PO Box 430, STA "A"
Sydney, NS
B1P 6H2

REQUEST FOR PROPOSALS

NSLAND97

Former Gold Mine Sites
Montague and Goldenville

Nova Scotia Lands Inc.

Department Contact:	**Donnie Burke**
Phone Number:	**(902) 567-2715**
Closing Date:	**Ocotober 4, 2018**
Closing Time:	**2:00 pm**
NS Lands Address:	**Harbourside Place** **Harbourside Commercial Park** **45 Wabana Court** **Sydney, Nova Scotia** **B1P 0B9**

NOTE: Fax submissions will NOT be accepted

NOVA SCOTIA LANDS

FORMER GOLD MINE SITES
MONTAGUE AND GOLDENVILLE

REQUEST FOR PROPOSAL
FOR CLOSURE CONCEPTS AND COSTS

Prepared by:

NS Lands

September 18, 2018

NSLAND97

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1.0 INTRODUCTION

This request for proposal (RFP) is to develop conceptual closure plans and cost estimates for two historical gold mine sites in Nova Scotia:

- Montague Gold Mines, near Dartmouth, NS
- Goldenville, near Goldsboro, NS

The client for this project will be Nova Scotia Lands (NS Lands) who is working on behalf of the Nova Scotia Department of Natural Resources.

This project will proceed in two stages, with the first stage to develop conceptual closure plans for each of the sites that will provide NS Lands with an indication of the liability cost that should be carried for each site and the second stage that will develop a detailed closure plan for implementation. This RFP is for the first stage.

1.1 INSTRUCTION TO BIDDERS

1.1.1 Time and Date of Bid Closing

A Nova Scotia Lands Inc. (herein called "OWNER"), requests bids as specified in the bid documents for environmental site assessment and conceptual closure plan costing for ***Former Gold Mines Request for Proposal for Conceptual Closure Plan and Cost Estimate.***

B Bids shall be enclosed in two separate sealed envelopes (Technical and Cost) marked "SEALED BID" and identified as to the Project title, and name and address of bidder. Bids shall be delivered on or before 2 p.m. local time, Oct 4, 2018, to Nova Scotia Lands Inc., 45 Wabana Court, Sydney NS, B1P 0B9.

Such bids delivered via courier service will be deemed to have been received on time if received at Nova Scotia Lands Sydney office before 2 p.m. as noted above and per time shown on NS Lands official clock.

Electronic submissions sent by facsimile transmission or email will not be accepted.

No extension of time will be granted.

Nova Scotia Lands reserves the right to reject any or all bids.

1.1.2 Submission of Bids

A. Bidders shall submit their technical bids in accordance with Section 1.4 completed in every respect. Clearly label the document as "Technical Proposal". Bids shall consist of an original bid marked "Original" and two (2) exact copies each marked "Copy", which includes an exact copy of every attachment to the original bid.

A digital copy of the Technical Proposal is to be included in the Technical Envelope.

Financial information is not to be included in the technical proposal. Bidders shall submit in a separate envelope three (3) copies of their Cost of Services bids on the form furnished in the bid documents (Form of Bid) which form shall be completed in every respect. Clearly label the document as "Cost of Services Proposal". Bids shall consist of an original bid marked "Original" and exact copies marked "Copy", which includes an exact copy of every attachment to the original bid.

A Bids shall be submitted without any connection, comparison of figures, or arrangement with or knowledge of any other person or persons submitting a bid for the same work and shall be in all respects fair and without collusion or fraud.

B Unless specifically requested in the Form of Bid, bids shall not contain recapitulations of the work to be done.

1.2 BID DOCUMENTS

1.2.1 List of Bid Documents

A The bid documents consist of the following:
1. Instructions to Bidders;
2. Form of Agreement (CCDC2);
3. General Conditions (CCDC2);
4. Project Specifications;
5. Drawings listed in the Project Specifications;
6. All appendices, attachments, and exhibits to any of the foregoing; and
7. Any Addenda.

1.2.2 Terminology

A. Terms used in these Instructions to Bidders and the Form of Bid, which are defined in Definitions of the Contract (CCDC2), have the meanings assigned to them therein.

1.3 BID REQUIREMENTS

Bidders proposals must be submitted in the format, including heading descriptions, of the Evaluation Ratings Table presented below. The proposal must be presented in a clear and concise manner and respond to all requirements in this RFP and meet the goals and expectations of the project.

The Consultant, if they so wish, can offer an additional or alternate proposal, providing proven experience and/or advanced technical knowledge is clearly demonstrated.

Each proposal must consist of two (2) separately sealed submittals – Envelope A: Technical Submission covering items in Attachment C Evaluation Criteria Table; and Envelope B: Costs of Services Submittal covering items in Attachment C Evaluation Criteria Table. Please note: under no circumstance will any cost information appear in the technical submittal.

1.4 INQUIRIES

1.4.1 Prospective Bidders

A Inquiries shall be submitted only by prospective bidders and not by prospective Subcontractors, Suppliers, or others.

B For the purpose of procurement all inquiries shall be submitted to:
Donnie Burke (donnie.burke@novascotia.ca).

All email inquiries must state the tender number in the subject line.

1.5 ADDENDA

1.5.1 Interpretations or Clarifications

A All questions about the meaning or intent of the bid documents shall be submitted in writing. Interpretations or clarifications of the bid documents prior to the date of bid closing and considered necessary by OWNER in response to such questions, will be made only by written Addenda issued via the Government of Nova Scotia Tender Web Site. Addenda shall become part of the bid documents. Questions received less than 5 days prior to the date of bid closing will not be answered.
Only responses set forth in formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect and shall not be valid or relied upon by prospective bidders.

B If questions are of such nature that require substantial changes in the bid documents such as quantities or prices, or both, the time and date of bid closing may be postponed by OWNER by such period of time as will enable bidders to properly revise their bids. In such cases, an Addendum will be issued setting a new time and date for submitting bids.

C Addenda may be issued to clarify, correct, or modify the bid documents as deemed advisable by OWNER.

1.5.2 Acknowledgment

A Bidders shall acknowledge receipt of each and every Addendum in the space provided in the Form of Bid. Failure to acknowledge each and every Addendum may constitute grounds for rejection of the bid.

1.6 BID VALIDITY PERIOD

1.6.1 Bid Irrevocable

A Bids shall be irrevocable, and OWNER shall have the right to accept any bid at any time before the expiration of 60 days from the time and date of bid closing whether or not any other bid has been previously accepted.

1.6.2 Withdrawal

A Any bidder may withdraw its bid before the time and date of bid closing by providing written notice thereof to the address specified for submission of bids in 1.1. Such withdrawal by the bidder will not prejudice the right of the bidder to resubmit a bid, if it is delivered to the place where bids are to be submitted at any time prior to the time and date of bid closing. However, after the time and date of bid closing has expired, no bid may be withdrawn within the
specified bid validity period.

1.7 SECURITY

1.7.1 Bid Bond

A Bidders shall furnish with their bid a Bid Bond on the form prescribed in the bid documents executed by the bidder as Principal and having as surety thereon a surety company lawfully doing business in the Province of Nova Scotia. Such Bid Bond shall be issued by a surety company meeting the requirements of Sc.03 of the Special Conditions and shall be in an amount not less than 10 percent of the total maximum amount of the bid price listed in the Form of Bid. The Bid Bond shall name Nova Scotia Lands Inc. as Obligee.

