



October 21, 2015

Lyndsay Waller, B.Sc., EP
The Regional Municipality of Durham
605 Rossland Road East
P.O. Box 623
Whitby, Ontario
L1N 6A3

**Re: Soil Testing Plan Results and Summary
Durham York Energy Centre – 2015 Soil Sampling Plots
Project No. 111-26648-00-100A-0414013**

Dear Ms. Waller:

WSP Canada Inc. (WSP) was retained by The Regional Municipality of Durham (Durham) to conduct soil sampling as detailed in The *Durham York Energy Centre Soils Testing Plan* (Soil Testing Plan) document which was approved by the Ministry of the Environment and Climate Control (MOECC) after a second revision on February 8, 2013. The Soil Testing Plan was prepared to satisfy Conditions 7(10), 13(4) and 15(4) of Certificate of Approval #7306-8FDKNX (CofA). The preparation of this report has been completed within one (1) month of receipt of the laboratory results, in accordance with Condition 15(4) of the CofA.

1. BACKGROUND

The Durham York Energy Centre (DYEC) is an energy from municipal solid waste facility, currently operating in the Municipality of Clarington, Ontario. The site property is located on the west side of Osborne Road, southeast of the Courtice Road and Highway 401 interchange, and north of the Courtice Water Pollution Control Plant (CWPCP) and the CN Railway, as shown in **Figure 1**. Approval for the operation of the DYEC was received from the MOECC under the *Environmental Assessment Act* (EPA) on November 3, 2010. Three (3) applications for CofA under the EPA for waste; air and noise; and stormwater were approved as a multi-media CofA (#7306-8FDKNX) by the MOECC on June 28, 2011.

During the baseline study undertaken in the Environmental Assessment (EA) for the DYEC, 23 soil samples were collected at 17 sampling locations from areas surrounding the site. The results for the parameters analyzed during the baseline study satisfied the Table 1 Standards, where applicable; and the results of the baseline study determined the appropriate analysis suite that should be included in the Soil Testing Plan.

WSP Canada Inc.
126 Don Hillock Drive. Unit 2
Aurora, Ontario
L4G 4G9
www.wspgroup.com

The first stage of the Soil Testing Plan was undertaken in August 2013 by WSP (then GENIVAR) to quantify background (baseline) contaminant concentrations prior to the operation of the DYEC. The DYEC was under construction during the 2013 soil sampling event and, as per the Soil Testing Plan, only the upwind and downwind locations were sampled.

The soil sampling event completed in August 2015 is representative of the Year 1 operation of the facility, as defined in the Soil Testing Plan. This sampling event incorporated the previously established upwind and downwind locations, sampled in 2013, and included a new on-site sampling location near the downwind DYEC property line. The principal objective of the soil sampling conducted during this portion of the Soil Testing Plan is to determine if the first year of operation at the DYEC has altered parameter concentrations within the surficial soils in comparison to: (i) the baseline data collected in 2013, ii) the Table 1 Standards, and iii) between upwind, property line, and downwind locations..

2. METHODOLOGY

2.1 PLOT SET-UP PROCEDURES

Ambient air monitoring stations have already been established on the DYEC property and at the upwind and downwind sampling locations; and, in accordance with Section 13 (4) (a) of the CofA, the Soil Testing Plot locations were positioned in close proximity to the ambient monitoring stations. WSP field staff and Durham representatives met at the DYEC on August 25, 2015 and established the new soil sampling plot location near the existing ambient air monitoring station in the northeast corner of the DYEC property.

The upwind plot is established on the CWPCP property, which is located approximately one (1) kilometer (km) south of the DYEC. The ambient air monitoring station and soil sampling plot are positioned near the western extent of the CWPCP property, as shown in **Figure 2**. The downwind ambient air monitoring station and sampling plot are located on the western extent of a parcel of private property leased by Durham. The downwind property is located on the southeast corner of Baseline and Rundle Roads in Clarington, approximately 2.5 kms from the DYEC, as shown in **Figure 3**. The newly established DYEC sampling plot is located along the eastern extent of the DYEC property fronting Osborne Road, north of the main staff entrance and south of Energy Drive, in a newly landscaped area. The newly established DYEC sampling plot location can be seen on **Figure 4**.

Once the sample plot location was established on the DYEC property, and the upwind and downwind plots were re-established with the Durham representatives, WSP field staff began constructing the soil sampling plots. The four corners of the grid were laid out using a cloth measuring tape, creating a ten meter by ten meter

square. Metal posts were installed in the ground at each of the four (4) corners to mark the outer parameters of the grid. Nine, 3.3 m by 3.3 m, squares were then created within the ten meter squared box, which were then marked with wooden stakes that were pounded into the ground for reference. At the DYEC and upwind sample locations, string was then wrapped around the four corner posts and the twelve inner stakes, which helped to define the exact boundaries of the grid segments. Tall grasses and shrubs restricted string from being used at the downwind location, so extra attention was paid to the grid boundaries to ensure accurate sampling. The entire grid setup was located and again left in place at the downwind location because it is positioned in an area that was hidden from the public and is not likely to be disturbed. The upwind location was again removed except for the southeast corner post which will continue to be used as a reference location for future sampling events. The DYEC grid infrastructure was removed except for the northwest corner post which will continue to be used as a reference location for future sampling events. The respective sample grid construction are shown in the **Photo log**, within the Appendix.

The sample grids were measured from a fixed point to ensure that reassembly can occur in the exact location during subsequent sampling events should the metal post used for reference be removed. WSP personnel located UTM referenced mapping and found the fixed points that were measured by staff in the field. This procedure allowed for a more accurate UTM reference, compared to a hand held GPS unit.

2.2 SOIL SAMPLING

Once the plot grids were established, the physical soil sampling was carried out. WSP field staff used a stainless steel sampling probe to collect an equal quantity of soil at each of the nine (9) subplots within the respective grids. The probe was decontaminated with the use of a specialized inert detergent mixed with water, and was rinsed with de-ionized water, between sampling at each of the nine (9) segments of the three plots. The soil from each grid was placed into a bucket which had been decontaminated before use and was cleaned again between the plot locations. Nitrile gloves were replaced after each plot sample was collected to reduce the potential for cross-contamination of the samples. Sample collection activities can be seen in the attached **Photo log**.

An equivalent quantity of soil was collected from each segment of the three (3) plot grids from a depth of zero (0) to two (2) centimeters below ground surface for a total of 870 ml of sample per location. The entire contents of the bucket was gently mixed to create a composite sample and then placed into the laboratory supplied glass jars. The sample jars were stored at a temperature of less than 10 °C and handled under chain of custody procedures until received at the laboratory. The laboratory supplied four, amber coloured, glass jars (three 120 ml jars, one 250 ml jar) to submit for analysis. A total of three (3) soil samples were submitted for analysis to AGAT

Laboratories (AGAT), located in Mississauga, Ontario. AGAT is a Canadian Association for Laboratory Accreditation (CALA) certified laboratory as required in the Soil Testing Plan. The samples were analysed for select metal parameters, PAHs, and PCDDs/PCDFs as outlined in the approved Soil Testing Plan. It should be noted that the required methyl mercury analysis was subcontracted by AGAT to Fleet Research Ltd (Fleet) of Winnipeg, Manitoba. Fleet is accredited to complete methyl mercury analysis. AGAT is accredited to complete the remaining analyses.

2.3 QUALITY ASSURANCE AND QUALITY CONTROL

Prior to sampling, the sample jars were inspected to ensure that the Teflon liners under the lids were in place and that the jars were clean and unused. The sample containers were labelled with the sample identifications, the project number, and the sampling date and time. A laboratory supplied chain of custody was completed. One (1) copy of the chain of custody was left with the samples at the laboratory, and one (1) copy was retained for the project file.

As part of the quality assurance/quality control (QA/QC) program for the project, one (1) field-prepared duplicate sample was collected by WSP at each of the three (3) sample plot grids. As instructed by the MOECC in The Soil Testing Plan document, Durham representatives retained the three (3) duplicate samples and have stored them in a cool, dark, dry place. It is noted that lengthy storage periods of the soil samples in excess of the storage times specified in the applicable MOECC reference document will affect the laboratory results for some parameters, if analysis of the duplicate samples is carried out in the future.

In accordance with Section 3.5 of the Soils Testing Plan, sample handling, container requirements for parameter analysis, storage, and preservation requirements were carried out in accordance with the reference document Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act by MOECC Laboratory Services Branch July 1, 2011. Sample handling and storage requirements are described in the reference document in Table A: Soil and Sediment Sample Handling and Storage Requirements (Table A). AGAT has also established its own recommended holding times for the various parameter suites. Table 2-1 below was prepared to provide the recommended sample hold times from Table A of the reference document and the AGAT sample holding times related to soil.

Table 2-1: Sample Holding Times

PARAMETER/GROUP	AGAT LABORATORIES HOLDING TIME	PROTOCOL - MOE LAB SERVICES BRANCH HOLDING TIME
Metals	180 days	180 days
Hexavalent Chromium	28 days	30 days
Mercury/Methyl Mercury	28 days	28 days
PAHs	14 days	60 days
Dioxins/Furans	90 days	indefinite

All test results, with the exception of dioxins and furans, will be affected if/when tested after the prescribed holding times.

