79-01-6	E615B	220 µg/L	250 µg/L	88.1	50.0	140	----
		Vinyl chloride, TCLP	75-01-4	E615B	202 µg/L	250 µg/L	80.8	50.0	140	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1083700

Canada Toll Free: 1 800 668 9878

Page

Environmental Division
Waterloo
 Work Order Reference
WT2336751



Telephone : +1 519 886 6910

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Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested																														
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Postal Code:	N3E 4B6	Email 3:																																
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Invoice Recipients		Analysis Requ																														
Company:	Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	For all tests with rush TATs requested, please con																														
Contact:		Email 1 or Fax:	AP@exp.com	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																														
Project Information		Oil and Gas Required Fields (client use)		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="5" style="writing-mode: vertical-rl; transform: rotate(180deg);">NUMBER OF CONTAINERS</th> <td>TCLP Metals</td> <td>TCLP VOCs</td> <td>TCLP Ignitability</td> <td>TCLP PCBs</td> <td>TCLP B(a)P</td> <td rowspan="5" style="writing-mode: vertical-rl; transform: rotate(180deg);">SAMPLES ON HOLD</td> <td rowspan="5" style="writing-mode: vertical-rl; transform: rotate(180deg);">EXTENDED STORAGE REQUIRED</td> <td rowspan="5" style="writing-mode: vertical-rl; transform: rotate(180deg);">SUSPECTED HAZARD (see notes)</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>		NUMBER OF CONTAINERS	TCLP Metals	TCLP VOCs	TCLP Ignitability	TCLP PCBs	TCLP B(a)P	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																				
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ALS Account # / Quote #		AFE/Cost Center:	PO#																															
Job #:	KCH-22020234-A0	Major/Minor Code:	Routing Code:																															
PO / AFE:		Requisitioner:																																
LSD:		Location:																																
ALS Lab Work Order # (ALS use only):	WT2336751 FH	ALS Contact:	Gayle Braun	Sampler:	J. Ellis																													
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (h:mm)	Sample Type																														
	Bag 1	08-Nov-23	AM	S	2	X	X	X	X	X																								
	Bag 3	↓	↓	↓	2	X	X	X	X	X																								
	Bag 4	↓	↓	↓	2	X	X	X	X	X																								
	Bag 5	↓	↓	↓	2	X	X	X	X	X																								
	Bag 6	↓	↓	↓	2	X	X	X	X	X																								
	Bag 8	↓	↓	↓	2	X	X	X	X	X																								

Drinking Water (DW) Samples ¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)			
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO		O.Reg 347		Cooling Method: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED			
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO				Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO			
				Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A		Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A	
				INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
						4.5	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)			
Released by:	Date:	Received by:	Date:	Received by:	Date:	Time:	Time:
Jordan Ellis	Nov 9 2023			MT	11/09/23	4:47pm	17:55

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION
 Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.
 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

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