B The bid security of the successful bidder will be retained by OWNER until such bidder has satisfied the requirements of Ib.14, whereupon the bid security will be returned. The bid security of the other bidders will be returned, upon request, at the end of the specified bid validity period or when the required Contract bonds are received from the successful bidder, whichever occurs first.

C If any bidder shall withdraw or attempt to withdraw its bid at any time within the specified bid validity period, the bidder's bid security shall be forfeited and such bid security shall become the property of OWNER.

1.8 SIGNING BIDS

1.8.1 11.1 Submitted by Corporation

A If the bid is submitted by a corporation, the bid shall be signed (under seal if required to make the bid a valid and binding obligation of the corporation) in its corporate name and on its behalf by the president or a vice-president (or other duly authorized corporate officer) accompanied by evidence of authority to sign. Such evidence shall be in the form of a valid resolution passed by the bidder's Board of Directors identifying the officer(s) signing the bid and authorizing the officer(s) to do so on behalf of the bidder. The corporate address and province of incorporation shall be shown below the signature.

1.8.2 Submitted by Partnership

A If the bid is submitted by a partnership, the bid shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.

1.8.3 Submitted by Joint Venture

A If the bid is submitted by two or more contractors as partners in a joint venture, an authorized representative of each partner of the joint venture shall sign the bid, and by signing undertakes that if the bid is accepted each partner of the joint venture will be jointly and severally bound to discharge the duties, obligations and responsibilities of the Contract. Additionally, the bid shall include a copy of the resolution or agreement empowering each representative to sign the bid and bind the firm to the joint venture. The official address of the joint venture shall be shown below the signature.

1.8.4 Submitted by Limited Liability Company

A If the bid is submitted by a limited liability company, the bid shall be signed in the name of the firm by a member and accompanied by evidence of authority to sign. The province of formation of the firm and the official address of the firm shall be shown below the signature.

1.8.5 Submitted by an Individual

A A bid by an individual shall show the bidder's name and official address.

1.8.6 Evidence of Authority to do Business

A Bidders shall submit evidence of authority and qualification to do business in the province where the Project is located or covenant to obtain such qualification prior to Notice of Award and shall show their provincial contractor license number for the province of the Project, if any, in the space provided in the Form of Bid.

1.9 BID PRICE

1.9.1 Schedule of Prices

A In accordance the General Conditions, the prices in the Schedule of Prices forming part of the Form of Bid shall be the full inclusive value of the Works described including all costs, expenses, overhead, profit, and taxes (as provided in Article A-4 of the Form of Agreement) which may be required in and for the performance of the Works described, together with all general risks, liabilities, and obligations set forth or implied in the documents on which the bid is to be based.

B The Schedule of Prices forming part of the Form of Bid is to be used as a basis of payment only and shall not be used as a description of the full extent of the Works to be completed. Any work required to properly complete the Works, but not specifically listed as a separate pay item, must be provided for and the cost of such work included in the appropriate items listed in the Schedule of Prices.

C Bidders shall quote separate lump sum prices for furnishing Contract bonds and insurance and shall enter the quoted prices in the Schedule of Prices.

D. Bidders shall enter a price against each item of the Schedule of Prices. Items against which no price is entered will be considered as "no charge" items, the cost for which is covered by the other prices in the Schedule of Prices.

E The quantities stated in the bid are to be considered approximate only and the unit prices entered in the Schedule of Prices shall apply only to the actual quantities measured by ENGINEER, in the completed Works, in accordance with Article A-4 of the Form of Agreement.

F Where individual breakdowns in quantities for any one item are given in the Schedule of Prices, they shall be deemed given for information only and separate prices shall not be quoted for such individual quantities not entered in the quantity column.

G Where individual "Lump Sum (LS) Prices" are specified in the bid, it shall represent payment in full for the completion of the work specified.

H All prices shall be firm prices, quoted in Canadian dollars.

I Each item in the Schedule of Prices shall be reasonably priced.

1.10 NOTICE OF AWARD

1.10.1 Signing Contract and Delivery of Documentation

A Acceptance of a bid will be evidenced by a written Notice of Award issued by OWNER, delivered by email. No other act of OWNER shall constitute acceptance of a bid.

B The Notice of Award shall obligate the bidder whose bid is accepted to sign and deliver two copies of the Contract Documents and to furnish and deliver the required insurance documentation all within 7 days after the date of the Notice of Award. After signing by OWNER, one fully signed copy shall be returned to CONTRACTOR.

C If the Contract Documents prepared for signature by the successful bidder do not accompany the Notice of Award but are sent the next day or later, the successful bidder's obligation to deliver signed Contract Documents and to furnish and deliver insurance documentation within 7 days after the date of the Notice of Award shall be extended for a time equal to the delay in sending the Contract Documents to the successful bidder.

1.10.2 Failure to Sign Contract

A If the bidder whose bid is accepted refuses or fails to sign and deliver the Contract Documents and furnish and deliver the required insurance documentation within 7 days after the date of the Notice of Award, it will be considered that the bidder has abandoned all rights and interests in the award in which case OWNER may annul the Notice of Award and the bid security of that bidder will be forfeited and shall become the property of OWNER.

1.11 NOTICE TO PROCEED

1.11.1 Commencement of Contract Times

A Upon signing of the Contract by OWNER or at any time on or after the effective date of the Contract (date of the Notice of Award), ENGINEER on behalf of OWNER will issue to CONTRACTOR a written Notice to Proceed. The issuance of the Notice to Proceed by ENGINEER will fix the date on which the Contract Times (or Milestones) will commence to run. A Notice to Proceed may be given on, or at any time within 30 days after, the date of the Notice of

2.0 DESCRIPTION OF THE SITES

The two sites were mined in the late 1800’s and early 1900’s and have been dormant since the 1940’s. The Montague Mine produced over 120,000 ounces of gold and Goldenville Mine produced over 540,000 ounces. Both operations generated significant quantities of tailings. As both of these sites were mined long before environmental regulations were in place, the tailings from these sites were discharged into streams and wetlands downstream of the mine site areas without environmental controls. These tailings contain high levels of arsenic and mercury, due to natural enrichment (in the case of arsenic), and mercury added during processing to extract the gold from the ore.

Both properties are now owned by the Government of Nova Scotia, with tailings deposits occurring within Crown land boundaries, as well as outside of Crown lands. There have been numerous environmental studies of these two sites, as well as some studies on several other historical gold mining districts in Nova Scotia (which total 64), since the 1970s (Drage, 2015). In 2005, an inter-departmental Historic Gold Mines Advisory Committee was formed, which included experts from 10 provincial and federal departments, to evaluate the potential ecological and human health risks associated with tailings from historic gold mines in Nova Scotia (Drage, 2015). The Goldenville and Montague Mines sites were identified as sites requiring risk management, due to the elevated levels of arsenic at these two sites, the proximity of these sites to communities (public accessibility), and the types of activities occurring at these sites at the time (involving a truck rally, and dirt biking activities). While some risk management has been in place since 2005/2006 (e.g., increasing public awareness of the issues; reducing human interaction with the tailings), appropriate closure of these two sites is desired to reduce residual or on-going risks to either human or ecological health with respect to arsenic from the tailings in the soil and ground water at the sites. Therefore, the Government of Nova Scotia wishes to have a closure plan and cost estimate developed so that they can suitably close the sites. While the focus of risk management has been on arsenic and human health, this project must also consider mercury, and the ecological implications of both substances.

2.1 MONTAGUE

The Montague gold district is located in the community of Montague Gold Mines, within the Regional Municipality of Halifax. Figure 2.1 shows the location of the Montague Gold Mines and Figure 2.2 is a photo of the tailings at the site, taken in May 2018.

