

January 15, 2013

Mr. Patrick Dovigi  
GFL Environmental Inc.  
1070 Toy Avenue  
Pickering, ON L1W 3P1

**Reference: Work Plan, Remedial Soil Excavation  
13471 Lake Ridge Road, Scugog, Ontario (the "Site").**

Dear Mr. Dovigi,

D.L. Services Inc. ("DLS") is pleased to provide GFL Environmental Inc. (the "Client"), with the following Work Plan to conduct remedial soil excavation at the above referenced Site.

## 1.0 INTRODUCTION & BACKGROUND

DLS was previously engaged by the Client to undertake Phase II Environmental Site Assessment ("ESA") work at 13471 Lake Ridge Rd. in the Township of Scugog ("the Site"). The Site is a former aggregate extraction pit that was being backfilled with soil that meets the Table 3 Standards provided in the MOE document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (MOE, March 9, 2004), as authorized by the Township of Scugog.

Site investigation work was conducted by DLS between January 20, 2011 and March 7, 2011 which included the advancement of twenty-three boreholes and four test-pits, and the installation of groundwater monitoring wells. On March 15, 2011, DLS issued its report regarding this investigation entitled *Phase II Environmental Site Assessment Report, 13471 Lake Ridge Road, Port Perry, Ontario*.

The initial Phase II ESA investigations that were carried out by DLS in 2011 identified one location (borehole BH14 in Pad 2) where benzo(a)pyrene concentrations within the fill exceeded the Table 3 Standard. This material was subsequently removed during a remedial excavation directed by Canada Engineering Services Inc. ("CESI") of Toronto, Ontario. Analytical results for verification soil samples collected by DLS from the walls and floor of the excavation showed that the fill material within the footprint of the excavation complied with the Table 3 Standards. At this and two other locations (boreholes BH7 and BH8 in Pad 3) exceedances of the Table 2 Standards for naphthalene and/or 2- and 1-methylnaphthalene were identified. Due to the heterogeneity of the fill material, additional borehole drilling and soil sampling was recommended in the vicinity of boreholes BH7, BH8 and BH14. These investigations were recommended to further delineate the extent of the soil contamination identified at BH7 and BH8, and to determine if further remediation work is required beyond the remedial excavation at BH14.

The initial Phase II ESA was conducted while fill material was being actively deposited at the Site at the east sides of Pads 1 and 2. Due to the high density of vehicular and heavy equipment traffic flow safe access for drilling and test-pitting activities in this area was not practical at that time. Consequently, DLS recommended additional borehole drilling to complete the characterization of fill material at the Site.

A supplementary Phase II ESA was conducted by DLS in January 2012 to further delineate the extent of contamination identified during the previous environmental assessment work and to characterize the quality of the fill material in areas that were previously inaccessible. Fifteen additional boreholes were advanced into the fill material and underlying native soil. The analytical results were compared to the Table 2 Standards (potable groundwater) and Table 3 Standards (non-potable) provided in the MOE document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (MOE, March 9, 2004). Four areas of contamination were identified where concentrations of cyanide, conductivity, PAHs, and/or VOCs exceeded Table 3 Standards. These areas correspond to the vicinities of boreholes BH25, BH27, BH30, BH33, BH36, and BH37. Additional excavation was recommended in these areas to remove the contaminated fill for disposal at an approved soil recycling or waste disposal facility.

Staff of the Ontario Ministry of Environment ("MOE") also collected soil samples from six locations on the property where fill had been deposited. Two control samples were obtained from the southern area of the Site where fill had not been deposited. At each location, samples were collected in duplicate from the surface to a depth of approximately 5cm. The samples were submitted to the MOE's own laboratory for analysis of Metals, PHCs, PAH, and VOCs. The analytical results were compared to Table 1 and Table 2 Standards provided in the MOE document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (MOE, April 15, 2011). Based on DLS's review of the results, two