AGAT performed QA/QC procedures as outlined in their CALA procedures. These procedures included, but were not limited to, analysis of lab duplicates and blanks as well as analysis of surrogate recovery, as outlined in the Certificates of Analysis provided.

2.4 FIELD DOCUMENTATION

In accordance with the Soil Testing Plan, field notes were recorded by WSP field staff during the execution of the 2015 sampling event. A summary of the notes taken is provided in Table 2-2 below.

Table 2-2: Field Note Summary

NOTE CATEGORIES (AS PER MOE)	NOTES
Site name and photograph	Durham York Energy Center, site photographs are included in the attached Photo log
UTM coordinates for sample plot locations (NAD 83)	DYEC (centre of grid) – 17 680639, 4860535 Upwind (center of grid) – 17 680038, 4860021 Downwind (center of grid) – 17 681966, 4861859
Field personnel's name	Trevor Swift, C.E.T. and Stephen Heikkila, P.Eng.
Date, time and location of sample collection	August 25, 2015, 8:00 am to 3:00 pm, DYEC, upwind and downwind plot locations
Sample number/ID	DYEC grid – 'DYEC', Upwind grid – 'UPWIND', Downwind grid – 'DOWNWIND'
Whether QA/QC samples were collected	QA/QC samples were collected from the sample locations and are being held by Durham as per The Soil Testing Plan.

NOTE CATEGORIES (AS PER MOE)	NOTES
Type of containers used for collection	Soil samples were submitted in three, 120 ml amber, glass jars and one, 250 ml amber, glass jar for each sample location. The sample containers were provided by AGAT.
Whether samples were preserved	No preservative was used, as specified by AGAT.
Sampling method and composite collection pattern/map of test plot area	See Section 3 - Methodology and Figures 2, 3 and 4 .
Unusual site conditions	The DYEC sample location was completed within 0.3 m of Osbourne Road. The DYEC sample plot was surfaced with sod that had been installed within a six month period. The Downwind sample location was covered with waist high grasses and shrubs.
Weather conditions	Sun with some cloud cover, 24 degrees Celsius.

The field notes summarized above are maintained on file by WSP, if further reference is required.

3. REVIEW AND EVALUATION

The laboratory Certificates of Analysis presenting the laboratory results were received by WSP and Durham on September 25, 2015 and are attached to this report for reference.

As stated in The Soil Testing Plan, the soil samples are to be evaluated against the Table 1 Background Standards for Industrial property uses. The Table 1 Standards are considered to be representative of the upper limits of typical, province-wide background concentrations in soils that are not contaminated by point sources and are the most conservative standards for comparing soil quality data. In addition, owing to the fact that baseline data exists from the upwind and downwind sampling plots (2013 sampling program) the upwind and downwind concentrations will also be compared to the baseline data.

3.1 METALS

The metal parameters analyzed for the DYEC, upwind, and downwind sample locations satisfied the Table 1 Standards for industrial property uses. The historical baseline data appears similar to the 2015 concentrations with minor increases and decreases observed for select parameters. The results are summarized in the attached **Table 1**.

3.2 POLYCYCLIC AROMATIC HYDROCARBONS

The PAH parameters analyzed for the DYEC, upwind, and downwind sample locations satisfied the Table 1 Standards for industrial property uses. The historical baseline data reported the PAH parameters as non-detect with the exception of benzo(a)pyrene at the downwind location. A similar pattern occurred for the laboratory results in 2015 except the concentration for benzo(a)pyrene decreased from 0.11 µg/g to 0.05 µg/g. These results are summarized in the attached **Table 2**.

3.3 TOTAL DIOXINS AND FURANS

The Total PCDD/PCDF results for the DYEC, upwind, and downwind sample locations satisfied the Table 1 Standards for industrial property uses. The parameter concentrations in 2015 are similar to the historical baseline data, with a slight decrease at the downwind plot (1.12 to 0.606 TEQ ng/kg), and a minor increase observed at the upwind plot location (0.977 to 1.21 TEQ ng/kg). The results are summarized in the attached **Table 3**.

3.4 GENERAL REVIEW AND EVALUATION

The soil sampling results at the three (3) sample plots were generally similar to one another, and to the 2013 baseline results. Although some metal and PCDDs/PCDF parameter concentrations increased slightly compared to the 2013 baseline concentrations, it is noted that data concentration increases at the upwind location were larger compared to the downwind increases. This pattern indicates that the higher concentrations observed at the two locations, compared to the 2013 results, are attributed to natural variability of the soil, and to potential alternate off site sources, and are not attributed to the DYEC facility. This pattern will continue to be assessed with future monitoring. The parameter concentrations for the soil samples collected satisfied the Table 1 Standards.

A contingency plan is presented within the Soil Testing Plan in the event that a parameter concentration exceeds a value obtained during the baseline sampling event and if a parameter concentration exceeds the Table 1 Standards. Since the variations in the parameter concentration for 2015 are not attributed to the DYEC facility, and the parameter concentrations satisfied the Table 1 Standards, the contingency plan does not need to be implemented at the present time.

4. FUTURE MONITORING

In accordance with the testing period outlined in the Soil Testing Plan, the next soil sampling event is expected to be carried out in 2016, once the DYEC has been

operating for two (2) years. The sampling event in 2016 will be the second sampling event as part of a three (3) year evaluation program.

5. CONCLUSIONS AND RECOMMENDATIONS

The following are the conclusions of the Study:

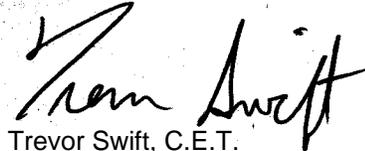
- The soil sampling plot grids have been established as outlined in the Soil Testing Plan. UTM coordinates are available, and at least one steel post remains securely installed at each sampling location, for reassembly during future sampling events.
- The composite samples collected from the DYEC, upwind, and downwind sample locations satisfied the Table 1 Standards for industrial property uses.
- The parameter concentrations for the 2015 sampling event are similar to the historical baseline data, with minor increases and decreases observed for select parameters. These parameter variations are attributed to natural variation of the soil, or to other potential off-site sources, and are not due to the operation of the facility.
- The Region of Durham has retained a duplicate sample, collected by WSP, from each sample plot location as outlined in the Soil Testing Plan.

The following recommendation is presented:

- The contingency plan does not need to be implemented at the present time.
- The next soil sampling event should be carried out during the summer season, within the second year of operation (2016) at the DYEC, as part of the evaluation program.

We trust that this letter report satisfies the requirements of the Soil Sampling Plan at this time. Should you have any questions, please feel free to contact the undersigned.

Yours truly,
WSP Canada Inc.



Trevor Swift, C.E.T.
Environmental Consultant



Stephen J. Taziar, P.Eng.
Senior Project Engineer

TAS:nah

Appendix

FIGURE 1 – SITE LOCATION MAP

FIGURE 2 – UPWIND SAMPLE LOCATION MAP

FIGURE 3 – DOWNWIND SAMPLE LOCATION MAP

FIGURE 4 – DYEC SAMPLE LOCATION MAP

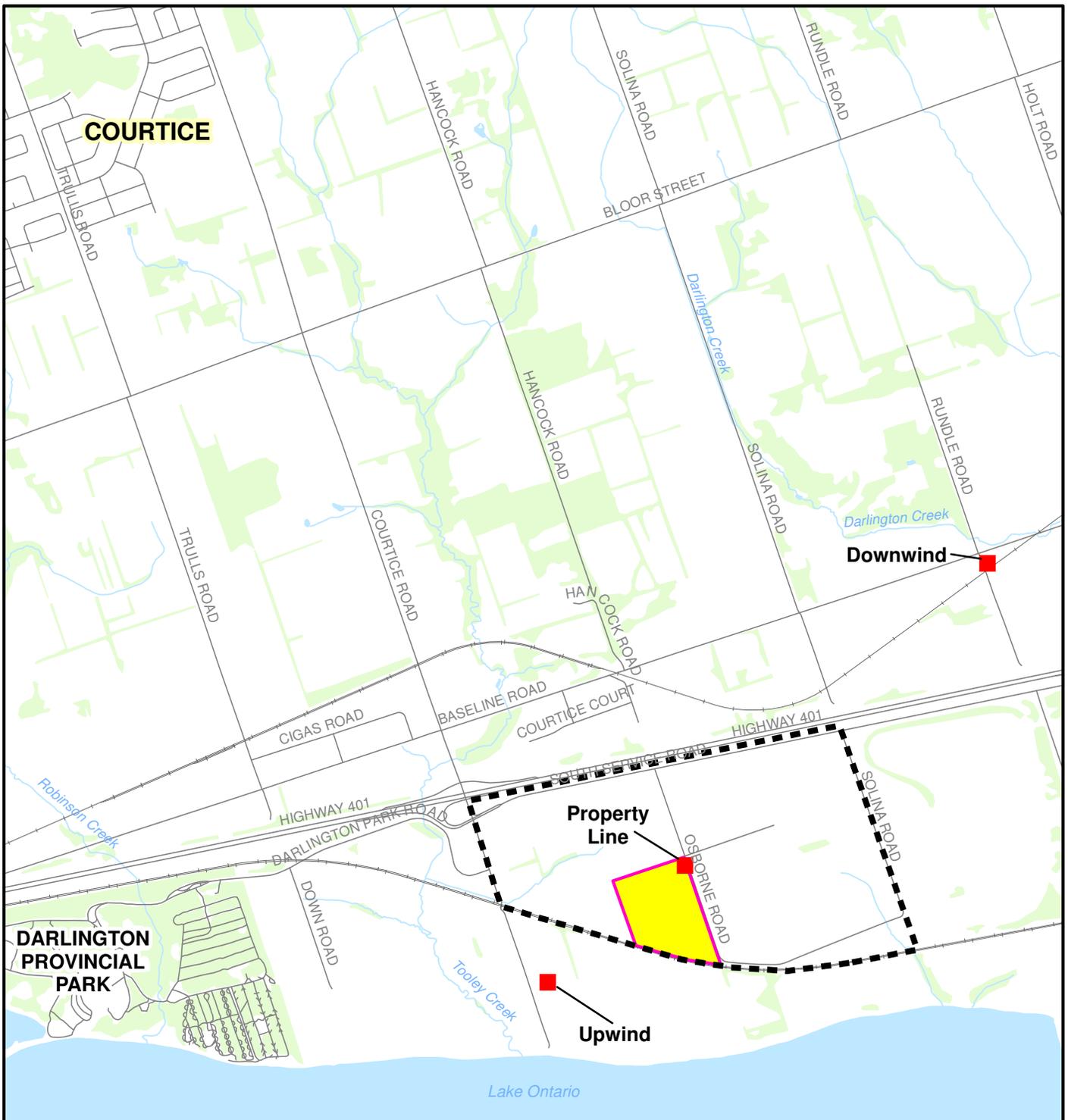
TABLE 1 – SOIL CHEMICAL RESULTS – METALS