Parsons et al (2012) provide a summary of historic gold mining activities at this site, which included the discovery of gold in 1862, with mining being carried out continuously from 1865 to 1928, and then intermittently until 1940. Ore was milled on-site, using a variety of stamp mills with mercury amalgamation. The tailings were discharged into nearby Mitchell Brook, which originates from Loon Lake, and discharges further downstream into Lake Charles. The area now appears as an open wetland, with tailings distributed throughout the wetland. The wetland is largely submerged in high flow periods, but also has open dry areas which can generate dust. Government warning signs are present indicating high levels of arsenic, but there continues to be evidence of trail biking activities at this site.

There has been considerable geochemical characterization of the tailings and surrounding soils present at this site, with arsenic concentrations ranging up to 4.1 wt. %, and mercury in tailings ranging up to 8.4 mg/kg (Parsons et al, 2012; DeSisto et al, 2011). Some characterization of tailings pore water also exists (Desisto et al, 2017), as well as additional soils characterization and preliminary groundwater characterization (Maritime Testing (1985) Ltd., 2009). A list of pertinent studies is provided below for reference.

2.2 GOLDENVILLE

Figure 2.1 shows the location of the Goldenville Mine and Figure 2.3 shows a view of the tailings at Goldenville. With respect to the tailings site at Goldenville, this site was one of the more productive gold bearing districts in Nova Scotia (Parsons et al, 2012). This site involved up to 19 different gold mining companies, with mining starting in 1861 and ending in 1942 (see Parsons et al, 2012).

Tailings from the various mills are found at several locations around Goldenville, with the majority deposited in Geogogan Brook and visible on the floodplain for at least 6 km downstream (Wong *et al.* 1999). Since that time, there has been intermittent exploration conducted, to evaluate the potential of mining the tailings areas for gold, due to the advancements of current mining technologies, relative to that used in the previous operating periods. From 2004 to 2010, considerable research was conducted by NRCan in conjunction with Queen's University, and the Royal Military College. Both Nova Scotia Environment and Health Canada were also involved with these research groups to evaluate potential human health risks associated with the tailings at Goldenville, particularly related to the Goldenville Rally (a trucking rally which was held annually on the tailings site). This rally was cancelled in 2006, due to the high arsenic concentrations at this site, and potential exposures which could be occurring as a result of the rally.

As per the Montague Mines site, there has been considerable geochemical characterization of the tailings solids (Parsons et al, 2012), preliminary groundwater characterization, and soil characterization of areas adjacent to the tailings (C.J. McLellan and Associates Inc., 2009), as well as some characterization of tailings pore waters (DeSisto et al, 2017). Concentrations of arsenic in the percent range have been recorded in tailings at this site, with mercury also being detected at up to 28 mg/kg in tailings samples (Parsons et al, 2012). The study area drains to Geogogan Brook, which flows downstream to Geogogan Lake. The water table appears to be near the surface of the tailings, in the western end of the tailings.

Figure 2.4 (Montague Mines) and Figure 2.5 (Goldenville) present consolidated tailings and soils data from Parsons et al (2012); Parsons and Little (2015) and either Maritime Testing Limited (2009; Montague Mines) or C. J. McLellan & Associates (2009; Goldenville).

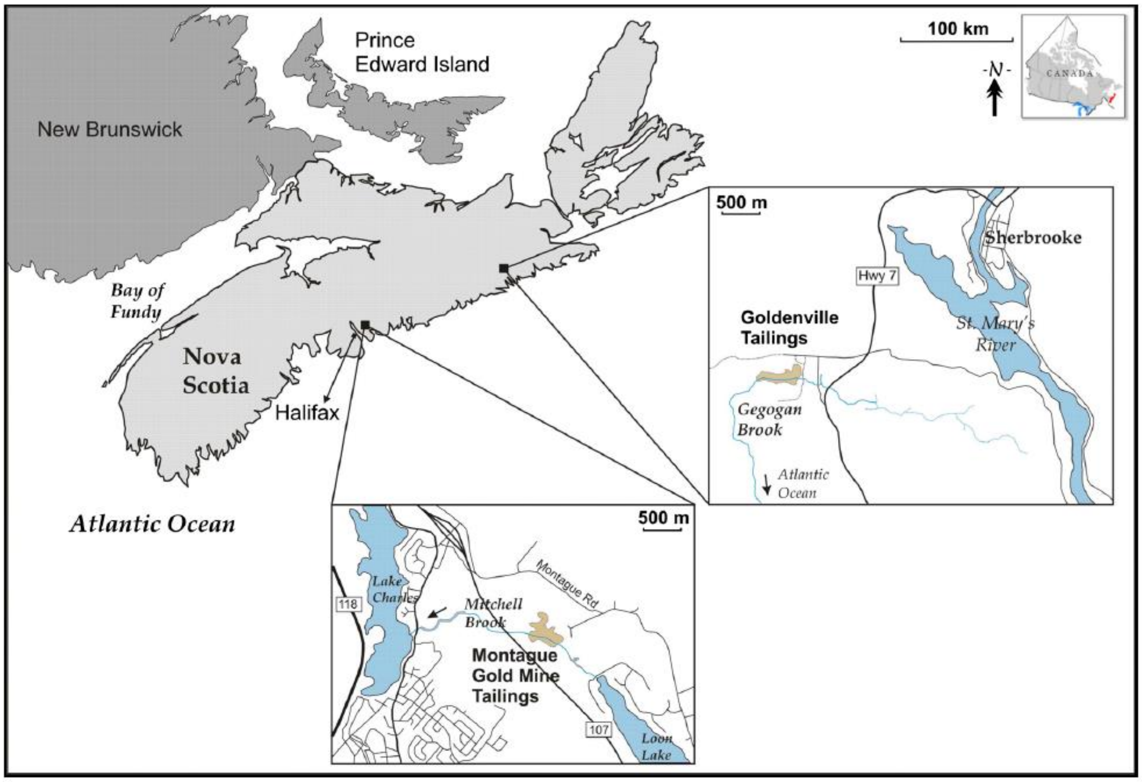
Attachment A contains information on the two sites of interest as provided by the Geological Survey of Canada including sediment chemistry in Open File 7150 entitled "Environmental geochemistry of tailings, sediments and surface waters collected from 14 historical gold mining districts in Nova Scotia" issued in 2012 (Parsons et al, 2012). This document contains an extensive reference list related to the issue. Additional supplementary information can be found in:

- Drage, J. 2015. Review of the Environmental Impacts of Historic Gold Mine Tailings in Nova Scotia. Open File Report ME 2015-004.
- https://novascotia.ca/natr/meb/data/pubs/15ofr04/ofr_me_2015-004.pdf
- Parsons, M. and M. Little, 2015. Establishing geochemical baselines in forest soils for environmental risk assessment in the Montague and Goldenville gold districts, Nova Scotia, Canada. Atlantic Geology 51, 364-386 (2015)
- C. J. McLellan & Associates Inc. 2009. Phase II Environmental Site Assessment. Nova Scotia Department of Transportation and Infrastructure Renewal. Former Gold Mine Site, Goldenville, Guysborough County, Nova Scotia.
- Maritime Testing Consulting Engineering & Environmental Services. 2009. Modified Phase II Environmental Site Assessment. Former Gold Mine Site, Montague Mines, Nova Scotia. Final Report. Prepared for Nova Scotia Department of Transportation and Infrastructure Renewal.
- DeSisto, S.L., H. Jameson, and M. Parsons. 2011. Influence of hardpan layers on arsenic mobility in historical gold mine tailings. Applied Geochemistry 26(2011) 2004-2018.
- DeSisto, S.L. H. Jamieson, and M.Parsons. 2017. Arsenic mobility in weathered gold mine tailings under low-organic soil cover. Environmental Earth Sciences (2017) 76:773.
- Parsons, M., H. Jamieson, S. DeSisto, and J. Kavalench. Optimizing Remediation of Gold Mine Tailings in Nova Scotia. https://novascotia.ca/natr/meb/data/pubs/10re02/10re02_26.pdf
- Meunier, L, S. Walker, J. Wragg, M. Parsons, I Koch, H. Jamieson and K. Reimer. 2010. Effectsof Soil composition and Minerology on the bioaccessibility of arsenic from tailings and soil in gold mine districts of Nova Scotia. Environ. Sci Technol. 2010. 44(2) pp 2667-2674.