areas of concern were located where concentrations of Metals (copper, lead, zinc), PAHs (benzo(a)pyrene) and PHCs (F2, F3) exceeded Table 3 Standards (MOE, March 2004). Concentrations of VOCs (benzene) and PAHs (naphthalene) were also detected within these areas at concentrations exceeding Table 2 Standards (MOE, March 2004). Two of the sample locations (Site 3 and Site 4) correspond with the location of the previous remedial excavation work. The other sample locations (Site 5 and Site 6) were collected from the lower and middle slope of western extent of Pad 2. The MOE sample locations are illustrated in Figure 1 (attached), along with DLS borehole and test-pit locations. DLS recommends that contaminated fill at these identified areas be excavated and removed from the Site for disposal at an approved soil recycling or landfill facility.

## 2.0 SCOPE OF WORK

Based on the above information, potential environmental concerns that have been identified at the Site are briefly summarized in Table 1, below.

**Table 1: Proposed Scope of Work – Supplementary Subsurface Investigation**

POTENTIAL ENVIRONMENTAL CONCERN	RATIONALE	FIELD WORK	SOIL SAMPLES <i>(Metals &amp; Inorganics, PHC, VOCs, PAHs)</i>
Imported Fill at Pad 1 (@BH25)	- Remove contamination exceeding Table 3 Standards ( <i>Tetrachloroethane, 1,1,2,2-</i> )	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x VOC
Imported Fill at Pad 2 (@BH27)	- Remove contamination exceeding Table 3 Standards ( <i>Benzo(a)pyrene, Methyl-naphthalene, 1,2-, Cyanide</i> )	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x PAH 6x Metals
Imported Fill at Pad 2 (@BH30)	- Remove contamination exceeding Table 3 Standards ( <i>Benzo(a)pyrene, Conductivity, Cyanide</i> )	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x PAH 6x Metals
Imported Fill at Pad 2 (@Site 3 & Site 4)	- Remove contamination exceeding Table 3 Standards ( <i>Benzo(a)pyrene</i> )	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x PAH
Imported Fill at Pad 2 (@Site 5)	- Remove contamination exceeding Table 3 Standards ( <i>Benzo(a)pyrene, PHC-F2, PHC-F3</i> )	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x PAH 6x PHCs
Imported Fill at Pad 2 (@Site 6)	- Remove contamination exceeding Table 3 Standards ( <i>Benzo(a)pyrene, Copper, Lead, Zinc</i> )	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x PAH 6x Metals
Imported Fill at Pad 3 (@BH33)	- Remove contamination exceeding Table 3 Standards ( <i>Tetrachloroethane, 1,1,2,2-</i> )	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x PAH
Imported Fill at Pad 3 (@BH36)	- Remove contamination exceeding Table 3 Standards ( <i>Tetrachloroethane, 1,1,2,2-</i> )	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x PAH

Imported Fill at Pad 3 (@BH37)	- Remove contamination exceeding Table 3 Standards (Tetrachloroethane, 1,1,2,2- and 1,1,1,2-)	- 10m x 10m excavation - Field screen approx. 15 soil samples	6x PAH
Total No. Samples Analyzed			6x VOC 48x PAH 18x Metals 6x PHC

The scope of work (“SOW”) presented herein is intended to remove the contaminated fill that exceeds the Table 3 Standards provided in the MOE document entitled Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MOE; March 9, 2004). These Standards are selected because in 2010, the Client was authorized through issuance of a permit by the Township to place within the former aggregate extraction pit soils that meet Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition of the MOE document entitled Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MOE; March 9, 2004)

The SOW will consist of the following tasks:

**Task 1** – Remedial Excavation Program

**Task 2** – Data Analysis, Reporting and Project Management

A description of the work to be completed for each task is discussed in the following subsections. The SOW presented herein is subject to the assumptions and limitations listed at the end of this Work Plan.

The total Estimated Probable Cost (“EPC”) and Commercial Terms will be presented to the client under separate cover and are subject to the project assumptions and limitations discussed herein.