TABLE 2 – SOIL CHEMICAL RESULTS – PAHS

TABLE 3 – SOIL CHEMICAL RESULTS – DIOXINS AND FURANS

PHOTO LOG

LABORATORY CERTIFICATES OF ANALYSIS



LEGEND

-  CLARINGTON ENERGY PARK
-  DURHAM YORK ENERGY CENTRE
-  SOIL PLOT LOCATION



200 100 0 200 Metres

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014.

LOCATION MAP

SOIL TESTING PLAN
 DURHAM YORK ENERGY CENTRE
 For Regional Municipalities of Durham and York

DATE: OCTOBER 2015

SCALE: 1:25000

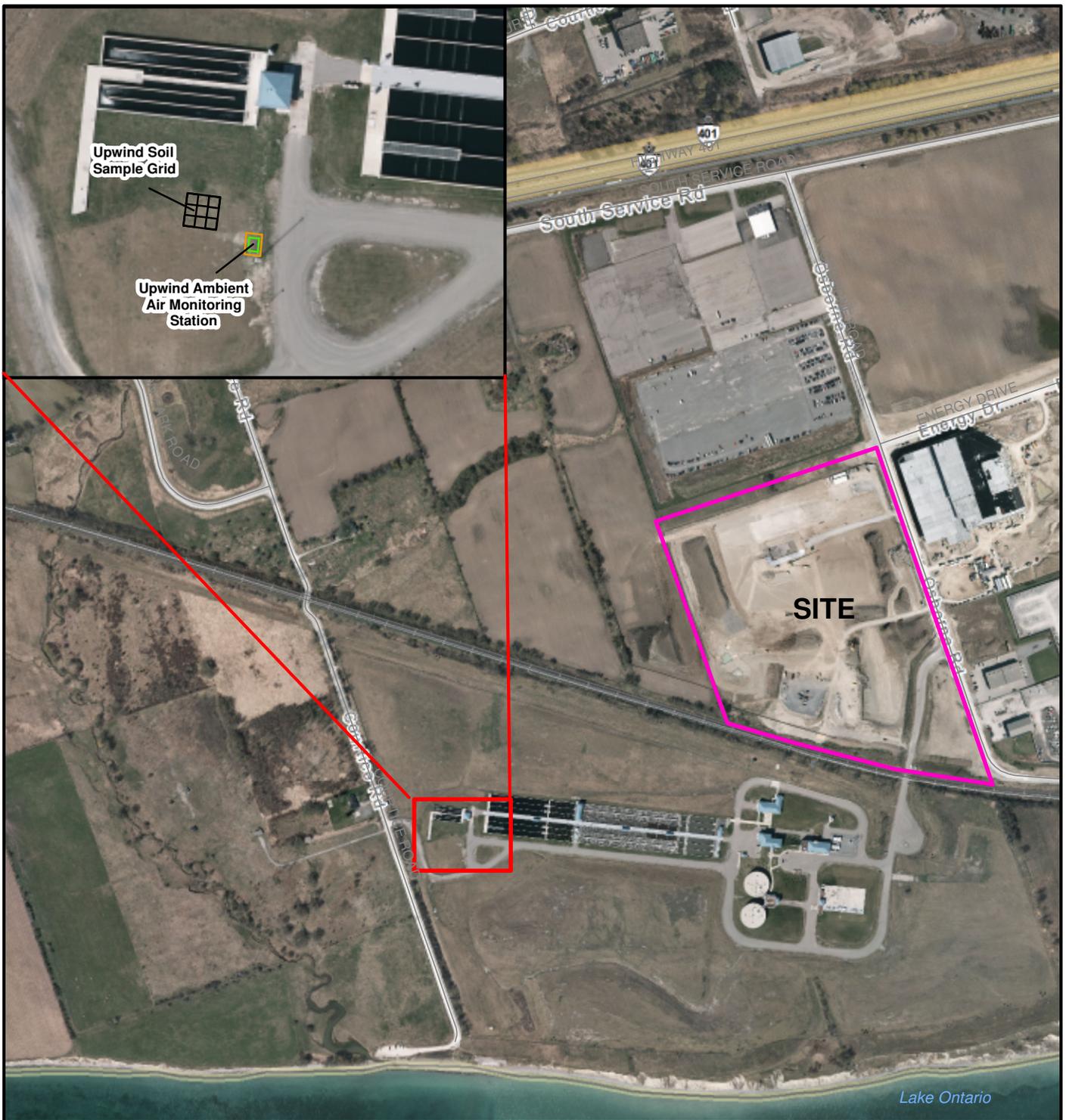
PROJECT: 111-26648-00 100A-3

FILE. NO.:111-26648-00 100A-3 F1



FIGURE

1



LEGEND

- DURHAM YORK ENERGY CENTRE
- UPWIND SAMPLING GRID
- UPWIND AMBIENT AIR MONITORING STATION
- FENCE



80 40 0 80 Metres

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014. Imagery, Region of Durham, 2012.

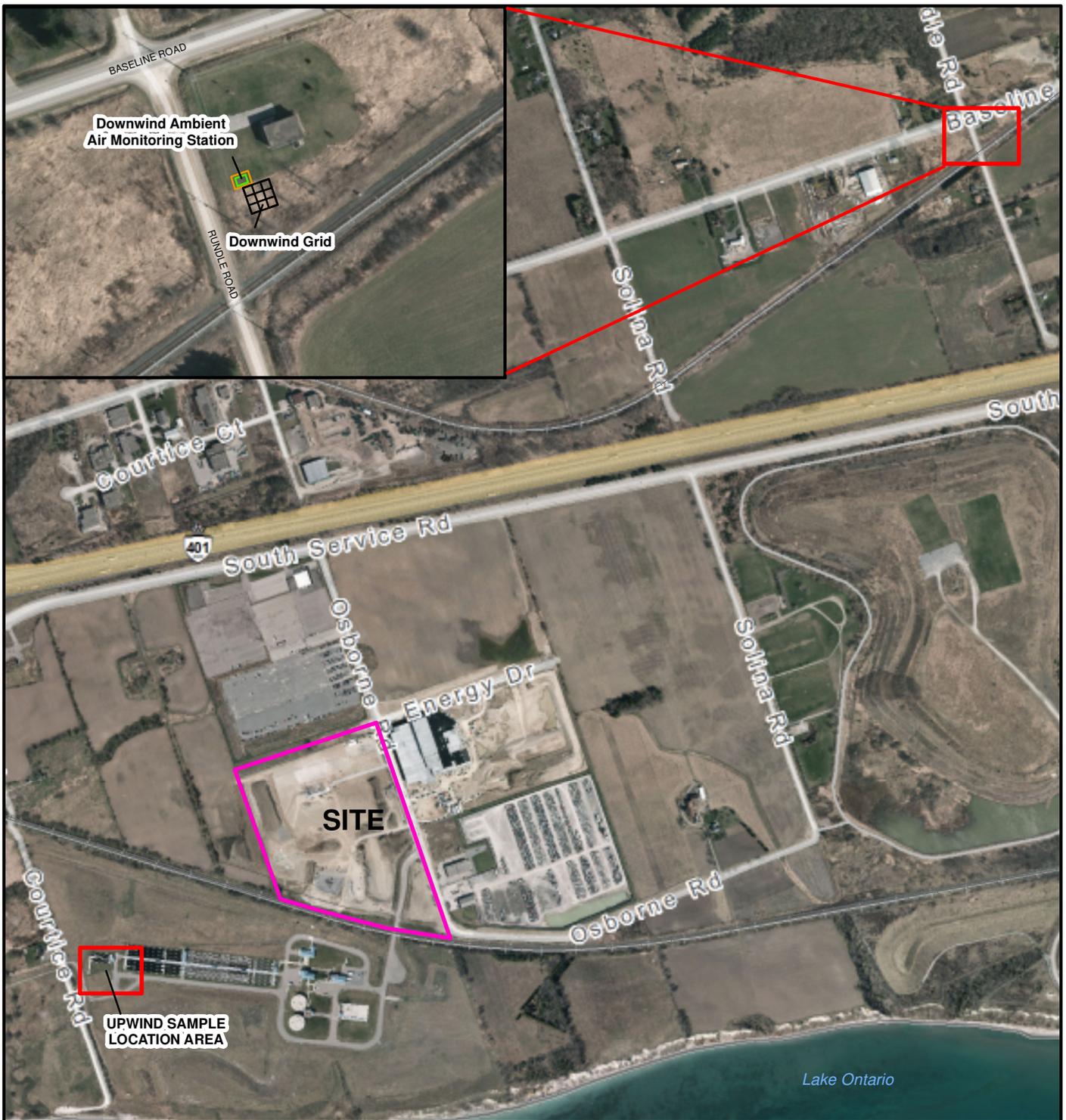
UPWIND SAMPLE LOCATION MAP

SOIL TESTING PLAN
 DURHAM YORK ENERGY CENTRE
 For Regional Municipalities of Durham and York