The closure plans for these sites require careful attention, due to the high concentrations of arsenic, and the fact that over 70 years of weathering of the tailings has taken place. The weathering process can lead to a wide range of As-bearing secondary minerals, which may dissolve under some types of soil cover, resulting in increasing concentrations of arsenic in down gradient surface waters, the complexities of which are discussed in DeSisto et al, 2017. Closure plans for these sites, therefore, must carefully consider the geochemistry, and ensure the proposed closure solution will not exacerbate the situation. Therefore, considerable expertise related to arsenic geochemistry, and mine closure, are required for this project. The scope of the project is not calling for a risk assessment, but a risk-based approach is inherent in the Nova Scotia Contaminated Site Regulations.

Note that both sites have mine shafts remaining from historical mining activities. These shafts represent physical hazards, and there are signs located at both sites warning of the presence of these shafts. The conceptual closure plans that are to be developed as part of this project are to focus on the tailings. The closure of the mine shafts are to be addressed by NS Lands separately.

Figure 2.1 Location of Montague and Goldenville Sites



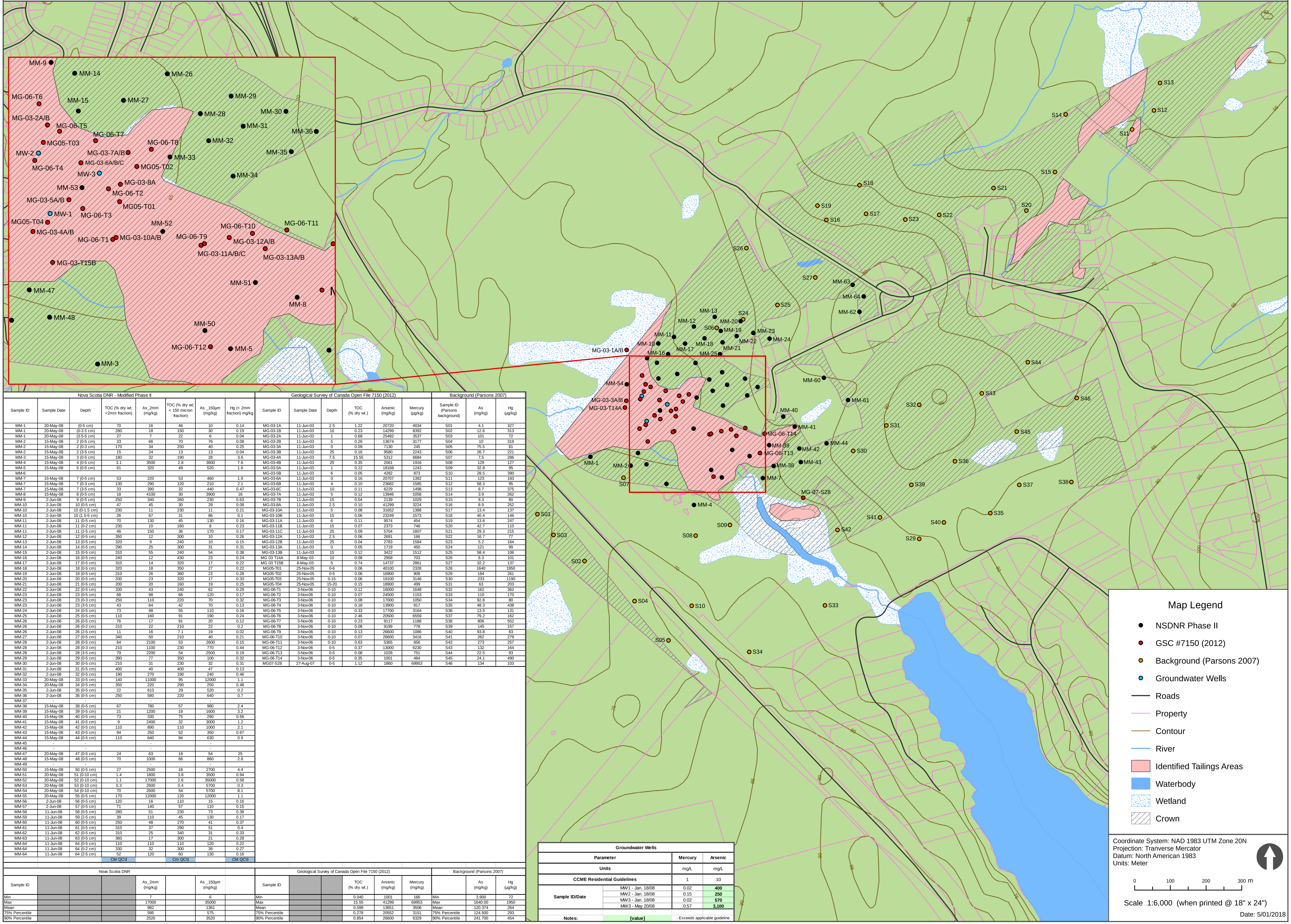
From: DeSisto, S.L. H. Jamieson, and M.Parsons. 2017. Arsenic mobility in weathered gold mine tailings under low-organic soil cover. Environmental Earth Sciences (2017) 76:773.