### ***Task 1 – Remedial Excavation Program***

The potential areas of soil (fill) contamination, along with DLS borehole MOE sample site locations, are illustrated in Figure 1 (attached). It is proposed that at each of the identified areas, an estimated area of 100 m<sup>2</sup> (10m x 10m) will be excavated to a terminal depth where the contaminated fill is sufficiently removed. The Client will arrange for and provide the excavation and earth moving equipment for removal of the impacted soil. The Client will also arrange for transportation and disposal of the contaminated fill to an approved soil recycling or waste receiving facility. The limits of excavation will be determined via field screening, with a total of six confirmatory samples submitted from each location. Should field screening identify the need to expand the excavated area beyond the initial 100m<sup>2</sup>, DLS will contact the Client for authorization to proceed.

All soil samples will be collected in accordance with the protocols specified in the MOE's "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario," December 1996 ([http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/std01\\_079678.pdf](http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/std01_079678.pdf)). Based on an area of 50 m<sup>2</sup> to 100m<sup>2</sup>, the protocol requires three sidewall samples and three floor samples to be collected from each excavated area. If the final excavation area is larger or smaller than anticipated, the actual number of samples will be adjusted according to the sampling protocol specified within the MOE guidance document.

All samples obtained by DLS during this investigation will be submitted under a formal chain-of-custody protocol to Caduceon Environmental Laboratories ("Caduceon") in Kingston, Ontario. Caduceon is accredited by the Canadian Association for Laboratory Accreditation ("CALA" - <http://www.cala.ca/index.html>).

A total of up to 15 soil samples will be collected from the fill within each identified area for field screening. As indicated above, Table 1 presents a summary of the potential environmental concerns for which excavations are planned, the number of samples submitted for laboratory analysis from each location and the type(s) of analyses to be completed on each sample.

During excavation, soil samples will be collected from the exposed sides or floor using a stainless steel spatula or soil augur. Each sample will be examined for physical evidence of the presence of potential constituents of concern in the soil (e.g., staining or obvious odours). The soil will be examined for physical evidence of the presence of potential constituents of concern in the soil (e.g., staining or obvious odours). The soil samples will be placed in Ziplock™ freezer bags for field screening. The portion of each sample placed in the Ziplock™ bag will be field screened for the presence of organic vapours in the headspace of the soil sample using a Photovac photoionization detector ("PID") equipped with an 11.7 electron-volt lamp after the samples have reached ambient air temperature. The soil samples will be field screened on the day in which they are collected. Prior to screening the soil samples, the PID will be calibrated to ambient air and to isobutylene span gas of known concentration (e.g., 100 parts per million by volume) according to the manufacturer's specifications. Each sample will then be screened by partially opening the top of the Ziplock™ bag, inserting the tip of the PID into the headspace within the bag while crumbling the sample, and recording the maximum concentration registered on the PID's meter. The calibration of the PID will be rechecked with the isobutylene span gas from time-to-time during each day to check whether the instrument's calibration has drifted during measurement. Visual and/or olfactory evidence of contamination will also be used to screen the samples in the field. The field screening results will be used to determine the required limits of excavation.

When the field screening data indicates that the impacted soil has been sufficiently removed, verification soil samples will be submitted to Caduceon under formal chain-of-custody for analysis of metals and inorganics (18 samples), petroleum hydrocarbons ("PHC") (6 samples), volatile organic compounds ("VOCs") (6 samples), and poly-aromatic hydrocarbons ("PAHs") (48 samples). These samples will be selected for submission to the laboratory on the basis of field observations, visual and olfactory evidence of contamination, organic vapour concentration, and information regarding the original source of the fill material. The samples will be placed into laboratory supplied containers. Sample containers will be filled to ensure that there is no headspace. All samples will be placed in coolers containing ice packs immediately following sample collection. Each soil sample will be logged by noting lithology, colour, moisture and any other visual or textural characteristics. Disposable, dedicated latex or nitrile gloves will be worn at all times during the logging of each core and during the collection of soil samples.