DATE: SEPTEMBER 2015	SCALE: 1:8000
PROJECT: 111-26648-00 100A-3	FILE. NO.:111-26648-00 100A-3 F2



FIGURE
2



LEGEND

- DURHAM YORK ENERGY CENTRE
- DOWNWIND SAMPLING GRID
- DOWNWIND AMBIENT AIR MONITORING STATION
- FENCE



Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014. Imagery, Region of Durham, 2012.



DOWNWIND SAMPLE LOCATION MAP

SOIL TESTING PLAN
 DURHAM YORK ENERGY CENTRE
 For Regional Municipalities of Durham and York

DATE: SEPTEMBER 2015

SCALE: 1:12500

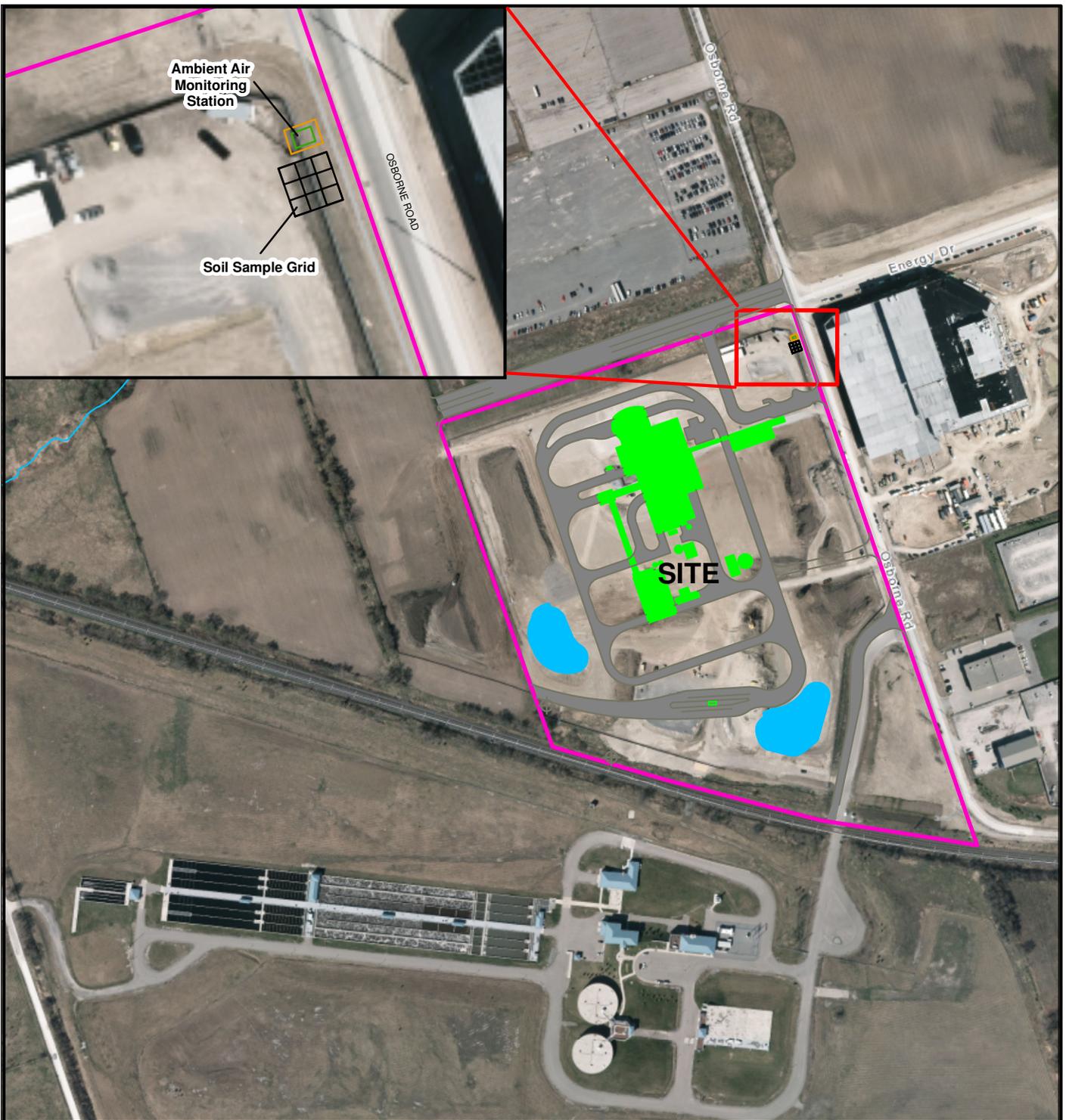
PROJECT: 111-26648-00 100A-3

FILE. NO.:111-26648-00 100A-3 F3



FIGURE

3



LEGEND

- DURHAM YORK ENERGY CENTRE
- SAMPLING GRID
- AMBIENT AIR MONITORING STATION
- FENCE
- BUILDINGS / INFRASTRUCTURE
- PONDS
- ROADWAY



Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014. Imagery, Region of Durham, 2012.

DYEC SAMPLE LOCATION MAP

SOIL TESTING PLAN
 DURHAM YORK ENERGY CENTRE
 For Regional Municipalities of Durham and York

DATE: OCTOBER 2015	SCALE: 1:5000
PROJECT: 111-26648-00 100A-3	FILE. NO.: 111-26648-00 100A-3 F4

	FIGURE 4
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TABLE 1
SOIL CHEMICAL RESULTS - Metals
DURHAM YORK ENERGY CENTRE - SOIL TESTING PLAN

PARAMETER	SGSS TABLE 1	UNITS	UPWIND		DYEC	DOWNWIND	
			Aug-13	Aug-15	Aug-15	Aug-13	Aug-15
Antimony	1.3	µg/g	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	18	µg/g	2	2	2	3	3
Barium	220	µg/g	87	76	54	68	59
Beryllium	2.5	µg/g	0.5	0.6	0.5	<0.5	0.5
Boron	36	µg/g	6	7	5	5	7
Cadmium	1.2	µg/g	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	21	µg/g	6.8	7.1	4.5	4.8	4.9
Chromium - total	70	µg/g	18	20	16	14	15
Chromium - hexavalent	0.66	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	92	µg/g	15	12	9	11	9
Lead	120	µg/g	10	9	10	13	12
Molybdenum	2	µg/g	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	82	µg/g	16	13	9	11	9
Phosphorus		µg/g	729	815	911	609	668
Selenium	1.5	µg/g	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	0.5	µg/g	<0.4	<0.4	<0.4	<0.4	<0.4
Thallium	1	µg/g	<0.4	<0.4	<0.4	<0.4	<0.4
Tin		µg/g	<1	<1	1.00	<1	<1
Vanadium	86	µg/g	27	29	23	24	26
Zinc	290	µg/g	63	58	54	51	49
Mercury	0.27	µg/g	<0.10	<0.10	<0.10	<0.10	<0.10
Methyl Mercury (as Hg)		ng/g	<1.3	<0.4	0.75	<1.3	<0.4

- NOTES: 1) SGSS Table 1 = Soil, Ground Water and Sediment Standards for Use Under Condition for Res/Park/Instit/Ind/Com./Comm Property Uses, Part XV.1 of the Environmental Protection Act (April 2011) - Table 1: Full Depth Generic Site Condition Standards (Background).
- 2) Blank - Indicates a Standard does not exist in SGSS Table 1 for the parameter.