Figure 2.2 Tailings at the Montague Site

Figure 2.3 Tailings at the Goldenville Site

Figure 2.4 Montague Mines – Existing Geochemistry Data

Montague Site Samples - Arsenic, Total Organic Carbon & Mercury



Nova Scotia DNR - Modified Phase II							
Sample ID	Sample Date	Depth	TOC (% dry wt; <2mm fraction)	As_2mm (mg/kg)	TOC (% dry wt; < 150 micron fraction)	As _150µm (mg/kg)	Hg (< 2mm fraction) mg/kg
MM-1	20-May-08	(0-5 cm)	70	16	46	10	0.14
MM-1	20-May-08	(0-3.5 cm)	280	18	150	30	0.19
MM-1	20-May-08	(3.5-5 cm)	27	7	22	6	0.04
MM-2	15-May-08	2 (0-5 cm)	33	66	70	76	0.08
MM-2	15-May-08	2 (0-3 cm)	170	34	250	40	0.25
MM-2	15-May-08	2 (3-5 cm)	15	24	13	13	0.04
MM-3	15-May-08	3 (0-5 cm)	180	32	190	28	3.6
MM-4	15-May-08	4 (0-5 cm)	3.1	3500	2.8	3600	7.6
MM-5	15-May-08	5 (0-5 cm)	61	320	49	520	1.6
MM-6							
MM-7	15-May-08	7 (0-5 cm)	53	220	53	460	1.9
MM-7	15-May-08	7 (0-3 cm)	130	290	120	210	2.1
MM-7	15-May-08	7 (3-5 cm)	33	390	32	440	0.47
MM-8	15-May-08	8 (0-5 cm)	18	4100	30	3900	16
MM-9	2-Jun-08	9 (0-5 cm)	250	340	260	230	0.63
MM-10	2-Jun-08	10 (0-5 cm)	47	45	30	29	0.09
MM-10	2-Jun-08	10 (0-1.5 cm)	230	11	230	11	0.21
MM-10	2-Jun-08	10 (1.5-5 cm)	26	67	31	86	0.1
MM-11	2-Jun-08	11 (0-5 cm)	70	130	45	130	0.16
MM-11	2-Jun-08	11 (0-2 cm)	230	10	160	8	0.23
MM-11	2-Jun-08	11 (2-5 cm)	46	150	36	170	0.17
MM-12	2-Jun-08	12 (0-5 cm)	350	12	300	10	0.26
MM-13	2-Jun-08	13 (0-5 cm)	320	9	240	10	0.15
MM-14	2-Jun-08	14 (0-5 cm)	290	25	300	31	0.31
MM-15	2-Jun-08	15 (0-5 cm)	310	55	240	54	0.38
MM-16	2-Jun-08	16 (0-5 cm)	240	12	430	23	0.24
MM-17	2-Jun-08	17 (0-5 cm)	310	14	320	17	0.22
MM-18	2-Jun-08	18 (0-5 cm)	320	18	350	27	0.22
MM-19	2-Jun-08	19 (0-5 cm)	310	26	360	23	0.28
MM-20	2-Jun-08	20 (0-5 cm)	330	23	320	17	0.33
MM-21	2-Jun-08	21 (0-5 cm)	200	20	160	19	0.25
MM-22	2-Jun-08	22 (0-5 cm)	330	43	240	62	0.29
MM-23	2-Jun-08	23 (0-5 cm)	68	98	68	120	0.17
MM-23	2-Jun-08	23 (0-3 cm)	250	110	220	70	0.32
MM-23	2-Jun-08	23 (3-5 cm)	43	64	42	70	0.13
MM-24	2-Jun-08	24 (0-5 cm)	73	98	55	110	0.16
MM-25	2-Jun-08	25 (0-5 cm)	110	160	91	190	0.24
MM-26	2-Jun-08	26 (0-5 cm)	76	17	91	20	0.12
MM-26	2-Jun-08	26 (0-2 cm)	210	22	210	22	0.2
MM-26	2-Jun-08	26 (2-5 cm)	11	16	7.1	19	0.02
MM-27	2-Jun-08	27 (0-5 cm)	340	50	210	40	0.21
MM-28	2-Jun-08	28 (0-5 cm)	64	2100	53	2600	0.15
MM-28	2-Jun-08	28 (0-3 cm)	210	1100	230	770	0.44
MM-28	2-Jun-08	28 (3-5 cm)	79	2200	54	2500	0.19
MM-29	2-Jun-08	29 (0-5 cm)	390	77	350	100	0.32
MM-30	2-Jun-08	30 (0-5 cm)	210	31	230	32	0.31
MM-31	2-Jun-08	31 (0-5 cm)	400	40	400	47	0.13
MM-32	2-Jun-08	32 (0-5 cm)	190	270	190	240	0.46
MM-33	20-May-08	33 (0-5 cm)	140	11000	95	12000	1.1
MM-34	20-May-08	34 (0-5 cm)	350	220	290	250	0.48
MM-35	2-Jun-08	35 (0-5 cm)	22	610	29	520	0.2
MM-36	2-Jun-08	36 (0-5 cm)	250	580	220	640	0.7
MM-37	-	-		-		-	
MM-38	15-May-08	38 (0-5 cm)	67	780	57	980	2.4
MM-39	15-May-08	39 (0-5 cm)	21	1200	19	1600	3.2
MM-40	15-May-08	40 (0-5 cm)	73	330	75	290	0.56
MM-41	15-May-08	41 (0-5 cm)	9	2400	32	3000	1.2
MM-42	15-May-08	42 (0-5 cm)	110	890	110	1000	2.1
MM-43	15-May-08	43 (0-5 cm)	94	250	52	350	0.67
MM-44	15-May-08	44 (0-5 cm)	110	640	94	630	0.9
MM-45	-	-		-		-	
MM-46	-	-		-		-	
MM-47	20-May-08	47 (0-5 cm)	24	63	18	54	25
MM-48	15-May-08	48 (0-5 cm)	70	1000	66	860	2.8
MM-49	-	-		-		-	
MM-50	15-May-08	50 (0-5 cm)	27	2500	18	2700	4.4
MM-51	20-May-08	51 (0-10 cm)	1.4	1800	3.8	3500	0.94
MM-52	20-May-08	52 (0-10 cm)	1.1	17000	2.6	35000	0.58
MM-53	20-May-08	53 (0-10 cm)	0.3	2600	0.4	5700	0.3
MM-54	20-May-08	54 (0-10 cm)	70	2600	54	5700	8.1
MM-55	20-May-08	55 (0-5 cm)	170	12000	120	12000	1.1
MM-56	2-Jun-08	56 (0-5 cm)	120	16	110	15	0.16
MM-57	2-Jun-08	57 (0-5 cm)	71	140	57	110	0.15
MM-58	11-Jun-08	58 (0-5 cm)	280	51	230	73	0.38
MM-59	11-Jun-08	59 (2-5 cm)	39	110	45	130	0.17
MM-60	11-Jun-08	60 (0-5 cm)	250	48	270	41	0.37
MM-61	11-Jun-08	61 (0-5 cm)	310	37	290	51	0.4
MM-62	11-Jun-08	62 (0-5 cm)	310	25	340	31	0.33
MM-63	11-Jun-08	63 (0-5 cm)	360	17	300	21	0.28
MM-64	11-Jun-08	64 (0-5 cm)	110	110	110	120	0.22
MM-64	11-Jun-08	64 (0-2 cm)	330	32	300	39	0.27
MM-64	11-Jun-08	64 (2-5 cm)	52	120	60	130	0.16
			CM QC'd		Cm QC'd		CM QC'd