The stainless-steel spatula used in sample collection will be cleaned prior to initial use and between samples by brushing with a potable water/laboratory grade detergent solution to remove excess soil, rinsing with laboratory-supplied distilled water. Detailed equipment decontamination procedures for hand-held utensils will be consistent with those described above.

In addition to the analyses listed in Table 1, and for quality assurance/quality control ("QA/QC") purposes, DLS will submit up to 10% field duplicate soil samples to Caduceon for analysis. The field duplicate samples will be selected by DLS based on visual and PID screening results. Each duplicate soil sample will be collected by splitting the soil sample in half collecting one half as the regular investigative sample and the other half as the field duplicate sample.

It is recommended that the areas of excavation remain open (unfilled) until receipt of the laboratory reports of analysis for the verifications samples. Depending on the findings presented in the laboratory reports, additional soil excavation and verification sampling may be required.

## ***Task 2 – Data Analysis, Reporting and Project Management***

The locations of the excavation sites and corresponding confirmatory sample locations will be surveyed using a calibrated Thales MobileMapper CE GPS unit which provides both horizontal and vertical location data with an error range of less than one metre. The sample locations will be illustrated on a map that will accompany the report.

DLS will provide the Client with a written, draft report within 30 business days of receipt of all laboratory data. The report will present a synthesis of the data obtained from the proposed investigation, complete with data interpretation, conclusions, and recommendations for future

work. Analytical results for the soil samples obtained will be compared to the Standards provided in Tables 2 and 3 of the MOE document entitled Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*, 09 March 2004.

The draft report will be finalized following a telephone review meeting with the Client and the final draft report will be submitted within two (2) business days following receipt of the Client's written comments. The final report will present a synthesis of the data obtained from the proposed remedial excavation work.

### **3.0 STUDY TEAM**

Dan Machmueller, Sr. Project Manager will manage the project, coordinate DLS technical staff and field activities, and co-author the report.

Kevin McClintock P.Eng., is the Environmental Engineer and will provide engineering and technical support to the project.

Scott Pitsch, P.Geo-Limited, will co-author and carry out senior technical review of the final report.

### **4.0 PROJECT ASSUMPTIONS**

In the development of this Work Plan, DLS has assembled a series of project assumptions, including:

- GFL Environmental Inc. is the Client.
- All laboratory costs are based on standard turnaround time ("TAT"). Three day TAT would incur a 25% surcharge, two day TAT 50% surcharge and 24 hour TAT would incur a 100% surcharge.
- The Client will arrange for DLS to have access to the Site as well as to any pertinent facility drawings or records which may be of use in the successful completion of this project.
- The Client will provide the excavation and earth moving equipment for use at the Site. The Client will arrange for the trucking and disposal of the excavated contaminated fill to an approved soil recycling or disposal facility.

- The Estimated Probable Cost assumes successful advancement of excavation to the proposed target depths (up to 7.62 metres) and the budget does not account for additional time or disbursements spent due to adverse ground conditions (if encountered).
- Ontario One Call requires at least 8 to 10 business days to clear all public utilities.
- Excavation and soil sampling activities can be completed in 10 business days. Difficult subsurface conditions or inclement weather could require additional time and modification of the project budget.
- DLS and/or their subcontractors will have continuous and unrestricted access to the work area and excavation locations. The Client will be responsible for ensuring the work areas are free of equipment and vehicles.
- This Work Plan assumes no work delays due to severe weather.
- The Client is responsible for the proper and legal disposal of all waste material generated as a result of the proposed work. DLS assumes no responsibility for any waste material generated during the tenure of this project. Costs associated with solid or liquid waste disposal are not included in DLS's proposed budget.
- The Estimated Probable Cost ("EPC") for this project (provided under separate cover) is based on completion of the entire field program as outlined in this work plan in ten business days. If weekend work is required, it will be carried out at premium rates in accordance with Ontario's Labour Laws.
- The EPC for this work plan does not include the costs for any subsequent remedial excavation work beyond the 100m<sup>2</sup> allocated for each identified location. Should field screening and/or confirmatory sampling identify the need for additional excavation, the Client will be contacted for authorization to proceed with the additional work, and said work will be conducted on a time and material basis, according to the rates provided in the "*Authorization to Proceed*".
- The project budget does not include extra Site visits, meetings or other activities not specified herein.
- DLS has budgeted for 1 round of review of the draft report.