TABLE 2
SOIL CHEMICAL RESULTS - Polycyclic Aromatic Hydrocarbons
DURHAM YORK ENERGY CENTRE - SOIL TESTING PLAN

PARAMETER	SGSS TABLE 1	UNITS	UPWIND		DYEC	DOWNWIND	
			Aug-13	Aug-15	Aug-15	Aug-13	Aug-15
1,2-Benzofluorene		µg/g	<0.05	<0.05	<0.05	<0.05	<0.05
2,3-Benzofluorene		µg/g	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	0.12	µg/g	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	0.16	µg/g	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	0.3	µg/g	<0.05	<0.05	<0.05	0.11	0.05

- NOTES: 1) SGSS Table 1 = Soil, Ground Water and Sediment Standards for Use Under Condition for Res/Park/Instit/Ind/Com./Comm Property Uses, Part XV.1 of the Environmental Protection Act (April 2011) - Table 1: Full Depth Generic Site Condition Standards (Background).
- 2) PAH = Polycyclic Aromatic Hydrocarbons
- 3) Blank - Indicates a Standard does not exist in SGSS Table 1 for the parameter.
- 4) 1,2-Benzofluorene is a synonym for Benzo(a)Fluorene
- 5) 2,3-Benzofluorene is a synonym for Benzo(b)Fluorene

TABLE 3

**SOIL CHEMICAL RESULTS - Dioxins & Furans
DURHAM YORK ENERGY CENTRE - SOIL TESTING PLAN**

PARAMETER	SGSS TABLE 1	UNITS	UPWIND		DYEC	DOWNWIND	
			Aug-13	Aug-15	Aug-15	Aug-13	Aug-15
2,3,7,8-Tetra CDD		ng/kg	<0.5	0.2	<0.2	<0.4	<0.1
1,2,3,7,8-Penta CDD		ng/kg	<0.6	0.5	0.3	<0.6	<0.2
1,2,3,4,7,8-Hexa CDD		ng/kg	<0.6	0.6	0.4	<0.5	0.2
1,2,3,6,7,8-Hexa CDD		ng/kg	<0.6	0.5	<0.3	<0.5	0.6
1,2,3,7,8,9-Hexa CDD		ng/kg	<0.5	0.6	0.9	0.5	0.5
1,2,3,4,6,7,8-Hepta CDD		ng/kg	8.2	7.9	12.0	17	11
Octa CDD		ng/kg	57	60	95	118	86
2,3,7,8-Tetra CDF		ng/kg	<0.4	0.3	<0.2	<0.3	0.2
1,2,3,7,8-Penta CDF		ng/kg	<0.4	0.4	<0.2	<0.8	0.2
2,3,4,7,8-Penta CDF		ng/kg	<0.4	0.5	0.2	<0.6	0.3
1,2,3,4,7,8-Hexa CDF		ng/kg	<0.6	0.6	0.5	<0.4	0.6
1,2,3,6,7,8-Hexa CDF		ng/kg	<0.6	0.3	0.3	<0.4	0.4
2,3,4,6,7,8-Hexa CDF		ng/kg	<0.6	0.4	0.4	0.7	0.3
1,2,3,7,8,9-Hexa CDF		ng/kg	<0.8	0.4	<0.3	<0.5	<0.2
1,2,3,4,6,7,8-Hepta CDF		ng/kg	2.1	2.2	2.7	4.9	2.6
1,2,3,4,7,8,9-Hepta CDF		ng/kg	<1	<0.3	0.30	<0.6	<0.2
Octa CDF		ng/kg	3	6	9	9	8
Total Tetrachlorodibenzodioxins		ng/kg	1.3	0.7	0.3	1.4	0.4
Total Pentachlorodibenzodioxins		ng/kg	<0.6	2.5	2.3	2.3	1.8
Total Hexachlorodibenzodioxins		ng/kg	3.6	3.7	3.3	4.3	3.2
Total Heptachlorodibenzodioxins		ng/kg	17.7	10.2	15	31.1	12.7
Total PCDDs		ng/kg	80	76.8	116	158	104
Total Tetrachlorodibenzofurans		ng/kg	3.1	2	3.8	4.7	2.1
Total Pentachlorodibenzofurans		ng/kg	1.3	2.3	3.3	3.3	2.5
Total Hexachlorodibenzofurans		ng/kg	2.4	1.8	1.2	6.5	1.3
Total Heptachlorodibenzofurans		ng/kg	5	3.3	4.9	12.3	4.8
Total PCDFs		ng/kg	14	15.5	21.7	36	19.1
2,3,7,8-Tetra CDD (TEF 1.0)		TEQ	0.25	0.195	0.116	0.2	0.0456
1,2,3,7,8-Penta CDD (TEF 1.0)		TEQ	0.3	0.47	0.262	0.3	0.0767
1,2,3,4,7,8-Hexa CDD (TEF 0.1)		TEQ	0.03	0.0628	0.0372	0.025	0.0203
1,2,3,6,7,8-Hexa CDD (TEF 0.1)		TEQ	0.03	0.0525	0.0129	0.025	0.0605
1,2,3,7,8,9-Hexa CDD (TEF 0.1)		TEQ	0.025	0.0646	0.0871	0.0544	0.0535
1,2,3,4,6,7,8-Hepta CDD (TEF 0.01)		TEQ	0.0819	0.0788	0.12	0.17	0.109
Octa CDD (TEF 0.0003)		TEQ	0.0172	0.0179	0.0285	0.0355	0.0259
2,3,7,8-Tetra CDF (TEF 0.1)		TEQ	0.02	0.0265	0.0106	0.015	0.0224
1,2,3,7,8-Penta CDF (TEF 0.03)		TEQ	0.006	0.0405	0.0118	0.012	0.017
2,3,4,7,8-Penta CDF (TEF 0.3)		TEQ	0.06	0.0135	0.00697	0.09	0.0097
1,2,3,4,7,8-Hexa CDF (TEF 0.1)		TEQ	0.03	0.0623	0.0499	0.02	0.0576
1,2,3,6,7,8-Hexa CDF (TEF 0.1)		TEQ	0.03	0.0302	0.03	0.02	0.0369
2,3,4,6,7,8-Hexa CDF (TEF 0.1)		TEQ	0.03	0.0372	0.0427	0.072	0.0286
1,2,3,7,8,9-Hexa CDF (TEF 0.1)		TEQ	0.04	0.0377	0.0154	0.025	0.0122
1,2,3,4,6,7,8-Hepta CDF (TEF 0.01)		TEQ	0.0508	0.0219	0.027	0.049	0.0261
1,2,3,4,7,8,9-Hepta CDF (TEF 0.01)		TEQ	0.005	0.00156	0.00266	0.003	0.00116
Octa CDF (TEF 0.0003)		TEQ	0.00081	0.00184	0.00256	0.00284	0.00252
Total PCDDs and PCDFs (TEQ)	7	TEQ ng/kg	0.977	1.21	0.864	1.12	0.606

NOTES: 1) SGSS Table 1 = Soil, Ground Water and Sediment Standards for Use Under Condition for Res/Park/Instit/Ind/Com./Comm Property Uses, Part XV.1 of the Environmental Protection Act (April 2011) - Table 1: Full Depth Generic Site Condition Standards (Background).

2) Blank - Indicates a Standard does not exist in SGSS Table 1 for the parameter.

3) TEQ - Toxic Equivalency

4) The TEQ standard for total dioxins and furans in SGSS Table 1 is listed as 0.000007, for values in µg/g; which is equal to 7 for values in ng/kg.

Site Photographs
Soil Sampling Plan
Durham York Energy Center, Clarington, Ontario



Photograph-1: View of WSP field staff assembling the DYEC sampling location with the ambient air monitoring station in the background.



Photograph-2: View of WSP field staff collecting the composite sample from the DYEC sampling location with the staff parking lot in the background.



Photograph-3: View of WSP field staff collecting the sample from the upwind sampling location with the ambient air monitoring station in the foreground.



Photograph-4: View of a composite sample before being placed the laboratory supplied jars.



Photograph-5: View of WSP field staff collecting the composite sample from the downwind sampling location.



Photograph-6: View of WSP field staff sampling at the downwind location.



Certificate of Analysis

AGAT WORK ORDER: 15T012038

PROJECT: 111-26648-00, 100A, 0414013

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Steve Taziar

SAMPLING SITE:

SAMPLED BY: Trevor Swift

Metals Scan + Hg & CrVI (Soil)

DATE RECEIVED: 2015-08-26

DATE REPORTED: 2015-09-25

Parameter	Unit	SAMPLE DESCRIPTION:		DYEC	UP WIND	DOWN WIND
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		8/25/2015	8/25/2015	8/25/2015
		G / S	RDL	6911073	6911099	6911103
Antimony	µg/g		0.8	<0.8	<0.8	<0.8
Arsenic	µg/g		1	2	2	3
Barium	µg/g		2	54	76	59
Beryllium	µg/g		0.5	0.5	0.6	0.5
Boron	µg/g		5	5	7	7
Cadmium	µg/g		0.5	<0.5	<0.5	<0.5
Chromium	µg/g		2	16	20	15
Chromium, Hexavalent	µg/g		0.2	<0.2	<0.2	<0.2
Cobalt	µg/g		0.5	4.5	7.1	4.9
Copper	µg/g		1	9	12	9
Lead	µg/g		1	10	9	12
Mercury	µg/g		0.10	<0.10	<0.10	<0.10
Molybdenum	µg/g		0.5	<0.5	<0.5	<0.5
Nickel	µg/g		1	9	13	9
Phosphorus	µg/g		5	911	815	668
Selenium	µg/g		0.8	<0.8	<0.8	<0.8
Silver	µg/g		0.4	<0.4	<0.4	<0.4
Thallium	µg/g		0.4	<0.4	<0.4	<0.4
Tin	µg/g		1	1	<1	<1
Vanadium	µg/g		1	23	29	26
Zinc	µg/g		5	54	58	49

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
6911073-6911103

Certified By:

Amanjot Bhela



Certificate of Analysis

AGAT WORK ORDER: 15T012038

PROJECT: 111-26648-00, 100A, 0414013

5835 COOPERS AVENUE
 MISSISSAUGA, ONTARIO
 CANADA L4Z 1Y2
 TEL (905)712-5100
 FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Steve Taziar