Geological Survey of Canada Open File 7150 (2012)					
Sample ID	Sample Date	Depth	TOC (% dry wt.)	Arsenic (mg/kg)	Mercury (µg/kg)
MG-03-1A	11-Jun-03	2.5	1.22	20720	4034
MG-03-1B	11-Jun-03	10	0.23	14299	8392
MG-03-2A	11-Jun-03	1	0.68	25482	3537
MG-03-2B	11-Jun-03	5	0.26	13674	3177
MG-03-3A	11-Jun-03	0	0.09	7130	245
MG-03-3B	11-Jun-03	25	0.16	9580	2243
MG-03-4A	11-Jun-03	7.5	15.55	5312	6684
MG-03-4B	11-Jun-03	20	0.35	2061	1916
MG-03-5A	11-Jun-03	1	0.22	18168	1243
MG-03-5B	11-Jun-03	6	0.05	4282	873
MG-03-6A	11-Jun-03	0	0.16	20707	1392
MG-03-6B	11-Jun-03	4	0.10	23682	1585
MG-03-6C	11-Jun-03	10	0.11	6229	1498
MG-03-7A	11-Jun-03	5	0.12	13946	1058
MG-03-7B	11-Jun-03	15	0.04	2139	1029
MG-03-8A	11-Jun-03	2.5	0.10	41299	3224
MG-03-10A	11-Jun-03	5	0.08	31652	1388
MG-03-10B	11-Jun-03	15	0.06	23249	1573
MG-03-11A	11-Jun-03	6	0.11	9574	454
MG-03-11B	11-Jun-03	15	0.07	2373	746
MG-03-11C	11-Jun-03	25	0.09	5704	1807
MG-03-12A	11-Jun-03	2.5	0.06	2691	166
MG-03-12B	11-Jun-03	25	0.04	2783	1584
MG-03-13A	11-Jun-03	0	0.05	1719	450
MG-03-13B	11-Jun-03	15	0.12	3422	1512
MG 03 T14A	8-May-03	10	0.08	2958	703
MG 03 T15B	8-May-03	5	0.74	14737	2861
MG05-T01	25-Nov-05	0-6	0.06	40100	2328
MG05-T02	25-Nov-05	0-5	0.06	16900	909
MG05-T03	25-Nov-05	0-15	0.06	19100	3146
MG05-T04	25-Nov-05	15-20	0.15	18900	499
MG-06-T1	3-Nov-06	0-10	0.12	16000	1648
MG-06-T2	3-Nov-06	0-10	0.07	24500	1153
MG-06-T3	3-Nov-06	0-10	0.08	17000	1050
MG-06-T4	3-Nov-06	0-10	0.18	13900	917
MG-06-T5	3-Nov-06	0-10	0.33	17700	3164
MG-06-T6	3-Nov-06	0-10	2.46	20500	6559
MG-06-T7	3-Nov-06	0-10	0.23	9117	1188
MG-06-T8	3-Nov-06	0-10	0.08	9199	778
MG-06-T9	3-Nov-06	0-10	0.13	26600	1086
MG-06-T10	3-Nov-06	0-10	0.07	26600	3416
MG-06-T11	3-Nov-06	0-10	0.63	5365	656
MG-06-T12	3-Nov-06	0-5	0.37	13000	6230
MG-06-T13	3-Nov-06	0-5	0.08	1028	751
MG-06-T14	3-Nov-06	0-5	0.35	1001	484
MG07-S28	27-Aug-07	0-5	1.12	1860	69953

Background (Parsons 2007)		
Sample ID (Parsons background)	As (mg/kg)	Hg (µg/kg)
S01	4.1	327
S02	12.6	313
S03	101	72
S04	10	319
S05	75.5	81
S06	26.7	221
S07	7.5	286
S08	129	127
S09	32.8	95
S10	28.5	390
S11	123	183
S12	58.3	95
S13	8.7	375
S14	3.9	262
S15	9.3	80
S16	8.9	252
S17	13.4	137
S18	40.4	146
S19	13.6	247
S20	42.7	110
S21	29.3	215
S22	16.7	77
S23	5.2	164
S24	121	99
S25	58.4	106
S26	6.3	101
S27	32.2	137
S28	1640	1950
S29	184	261
S30	233	1190
S31	63	203
S32	162	362
S33	110	170
S34	92.8	80
S35	48.3	438
S36	13.5	131
S37	79.2	162
S38	806	552
S39	145	157
S40	93.8	83
S41	262	279
S42	273	257
S43	132	164
S44	22.5	93
S45	24.1	490
S46	134	103

Nova Scotia DNR							
Sample ID				As_2mm (mg/kg)		As _150µm (mg/kg)	
Min				7		6	
Max				17000		35000	
Mean				982		1361	
75% Percentile				595		575	
90% Percentile				2520		3520	

Geological Survey of Canada Open File 7150 (2012)					
Sample ID			TOC (% dry wt.)	Arsenic (mg/kg)	Mercury (mg/kg)
Min			0.040	1001	166
Max			15.55	41299	69953
Mean			0.599	13651	3506
75% Percentile			0.278	20552	3151
90% Percentile			0.854	26600	6329

Background (Parsons 2007)		
	As (mg/kg)	Hg (µg/kg)
Min	3.900	72
Max	1640.00	1950
Mean	120.374	264
75% Percentile	124.500	293
90% Percentile	241.700	454

Groundwater Wells			
Parameter		**Mercury**	**Arsenic**
Units		mg/L	mg/L
CCME Residential Guidelines		1	10
Sample ID/Date	MW1 - Jan. 18/08	0.02	**400**
	MW2 - Jan. 18/08	0.15	**250**
	MW3 - Jan. 18/08	0.02	**570**
	MW3 - May 20/08	0.57	**3,100**
Notes:	**[value]**	- Exceeds applicable guideline	

Map Legend

●	NSDNR Phase II
●	GSC #7150 (2012)
●	Background (Parsons 2007)
●	Groundwater Wells
—	Roads
—	Property
—	Contour
—	River
🟥	Identified Tailings Areas
🟦	Waterbody
▨	Wetland
▨	Crown

Coordinate System: NAD 1983 UTM Zone 20N
Projection: Tranverse Mercator
Datum: North American 1983
Units: Meter

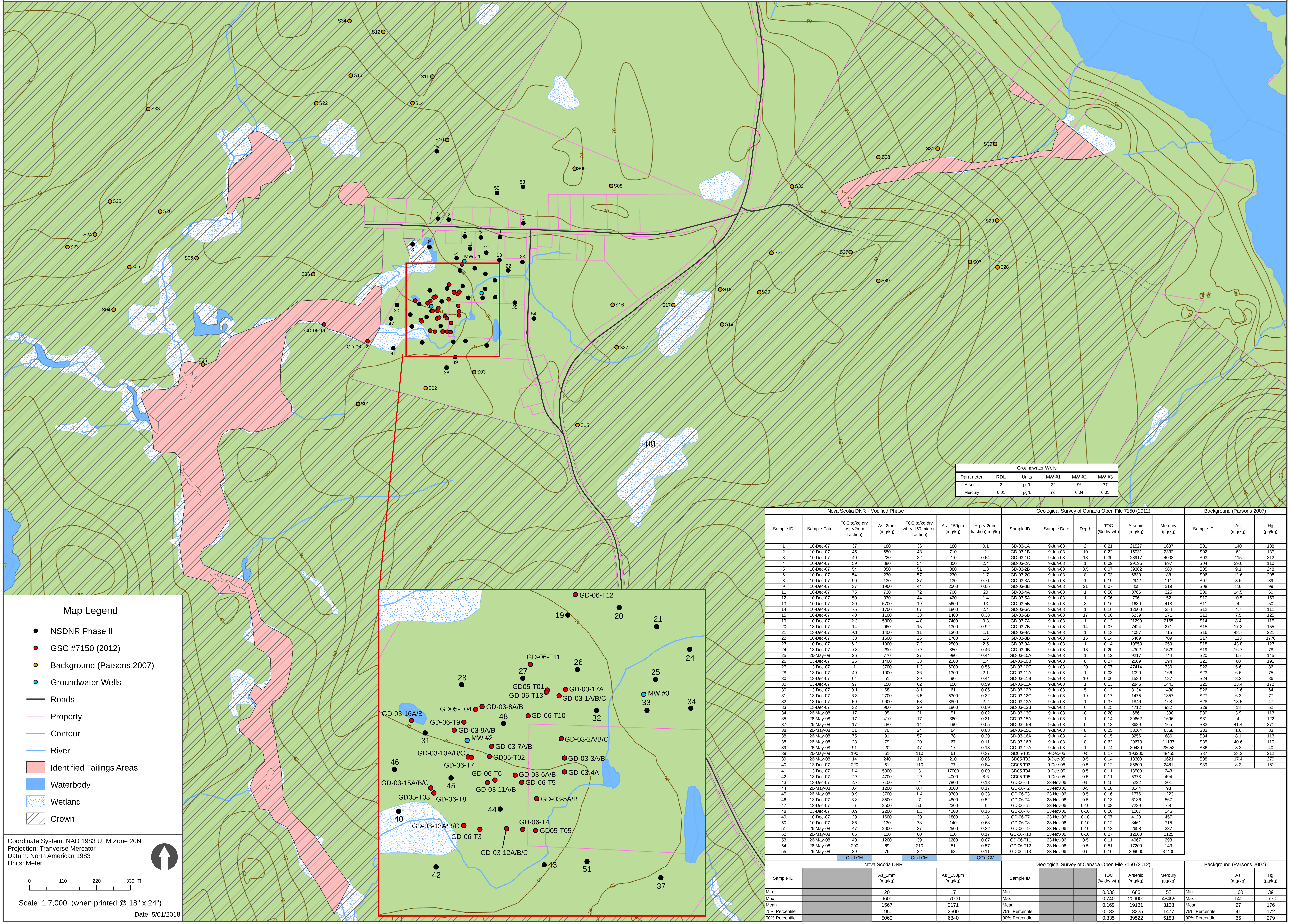
0 100 200 300 m

Scale 1:6,000 (when printed @ 18" x 24")