- This Work Plan is subject to the terms and conditions as outlined by the “*Authorization to Proceed, Remedial Soil Excavation at 13471 Lake Ridge Road, Scugog, Ontario*” document provided under separate cover.

## 5.0 LIMITATIONS

As applicable and available within the project schedule and budget, we will carry out the proposed work program exercising that degree of care and skill ordinarily exercised under similar circumstances by members of the environmental engineering and consulting profession performing the kind of services to be performed herewith and practicing in the same or similar locality at the same time. Lack of knowledge of prior uses may affect our ability to completely assess risks or hazards at the site. Further, there can be no assurance that any sampling techniques employed will necessarily disclose all contaminants at the site due, among other things and without limitation, to such factors as a practical and economic limitation on the number and location of samples, sample depth, lack of current definition of a particular material as hazardous, and the like. Further, we assume no liability for existing conditions on the site.

To the extent that the services require judgment, there can be no assurance that fully definitive or desired results will be obtained, or if any results are obtained, that they will be supportive of any given course of action. The services may include the application of judgment to scientific principles; to that extent certain results of this work may be based on subjective interpretation. DLS is not engaged in environmental engineering, consulting and reporting for the purpose of advertising, sales promotion, or endorsement of any of the Client's interests, including raising investment capital or recommending investment decisions, or other publicity purposes. The Client acknowledges that any reports prepared by DLS are for the exclusive use of the Client and agrees that DLS's reports or correspondences will not be used or reproduced in full or in part for such promotional purposes, and may not be used or relied upon in any prospectus or offering circular. The Client also agrees that none of its advertising, sales promotion, or other publicity matter containing information obtained from this investigation and report will make reference to DLS's trade name.

Nothing contained in the report of DLS shall be construed as a warranty or affirmation by DLS that the site and property described in the report are suitable collateral for any loan or that acquisition of such property by any lender through foreclosure proceedings or otherwise will pose no risk of potential environmental liability on the part of such lender.

The information to be provided under this proposed Work Plan is not to be construed as legal advice. All information compiled for and contained within the report and this Work Plan will be private and confidential.

## 7.0 CLOSURE

We trust that this submission is satisfactory to your current requirements. Should you have any questions or concerns regarding this Work Plan, we would be pleased to discuss them at your convenience.