SAMPLING SITE:

SAMPLED BY: Trevor Swift

1,2- and 2,3-Benzofluorene [soil]

DATE RECEIVED: 2015-08-26

DATE REPORTED: 2015-09-25

Parameter	Unit	SAMPLE DESCRIPTION:		DYEC	UP WIND	DOWN WIND
		G / S	RDL	6911073	6911099	6911103
1,2-Benzofluorene (Toronto)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05
2,3-Benzofluorene (Toronto)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%	0.1	5.23	5.45	5.32	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
 6911073-6911103 Results are based on the dry weight of the soil.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 15T012038

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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
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CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Steve Taziar

SAMPLING SITE:

SAMPLED BY: Trevor Swift

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2015-08-26

DATE REPORTED: 2015-09-25

Parameter	Unit	SAMPLE DESCRIPTION:		DYEC	UP WIND	DOWN WIND
		G / S	RDL	6911073	6911099	6911103
Fluorene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.05	<0.05	<0.05	<0.05	0.05
Moisture Content	%	0.1	8.2	13.5	18.5	
Surrogate	Unit	Acceptable Limits				
Chrysene-d12	%	50-140	89	80	93	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

6911073-6911103 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 15T012038

PROJECT: 111-26648-00, 100A, 0414013

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Steve Taziar

SAMPLING SITE:

SAMPLED BY: Trevor Swift

O. Reg 153 Dioxins & Furans (Soil, WHO 2005)

DATE RECEIVED: 2015-08-26

DATE REPORTED: 2015-09-25

Parameter	Unit	SAMPLE DESCRIPTION:		DYEC		UP WIND		DOWN WIND	
		SAMPLE TYPE:		Soil		Soil		Soil	
		DATE SAMPLED:		8/25/2015		8/25/2015		8/25/2015	
		G / S	RDL	6911073	RDL	6911099	RDL	6911103	
2,3,7,8-Tetra CDD	ng/kg		0.2	<0.2	0.1	0.2	0.1	<0.1	
1,2,3,7,8-Penta CDD	ng/kg		0.2	0.3	0.2	0.5	0.2	<0.2	
1,2,3,4,7,8-Hexa CDD	ng/kg		0.3	0.4	0.2	0.6	0.2	0.2	
1,2,3,6,7,8-Hexa CDD	ng/kg		0.3	<0.3	0.2	0.5	0.2	0.6	
1,2,3,7,8,9-Hexa CDD	ng/kg		0.3	0.9	0.2	0.6	0.2	0.5	
1,2,3,4,6,7,8-Hepta CDD	ng/kg		0.3	12.0	0.3	7.9	0.4	10.9	
Octa CDD	ng/kg		0.8	95.1	0.5	59.7	0.6	86.3	
2,3,7,8-Tetra CDF	ng/kg		0.2	<0.2	0.2	0.3	0.1	0.2	
1,2,3,7,8-Penta CDF	ng/kg		0.2	<0.2	0.2	0.4	0.1	0.2	
2,3,4,7,8-Penta CDF	ng/kg		0.2	0.2	0.2	0.5	0.1	0.3	
1,2,3,4,7,8-Hexa CDF	ng/kg		0.2	0.5	0.2	0.6	0.2	0.6	
1,2,3,6,7,8-Hexa CDF	ng/kg		0.2	0.3	0.2	0.3	0.2	0.4	
2,3,4,6,7,8-Hexa CDF	ng/kg		0.2	0.4	0.2	0.4	0.2	0.3	
1,2,3,7,8,9-Hexa CDF	ng/kg		0.3	<0.3	0.3	0.4	0.2	<0.2	
1,2,3,4,6,7,8-Hepta CDF	ng/kg		0.2	2.7	0.2	2.2	0.2	2.6	
1,2,3,4,7,8,9-Hepta CDF	ng/kg		0.3	0.3	0.3	<0.3	0.2	<0.2	
Octa CDF	ng/kg		0.3	8.5	0.6	6.1	0.3	8.4	
Total Tetrachlorodibenzodioxins	ng/kg		0.2	0.3	0.1	0.7	0.1	0.4	
Total Pentachlorodibenzodioxins	ng/kg		0.2	2.3	0.2	2.5	0.2	1.8	
Total Hexachlorodibenzodioxins	ng/kg		0.3	3.3	0.2	3.7	0.2	3.2	
Total Heptachlorodibenzodioxins	ng/kg		0.3	15.0	0.3	10.2	0.4	12.7	
Total PCDDs	ng/kg		0.8	116	0.5	76.8	0.6	104	
Total Tetrachlorodibenzofurans	ng/kg		0.2	3.8	0.2	2.0	0.1	2.1	
Total Pentachlorodibenzofurans	ng/kg		0.2	3.3	0.2	2.3	0.1	2.5	
Total Hexachlorodibenzofurans	ng/kg		0.3	1.2	0.3	1.8	0.2	1.3	
Total Heptachlorodibenzofurans	ng/kg		0.3	4.9	0.3	3.3	0.2	4.8	
Total PCDFs	ng/kg		0.3	21.7	0.6	15.5	0.3	19.1	
2,3,7,8-Tetra CDD (TEF 1.0)	TEQ			0.116		0.195		0.0456	
1,2,3,7,8-Penta CDD (TEF 1.0)	TEQ			0.262		0.470		0.0767	
1,2,3,4,7,8-Hexa CDD (TEF 0.1)	TEQ			0.0372		0.0628		0.0203	

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 15T012038

PROJECT: 111-26648-00, 100A, 0414013

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Steve Taziar

SAMPLING SITE:

SAMPLED BY: Trevor Swift

O. Reg 153 Dioxins & Furans (Soil, WHO 2005)

DATE RECEIVED: 2015-08-26

DATE REPORTED: 2015-09-25

Parameter	Unit	SAMPLE DESCRIPTION:		DYEC		UP WIND		DOWN WIND	
		SAMPLE TYPE:		Soil		Soil		Soil	
		DATE SAMPLED:		8/25/2015		8/25/2015		8/25/2015	
		G / S	RDL		RDL		RDL		RDL
1,2,3,6,7,8-Hexa CDD (TEF 0.1)	TEQ		0.0129		0.0525		0.0605		0.0605
1,2,3,7,8,9-Hexa CDD (TEF 0.1)	TEQ		0.0871		0.0646		0.0535		0.0535
1,2,3,4,6,7,8-Hepta CDD (TEF 0.01)	TEQ		0.120		0.0788		0.109		0.109
Octa CDD (TEF 0.0003)	TEQ		0.0285		0.0179		0.0259		0.0259
2,3,7,8-Tetra CDF (TEF 0.1)	TEQ		0.0106		0.0265		0.0224		0.0224
1,2,3,7,8-Penta CDF (TEF 0.03)	TEQ		0.0118		0.0405		0.0170		0.0170
2,3,4,7,8-Penta CDF (TEF 0.3)	TEQ		0.00697		0.0135		0.00970		0.00970
1,2,3,4,7,8-Hexa CDF (TEF 0.1)	TEQ		0.0499		0.0623		0.0576		0.0576
1,2,3,6,7,8-Hexa CDF (TEF 0.1)	TEQ		0.0300		0.0302		0.0369		0.0369
2,3,4,6,7,8-Hexa CDF (TEF 0.1)	TEQ		0.0427		0.0372		0.0286		0.0286
1,2,3,7,8,9-Hexa CDF (TEF 0.1)	TEQ		0.0154		0.0377		0.0122		0.0122
1,2,3,4,6,7,8-Hepta CDF (TEF 0.01)	TEQ		0.0270		0.0219		0.0261		0.0261
1,2,3,4,7,8,9-Hepta CDF (TEF 0.01)	TEQ		0.00266		0.00156		0.00116		0.00116
Octa CDF (TEF 0.0003)	TEQ		0.00256		0.00184		0.00252		0.00252
Total PCDDs and PCDFs (TEQ)	TEQ		0.864		1.21		0.606		0.606

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 15T012038
PROJECT: 111-26648-00, 100A, 0414013

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.
SAMPLING SITE:

ATTENTION TO: Steve Taziar
SAMPLED BY: Trevor Swift

O. Reg 153 Dioxins & Furans (Soil, WHO 2005)

DATE RECEIVED: 2015-08-26

DATE REPORTED: 2015-09-25

Surrogate	Unit	SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLED: Acceptable Limits	DYEC	UP WIND	DOWN WIND
			Soil	Soil	Soil
			8/25/2015 6911073	8/25/2015 6911099	8/25/2015 6911103
13C-2378-TCDF	%	40-130	70	73	66
13C-12378-PeCDF	%	40-130	68	75	67
13C-23478-PeCDF	%	40-130	80	84	77
13C-123478-HxCDF	%	40-130	57	59	57
13C-123678-HxCDF	%	40-130	62	66	64
13C-234678-HxCDF	%	40-130	66	69	66
13C-123789-HxCDF	%	40-130	69	71	70
13C-1234678-HpCDF	%	40-130	47	50	46
13C-1234789-HpCDF	%	40-130	58	61	58
13C-2378-TCDD	%	40-130	70	75	70
13C-12378-PeCDD	%	40-130	86	86	80
13C-123478-HxCDD	%	40-130	66	74	69
13C-123678-HxCDD	%	40-130	74	73	68
13C-1234678-HpCDD	%	40-130	61	65	60
13C-OCDD	%	40-130	42	45	41

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
6911073-6911103 The results were corrected based on the surrogate percent recoveries.
Total TEQ and Guideline expressed in ng/Kg TEQ.