Date: 5/01/2018

Figure 2.5 Goldenville - Existing Geochemistry Data

Goldenville Site Samples - Arsenic, Total Organic Content & Mercury



Map Legend

- ● NSDNR Phase II
- ● GSC #7150 (2012)
- ● Background (Parsons 2007)
- ● Groundwater Wells
- Roads
- Property
- Contour
- River
- 🟥 Identified Tailings Areas
- 🟦 Waterbody
- ▨ Wetland
- ▨ Crown

Coordinate System: NAD 1983 UTM Zone 20N
Projection: Tranverse Mercator
Datum: North American 1983
Units: Meter

Scale 1:7,000 (when printed @ 18" x 24")

Date: 5/01/2018

Groundwater Wells					
Parameter	RDL	Units	MW #1	MW #2	MW #3
Arsenic	2	µg/L	22	96	77
Mercury	0.01	µg/L	nd	0.04	0.01

Nova Scotia DNR - Modified Phase II							Geological Survey of Canada Open File 7150 (2012)						Background (Parsons 2007)		
Sample ID	Sample Date	TOC (g/kg dry wt; <2mm fraction)	As_2mm (mg/kg)	TOC (g/kg dry wt; < 150 micron fraction)	As _150µm (mg/kg)	Hg (< 2mm fraction) mg/kg	Sample ID	Sample Date	Depth	TOC (% dry wt.)	Arsenic (mg/kg)	Mercury (µg/kg)	Sample ID	As (mg/kg)	Hg (µg/kg)
1	10-Dec-07	37	180	36	180	0.1	GD-03-1A	9-Jun-03	2	0.21	21527	1637	S01	140	138
2	10-Dec-07	45	650	48	710	2	GD-03-1B	9-Jun-03	10	0.22	15031	2332	S02	62	137
3	10-Dec-07	40	220	32	270	0.54	GD-03-1C	9-Jun-03	13	0.30	23917	4008	S03	115	312
4	10-Dec-07	59	880	54	850	2.4	GD-03-2A	9-Jun-03	1	0.09	29196	897	S04	29.6	110
5	10-Dec-07	54	350	51	380	1.3	GD-03-2B	9-Jun-03	3.5	0.07	39382	980	S05	9.1	248
6	10-Dec-07	54	230	57	230	1.7	GD-03-2C	9-Jun-03	8	0.03	6630	88	S06	12.6	298
8	10-Dec-07	90	130	87	130	0.71	GD-03-3A	9-Jun-03	1	0.19	2942	111	S07	8.6	39
9	10-Dec-07	37	1900	44	2500	0.06	GD-03-3B	9-Jun-03	21	0.07	858	219	S08	8.6	99
11	10-Dec-07	75	730	72	700	20	GD-03-4A	9-Jun-03	1	0.50	3766	325	S09	14.5	60
12	10-Dec-07	50	370	44	420	1.4	GD-03-5A	9-Jun-03	1	0.06	796	52	S10	10.5	159
13	10-Dec-07	20	5700	19	5600	13	GD-03-5B	9-Jun-03	8	0.16	1630	418	S11	4	50
14	10-Dec-07	75	1700	67	1800	2.4	GD-03-6A	9-Jun-03	1	0.16	12600	354	S12	4.7	111
15	10-Dec-07	40	1100	33	1400	0.38	GD-03-6B	9-Jun-03	17	0.06	6239	171	S13	7.5	125
19	10-Dec-07	2.3	5300	4.8	7400	0.3	GD-03-7A	9-Jun-03	1	0.12	21299	2165	S14	8.4	115
20	13-Dec-07	14	960	15	1300	0.92	GD-03-7B	9-Jun-03	14	0.07	7424	271	S15	17.2	155
21	13-Dec-07	9.1	1400	11	1300	1.1	GD-03-8A	9-Jun-03	1	0.13	4087	715	S16	48.7	221
22	10-Dec-07	33	1600	26	1700	1.6	GD-03-8B	9-Jun-03	15	0.14	6469	709	S17	113	1770
23	10-Dec-07	6.2	1900	7.2	2500	2.5	GD-03-9A	9-Jun-03	1	0.14	10558	259	S18	43.8	123
24	13-Dec-07	9.8	290	9.7	350	0.46	GD-03-9B	9-Jun-03	13	0.20	4302	1579	S19	16.7	78
25	26-May-08	26	770	27	980	0.44	GD-03-10A	9-Jun-03	1	0.12	9217	744	S20	65	145
26	13-Dec-07	26	1400	33	2100	1.4	GD-03-10B	9-Jun-03	8	0.07	2609	294	S21	60	191
27	13-Dec-07	1	3700	1.3	6000	0.55	GD-03-10C	9-Jun-03	20	0.07	47414	330	S22	5.6	86
28	13-Dec-07	49	1000	36	1300	2.1	GD-03-11A	9-Jun-03	1	0.08	1090	166	S23	6.6	75
30	13-Dec-07	64	51	39	90	0.44	GD-03-11B	9-Jun-03	10	0.06	1530	187	S24	8.2	86
30	13-Dec-07	97	150	62	150	0.59	GD-03-12A	9-Jun-03	1	0.13	2846	1443	S25	13.4	172
30	13-Dec-07	9.1	68	8.1	61	0.05	GD-03-12B	9-Jun-03	5	0.12	3134	1430	S26	12.6	64
31	13-Dec-07	6.3	2700	6.5	5300	0.32	GD-03-12C	9-Jun-03	19	0.17	1475	1357	S27	6.3	77
32	13-Dec-07	59	9600	58	8800	2.2	GD-03-13A	9-Jun-03	1	0.37	1846	168	S28	18.5	47
33	13-Dec-07	32	960	29	1800	0.09	GD-03-13B	9-Jun-03	6	0.25	4712	932	S29	13	62
34	26-May-08	17	35	21	51	0.02	GD-03-13C	9-Jun-03	8	0.20	686	1390	S30	3.9	113
35	26-May-08	17	410	17	360	0.31	GD-03-15A	9-Jun-03	1	0.14	39662	1696	S31	4	122
37	26-May-08	17	180	14	190	0.05	GD-03-15B	9-Jun-03	5	0.13	3689	165	S32	41.4	271
38	26-May-08	31	70	24	64	0.08	GD-03-15C	9-Jun-03	8	0.25	33264	6358	S33	1.6	83
38	26-May-08	75	91	57	78	0.29	GD-03-16A	9-Jun-03	4	0.15	8256	686	S34	8.1	113
38	26-May-08	28	79	20	67	0.11	GD-03-16B	9-Jun-03	8	0.62	29678	11137	S35	40.6	110
39	26-May-08	91	20	47	17	0.18	GD-03-17A	9-Jun-03	1	0.74	30430	28652	S36	8.3	40
39	26-May-08	190	61	110	61	0.37	GD05-T01	9-Dec-05	0-5	0.17	193200	48455	S37	23.2	212
39	26-May-08	14	240	12	210	0.06	GD05-T02	9-Dec-05	0-5	0.14	13300	1621	S38	17.4	279
40	13-Dec-07	220	51	110	77	0.84	GD05-T03	9-Dec-05	0-5	0.12	86600	2481	S39	8.2	161
41	13-Dec-07	1.4	5800	3	17000	0.09	GD05-T04	9-Dec-05	0-5	0.11	13500	243			
42	13-Dec-07	2.7	4700	2.7	4000	8.6	GD05-T05	9-Dec-05	0-5	0.11	5373	494			
43	13-Dec-07	2.7	7100	4	7800	0.18	GD-06-T1	23-Nov-06	0-5	0.15	5222	201			
44	26-May-08	0.4	1200	0.7	3000	0.17	GD-06-T2	23-Nov-06	0-5	0.18	3144	93			
45	26-May-08	0.9	3700	1.4	8700	0.33	GD-06-T3	23-Nov-06	0-5	0.16	1776	1223			
46	13-Dec-07	3.8	3500	7	4800	0.52	GD-06-T4	23-Nov-06	0-5	0.13	6186	567			
47	13-Dec-07	6	2500	5.5	2300	1	GD-06-T5	23-Nov-06	0-10	0.08	7239	68			
48	13-Dec-07	0.9	2200	1.3	4200	0.16	GD-06-T6	23-Nov-06	0-10	0.06	1007	145			
49	10-Dec-07	29	1600	29	1800	1.8	GD-06-T7	23-Nov-06	0-10	0.07	4120	457			
50	10-Dec-07	86	130	78	140	0.68	GD-06-T8	23-Nov-06	0-10	0.12	8461	715			
51	26-May-08	47	2000	37	2500	0.32	GD-06-T9	23-Nov-06	0-10	0.12	2698	387			
52	26-May-08	65	120	60	110	0.17	GD-06-T10	23-Nov-06	0-10	0.07	12600	1125			
53	26-May-08	40	1200	39	1200	0.07	GD-06-T11	23-Nov-06	0-5	0.11	4967	293			
54	26-May-08	290	69	210	51	0.57	GD-06-T12	23-Nov-06	0-5	0.51	17200	143			
55	26-May-08	29	76	22	68	0.11	GD-06-T13	23-Nov-06	0-5	0.10	209000	37400			
		Qc'd CM		Qc'd CM		QC'd CM									