Yours truly,

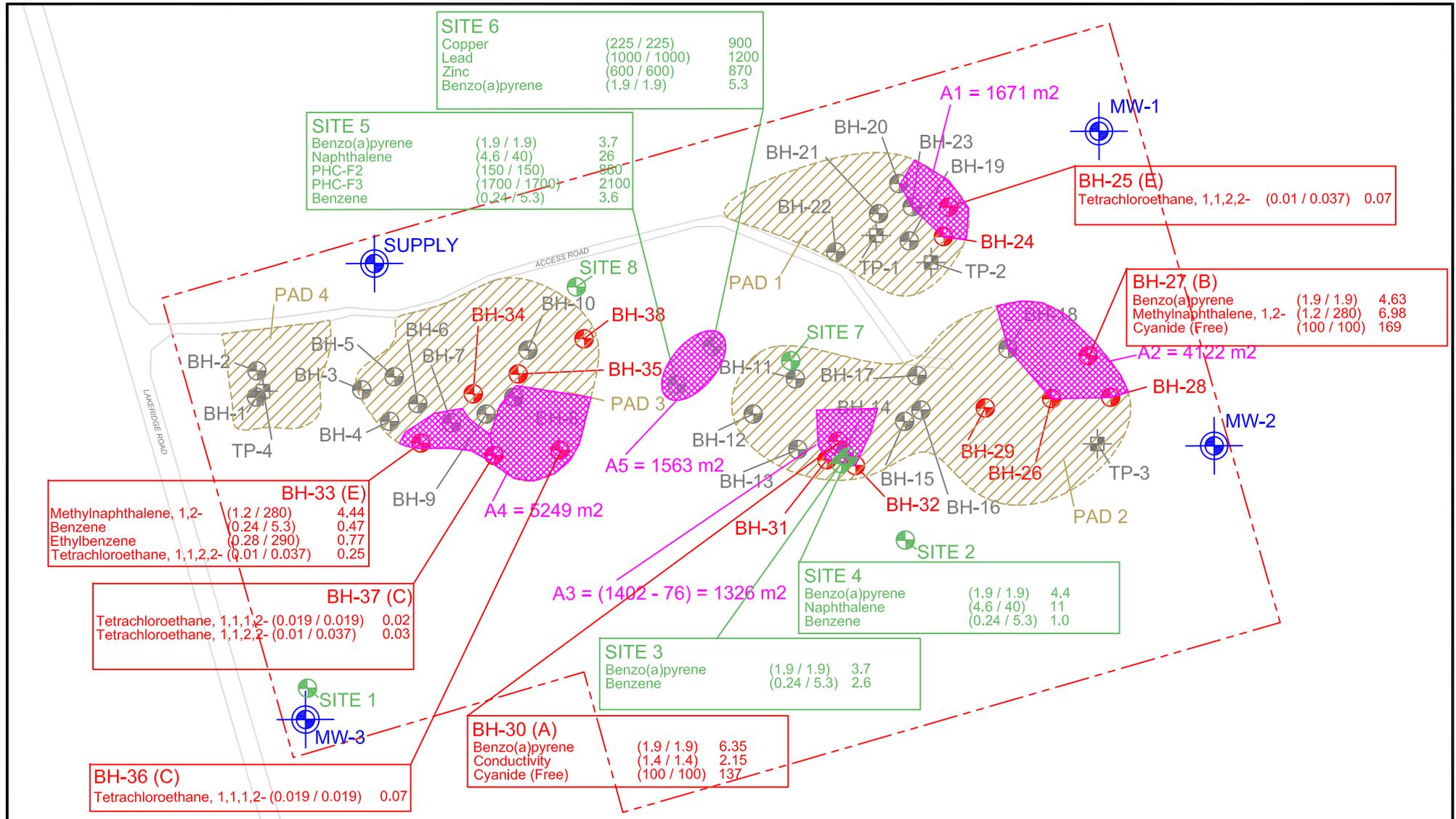
*D.L. Services Inc.*

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Scott Pitsch, P.Geo-Limited, QP  
*Operations Manager*

**Attachments:** Figure 1: Proposed Excavation Location Map

**Reference:** *D.L. Services Inc., File Number 1011-839KW  
Work Plan, Remedial Soil Excavation  
13471 Lake Ridge Road, Scugog, Ontario*



**LEGEND:**

- Property Boundary
- - - "Pad" Perimeter
- ⊕ Monitoring / Supply Well Location
- ⊗ Initial Test-pit and Borehole Locations (Jan/Feb 2011)
- ⊕ New Borehole Locations (Jan 2012) showing: Sample ID, Sample Depth Interval, Parameter, Table 2 / 3 Criteria, and Parameter Concentration (in ug/g)
- ⊕ MOE Soil Survey Locations (Jan 2011) showing: Sample ID, Parameter, Table 2 / 3 Criteria, and Parameter Concentration (in ug/g)

**SCALE: 1 : 4000**

0 100 200 m

**NOTE:**  
Drawing details are approximate and for illustration purposes only.



DATE: APR 2012

FILE NO.: 1011-839KW

**D.L. SERVICES**

TITLE: **(DRAFT - WORKING DRAWING)**

**POTENTIAL AREAS OF SOIL CONTAMINATION**  
13471 LAKE RIDGE ROAD, PORT PERRY, ONTARIO

DRAWING NO.: **FIG. 1**