Certified By:

Quality Assurance

 CLIENT NAME: WSP CANADA INC.
 PROJECT: 111-26648-00, 100A, 0414013
 SAMPLING SITE:

 AGAT WORK ORDER: 15T012038
 ATTENTION TO: Steve Taziar
 SAMPLED BY: Trevor Swift

Soil Analysis															
RPT Date: Sep 25, 2015			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Metals Scan + Hg & CrVI (Soil)															
Antimony	6911073		< 0.8	< 0.8	0.0%	< 0.8	94%	70%	130%	100%	80%	120%	99%	70%	130%
Arsenic	6911073		1	1	0.0%	< 1	109%	70%	130%	93%	80%	120%	91%	70%	130%
Barium	6911073		276	267	3.3%	< 2	100%	70%	130%	96%	80%	120%	86%	70%	130%
Beryllium	6911073		0.9	0.9	0.0%	< 0.5	100%	70%	130%	102%	80%	120%	100%	70%	130%
Boron	6911073		9	8	11.8%	< 5	80%	70%	130%	100%	80%	120%	98%	70%	130%
Cadmium	6911073		< 0.5	< 0.5	0.0%	< 0.5	110%	70%	130%	114%	80%	120%	102%	70%	130%
Chromium	6911073		56	55	1.8%	< 2	99%	70%	130%	94%	80%	120%	96%	70%	130%
Chromium, Hexavalent	6905128		<0.2	<0.2	0.0%	< 0.2	99%	90%	110%	100%	90%	110%	100%	70%	130%
Cobalt	6911073		14.5	13.7	5.7%	< 0.5	100%	70%	130%	99%	80%	120%	99%	70%	130%
Copper	6911073		39	38	2.6%	< 1	91%	70%	130%	89%	80%	120%	86%	70%	130%
Lead	6911073		9	9	0.0%	< 1	103%	70%	130%	90%	80%	120%	88%	70%	130%
Mercury	6911073		< 0.10	< 0.10	0.0%	< 0.10	98%	70%	130%	93%	80%	120%	84%	70%	130%
Molybdenum	6911073		< 0.5	< 0.5	0.0%	< 0.5	104%	70%	130%	104%	80%	120%	100%	70%	130%
Nickel	6911073		32	30	6.5%	< 1	102%	70%	130%	98%	80%	120%	98%	70%	130%
Phosphorus	6911073		1120	1080	3.6%	< 5	102%	80%	120%	99%	80%	120%	99%	70%	130%
Selenium	6911073		< 0.8	1.0	NA	< 0.8	93%	70%	130%	97%	80%	120%	100%	70%	130%
Silver	6911073		< 0.4	< 0.4	0.0%	< 0.4	103%	70%	130%	100%	80%	120%	100%	70%	130%
Thallium	6911073		< 0.4	< 0.4	0.0%	< 0.4	96%	70%	130%	99%	80%	120%	100%	70%	130%
Tin	6911073		1	1	0.0%	< 1	116%	70%	130%	105%	80%	120%	106%	70%	130%
Vanadium	6911073		67	64	4.6%	< 1	103%	70%	130%	105%	80%	120%	101%	70%	130%
Zinc	6911073		100	97	3.0%	< 5	98%	70%	130%	91%	80%	120%	93%	70%	130%

Comments: NA Signifies Not Applicable.
 RPD Qualifier for Selenium: As the average value for the sample and a duplicate is less than 5X RDL, lab's RPD acceptance criteria is not applicable.


 Certified By: _____

Quality Assurance

 CLIENT NAME: WSP CANADA INC.
 PROJECT: 111-26648-00, 100A, 0414013
 SAMPLING SITE:

 AGAT WORK ORDER: 15T012038
 ATTENTION TO: Steve Taziar
 SAMPLED BY: Trevor Swift

Trace Organics Analysis

RPT Date: Sep 25, 2015			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Fluorene	6905137		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	81%	50%	140%	57%	50%	140%
Anthracene	6905137		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	79%	50%	140%	74%	50%	140%
Benzo(a)pyrene	6905137		< 0.05	< 0.05	0.0%	< 0.05	98%	50%	140%	81%	50%	140%	76%	50%	140%
1,2- and 2,3-Benzofluorene [soil]															
1,2-Benzofluorene (Toronto)	1	NA				< 0.05	NA	60%	130%	63%	60%	130%	NA	60%	130%
2,3-Benzofluorene (Toronto)	1	NA				< 0.05	NA	60%	130%	67%	60%	130%	NA	60%	130%

Certified By: _____



Quality Assurance

 CLIENT NAME: WSP CANADA INC.
 PROJECT: 111-26648-00, 100A, 0414013
 SAMPLING SITE:

 AGAT WORK ORDER: 15T012038
 ATTENTION TO: Steve Taziar
 SAMPLED BY: Trevor Swift

Ultra Trace Analysis

RPT Date: Sep 25, 2015			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

O. Reg 153 Dioxins & Furans (Soil, WHO 2005)

2,3,7,8-Tetra CDD	1	6922612	<0.1	<0.1	0.0%	< 0.1	106%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,7,8-Penta CDD	1	6922612	0.2	0.2	0.0%	< 0.2	110%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,4,7,8-Hexa CDD	1	6922612	0.4	0.4	0.0%	< 0.4	109%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,6,7,8-Hexa CDD	1	6922612	0.4	0.3	28.6%	< 0.4	110%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,7,8,9-Hexa CDD	1	6922612	<0.4	<0.4	0.0%	< 0.4	107%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,4,6,7,8-Hepta CDD	1	6922612	0.9	0.9	0.0%	< 0.5	106%	40%	130%	NA	40%	130%	NA	40%	130%
Octa CDD	1	6922612	3.0	2.7	10.5%	< 0.3	112%	40%	130%	NA	40%	130%	NA	40%	130%
2,3,7,8-Tetra CDF	1	6922612	0.49	0.44	10.8%	< 0.1	108%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,7,8-Penta CDF	1	6922612	0.5	0.5	0.0%	< 0.1	105%	40%	130%	NA	40%	130%	NA	40%	130%
2,3,4,7,8-Penta CDF	1	6922612	0.3	0.3	0.0%	< 0.1	108%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,4,7,8-Hexa CDF	1	6922612	0.44	0.47	6.6%	< 0.1	106%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,6,7,8-Hexa CDF	1	6922612	0.3	0.3	0.0%	< 0.1	106%	40%	130%	NA	40%	130%	NA	40%	130%
2,3,4,6,7,8-Hexa CDF	1	6922612	<0.1	<0.2	NA	< 0.1	106%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,7,8,9-Hexa CDF	1	6922612	<0.2	<0.2	0.0%	< 0.2	102%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,4,6,7,8-Hepta CDF	1	6922612	0.5	0.5	0.0%	< 0.1	105%	40%	130%	NA	40%	130%	NA	40%	130%
1,2,3,4,7,8,9-Hepta CDF	1	6922612	<0.2	<0.2	0.0%	< 0.2	106%	40%	130%	NA	40%	130%	NA	40%	130%
Octa CDF	1	6922612	1	0.8	22.2%	< 0.3	112%	40%	130%	NA	40%	130%	NA	40%	130%

Certified By:



Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 15T012038

PROJECT: 111-26648-00, 100A, 0414013

ATTENTION TO: Steve Taziar

SAMPLING SITE:

SAMPLED BY: Trevor Swift

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium, Hexavalent	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Phosphorus	MET-93-6103	EPA SW 846-3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Tin	MET-93-6103	EPA SW 846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Trace Organics Analysis			
1,2-Benzofluorene (Toronto)	ORG-91-5114	EPA SW-846 3541 & 8270C	GC/MS
2,3-Benzofluorene (Toronto)	ORG-91-5114	EPA SW-846 3541 & 8270C	GC/MS
Moisture Content		MOE E3139	BALANCE
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS

Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 15T012038

PROJECT: 111-26648-00, 100A, 0414013

ATTENTION TO: Steve Taziar

SAMPLING SITE:

SAMPLED BY: Trevor Swift

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Ultra Trace Analysis			
2,3,7,8-Tetra CDD	HR-151-5400	EPA 1613	HRMS
1,2,3,7,8-Penta CDD	HR-151-5400	EPA 1613	HRMS
1,2,3,4,7,8-Hexa CDD	HR-151-5400	EPA 1613	HRMS
1,2,3,6,7,8-Hexa CDD	HR-151-5400	EPA 1613	HRMS
1,2,3,7,8,9-Hexa CDD	HR-151-5400	EPA 1613	HRMS
1,2,3,4,6,7,8-Hepta CDD	HR-151-5400	EPA 1613	HRMS
Octa CDD	HR-151-5400	EPA 1613	HRMS
2,3,7,8-Tetra CDF	HR-151-5400	EPA 1613	HRMS
1,2,3,7,8-Penta CDF	HR-151-5400	EPA 1613	HRMS
2,3,4,7,8-Penta CDF	HR-151-5400	EPA 1613	HRMS
1,2,3,4,7,8-Hexa CDF	HR-151-5400	EPA 1613	HRMS
1,2,3,6,7,8-Hexa CDF	HR-151-5400	EPA 1613	HRMS
2,3,4,6,7,8-Hexa CDF	HR-151-5400	EPA 1613	HRMS
1,2,3,7,8,9-Hexa CDF	HR-151-5400	EPA 1613	HRMS
1,2,3,4,6,7,8-Hepta CDF	HR-151-5400	EPA 1613	HRMS
1,2,3,4,7,8,9-Hepta CDF	HR-151-5400	EPA 1613	HRMS
Octa CDF	HR-151-5400	EPA 1613	HRMS
Total Tetrachlorodibenzodioxins	HR-151-5400	EPA 1613	HRMS
Total Pentachlorodibenzodioxins	HR-151-5400	EPA 1613	HRMS
Total Hexachlorodibenzodioxins	HR-151-5400	EPA 1613	HRMS
Total Heptachlorodibenzodioxins	HR-151-5400	EPA 1613	HRMS
Total PCDDs	HR-151-5400	EPA 1613	HRMS
Total Tetrachlorodibenzofurans	HR-151-5400	EPA 1613	HRMS
Total Pentachlorodibenzofurans	HR-151-5400	EPA 1613	HRMS
Total Hexachlorodibenzofurans	HR-151-5400	EPA 1613	HRMS
Total Heptachlorodibenzofurans	HR-151-5400	EPA 1613	HRMS
Total PCDFs	HR-151-5400	EPA 1613	HRMS
2,3,7,8-Tetra CDD (TEF 1.0)	HR-151-5400	EPA 1613	HRMS
1,2,3,7,8-Penta CDD (TEF 1.0)	HR-151-5400	EPA 1613	HRMS
1,2,3,4,7,8-Hexa CDD (TEF 0.1)	HR-151-5400	EPA 1613	HRMS
1,2,3,6,7,8-Hexa CDD (TEF 0.1)	HR-151-5400	EPA 1613	HRMS
1,2,3,7,8,9-Hexa CDD (TEF 0.1)	HR-151-5400	EPA 1613	HRMS
1,2,3,4,6,7,8-Hepta CDD (TEF 0.01)	HR-151-5400	EPA 1613	HRMS
Octa CDD (TEF 0.0003)	HR-151-5400	EPA 1613	HRMS
2,3,7,8-Tetra CDF (TEF 0.1)	HR-151-5400	EPA 1613	HRMS
1,2,3,7,8-Penta CDF (TEF 0.03)	HR-151-5400	EPA 1613	HRMS
2,3,4,7,8-Penta CDF (TEF 0.3)	HR-151-5400	EPA 1613	HRMS
1,2,3,4,7,8-Hexa CDF (TEF 0.1)	HR_151-5400	EPA 1613	HRMS
1,2,3,6,7,8-Hexa CDF (TEF 0.1)	HR-151-5400	EPA 1613	HRMS
2,3,4,6,7,8-Hexa CDF (TEF 0.1)	HR-151-5400	EPA 1613	HRMS
1,2,3,7,8,9-Hexa CDF (TEF 0.1)	HR-151-5400	EPA 1613	HRMS
1,2,3,4,6,7,8-Hepta CDF (TEF 0.01)	HR-151-5400	EPA 1613	HRMS
1,2,3,4,7,8,9-Hepta CDF (TEF 0.01)	HR-151-5400	EPA 1613	HRMS
Octa CDF (TEF 0.0003)	HR-151-5400	EPA 1613	HRMS
Total PCDDs and PCDFs (TEQ)	HR-151-5400	EPA 1613	HRMS
13C-2378-TCDF	HR-151-5400	EPA 1613	HRMS
13C-12378-PeCDF	HR-151-5400	EPA 1613	HRMS
13C-23478-PeCDF	HR-151-5400	EPA 1613	HRMS
13C-123478-HxCDF	HR-151-5400	EPA 1613	HRMS

Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 15T012038

PROJECT: 111-26648-00, 100A, 0414013

ATTENTION TO: Steve Taziar

SAMPLING SITE:

SAMPLED BY: Trevor Swift

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
13C-123678-HxCDF	HR-151-5400	EPA 1613	HRMS
13C-234678-HxCDF	HR-151-5400	EPA 1613	HRMS
13C-123789-HxCDF	HR-151-5400	EPA 1613	HRMS
13C-1234678-HpCDF	HR-151-5400	EPA 1613	HRMS
13C-1234789-HpCDF	HR-151-5400	EPA 1613	HRMS
13C-2378-TCDD	HR-151-5400	EPA 1613	HRMS
13C-12378-PeCDD	HR-151-5400	EPA 1613	HRMS
13C-123478-HxCDD	HR-151-5400	EPA 1613	HRMS
13C-123678-HxCDD	HR-151-5400	EPA 1613	HRMS
13C-1234678-HpCDD	HR-151-5400	EPA 1613	HRMS
13C-OCDD	HR-151-5400	EPA 1613	HRMS

Methyl Mercury Results

Flett Research Ltd.

440 DeSalaberry Ave. Winnipeg, MB R2L 0Y7
 Fax/Phone (204) 667-2505
 E-mail: flett@flettresearch.ca Webpage: http://www.flettresearch.ca

CLIENT: AGAT Labs - Mississauga: Project 15T012038

5835 Coopers Avenue
 Mississauga, ON L4Z 1R9

Date Received: September 9, 2015
 Sampling Date: August 25, 2015

Matrix: Sediment (wet)

Transaction ID: 593

PO/Contract No.: 90055

Date Analysed: September 23, 2015

Analyst(s): Xiang W.

Analytical Method: M10240: Methyl Mercury in Sediment by Distillation, Aqueous Ethylation, Purge and Trap, and CVAFS with Automated Instruments (Version 2)
 P:\Methyl Mercury\Method and SOPs\M10240 MeHg in Sediment by Distillation - Automated method.doc

Detection Limit: 0.4 ng/g (ML) MDL=0.1 ng/g The MDL was determined based on greater than 7 replicates of analytical blanks (98% confidence)
 For reporting purposes results will be flagged below the ML which is considered a practical quantitation limit.

Estimated Uncertainty: The estimated uncertainty of this method has been determined to be ± 20% at a concentration level of 0.1 and 170 ng/g (95% confidence)

Results authorized by Dr. Robert J. Flett, Chief Scientist

QUALITY DATA	Blanks		pg of MeHg in whole ethylation EPA vial	Gross Peak Area	Mean Ethylation Blank (ng/L)				
		Ethylation blank (H ₂ O+Reagent)	0.60	2556	0.01				
	Mean Eth. Blank (last 30 runs)	0.57		0.01					
		Net pg MeHg in whole Ethylation EPA vial	Gross Peak Area		Equiv. CH ₃ Hg Conc. - based on current batch mean weight (0.4388g) of wet sample, ng/g (Sediment)				
	Method Blank 1	0.12	3072	0.007					
	Method Blank 2	-0.04	2404	-0.002					
	Method Blank 3	0.00	2574	0.000					
	Mean Method Blank	0.03		0.002					
	Standards		MeHg Standard Added to Ethylation EPA Vial (pg CH ₃ Hg)	Gross Peak Area	Net Corrected MeHg Std Calibration Factor (units / pg)	RSD of MeHg Standard			
	Mean Value				7256	3.5			
Spike Recovery	Matrix Spike (MS) and Matrix Spike Duplicate (MSD)	Sample Identification	Sample Type	Gross Peak Area	% CH ₃ Hg Recovery Used for Calculations	Wet Sample Mass (g)	Net CH ₃ Hg as Hg (ng/g-Wet-Wt)	CH ₃ Hg Recovery (%)	
	(6911073D)	MS3	1619264	100%	0.466	10	91.1		
	(6911073D)	MS3D	1643406	100%	0.438	11	92.9		
	Mean of Recoveries						92.0		
QC Samples	FRES02 ID1201 (27.4± 3.6 ng/g)		1064708	100%	0.130		92.5		
	FRES02 ID1201 (27.4± 3.6 ng/g)	Repeat Aliquot	1063919	100%	0.130		92.5		
	Mean of FRES02						92.5		
	Alternate Source Standard (A.S.S.)	A.S.S. - Alfa ID1302 (1000 ng/L)	858938	100%		< Net CH ₃ Hg as Hg (ng/L)	100.3		
LAB ID	Sampling Details	Sample ID	Date Sampled	Sample Type	Gross Peak Area	% CH ₃ Hg Recovery Used for Calculations	Weighed Wet Sample Mass (g)	Net CH ₃ Hg as Hg (ng/g) Wet Wt. [recovery corrected]	
73459		6911073D	August 25, 2015		111500	92.0	0.4620	0.75	
73460		6911099D	August 25, 2015		49009	92.0	0.4300	~ 0.34	
73461		6911103D	August 25, 2015	DupA1	44469	92.0	0.4310	~ 0.31	
73461		6911103D	August 25, 2015	DupA2	41730	92.0	0.4320	~ 0.30	

* : See 'Comments' section above for discussion.

Q:\Clients A-L\AGAT Labs - Mississauga\2015\593\Methyl Mercury\MTSEW092315XW3.xls

~ : Result below the official detection limit for this analyte in this matrix.

This test report shall not be reproduced, except in full, without written approval of the laboratory.
 Note: Results relate only to the items tested.

Dup : Duplicate - two subsamples of the same sample carried through the analytical procedure in an identical manner.