Nova Scotia DNR							Geological Survey of Canada Open File 7150 (2012)						Background (Parsons 2007)		
Sample ID			As_2mm (mg/kg)		As _150µm (mg/kg)		Sample ID			TOC (% dry wt.)	Arsenic (mg/kg)	Mercury (ug/kg)		As (mg/kg)	Hg (µg/kg)
Min			20		17		Min			0.030	686	52	Min	1.60	39
Max			9600		17000		Max			0.740	209000	48455	Max	140	1770
Mean			1567		2171		Mean			0.169	19181	3158	Mean	27	176
75% Percentile			1950		2500		75% Percentile			0.183	18225	1477	75% Percentile	41	172
90% Percentile			5060		6840		90% Percentile			0.335	39522	5183	90% Percentile	65	279

3.0 OVERALL PLAN FOR CLOSURE OF THE SITES

The sites are now owned by Nova Scotia Department of Natural Resources (NSDNR). NSDNR have contracted with NS Lands, a Crown Corporation whose mandate is to assess and, where required, remediate and redevelop crown-owned properties. NS Lands will be the client for this project. NSTIR/NSDNR and NS Lands wish to develop closure plans for the tailings faculties at the sites by proceeding in two stages:

- Stage 1 – Develop conceptual closure plan(s) and approximate costs to help chart a path forward as to what a complete closure plan could be. This Stage would involve limited site investigation.
- Stage 2 – Develop a complete closure plan with detailed costs and implementation plan.

Stage 1 is to be done in Fiscal 2018/19 and Stage 2 at a later time (note, Stage 2 is not included as part of the current bid). Closure of other infrastructure and mine openings (existing mine shafts from historic activities) on the site is being dealt with separately.

4.0 OBJECTIVE OF STUDY

The objective of this RFP is to complete Stage 1, which involves the development of a conceptual closure plan(s) for each of the site with an associated cost estimate and schedule. The cost estimate is to be to a Class D Cost level. The schedule is to be at a Level 1 (further defined in Section 5.9). This study is to focus on the tailings. It is recognized that some of the tailings are on property owned by the Crown and some on privately owned property. The closure plan(s) is to address the entire tailings facility (whether on crown land or on private property).

The consultant is to work with NS Lands to develop appropriate closure criteria for the site and consider a variety of closure options that will meet the criteria. A recommendation as to the preferred closure option(s) for the sites is to be provided. It is understood that a single closure option may not be possible and the Stage 1 may generate more than one viable closure option for each site.

At the completion of Stage 1, a scope of work is to be developed for Stage 2, as part of the current project. NS Lands reserves the right to sole source the Stage 2 work to the incumbent consultant from Stage 1 or issue a new RFP for Stage 2.

5.0 ASSIGNMENT AND SCOPE OF WORK

The Consultant shall provide the services on a time plus disbursements basis to meet the objectives of the project. The following tasks are expected, and the proposal must outline approaches which will be taken to fulfill these tasks, as well as costs associated with each task, based on time requirements for selected staff and rate levels:

1. Kickoff meeting
2. Background information review

3. Development of Health and Safety Plan, Site visit and Meeting with NS Lands
4. Gap Analysis
5. Field program
6. Criteria development
7. Option development and assessment
8. Option selection
9. Closure Cost estimate and scheduling
10. Stakeholder engagement strategy
11. Reporting
12. Scope of work for Stage 2
13. Meetings and Communications

The Consultant may wish to provide a different sequence or series of tasks that will meet the objectives of Stage 1. If the Consultant wishes to do so, then that should be offered as an alternative proposal, the base proposal should be prepared in accordance with the task listing noted above.

The tasks described below are common to both sites.

5.1 TASK 1 – KICKOFF MEETING

Within one week of project award, the Consultant will convene a kickoff meeting (by conference call and/or in person) to review the scope of the project and the schedule. Information that is required by the consultant to undertake the study is to be identified by the consultant and reviewed with NS Lands. NS Lands is to provide such information that is available and identify which information is not available.

5.2 TASK 2 – BACKGROUND INFORMATION REVIEW

The Consultant will review the available information related to the two sites and prepare a document that summarizes the available information that will be used to support the conceptual closure plan.

5.3 TASK 3 – DEVELOPMENT OF HEALTH AND SAFETY PLAN, SITE VISIT AND MEETING WITH NS LANDS

The Consultant will coordinate with NS Lands to conduct a site visit at a time that is mutually acceptable. Section 5.13 presents information on the schedule. The Montague and Goldenville sites will be visited and it is expected that key personnel from the Consultant's team will participate in the site visits. The consultant will be expected to prepare a Health and Safety Plan for these site visits, and costs for preparation of this plan should be accounted for in the proposal submission. For budgeting purposes, allow 2 full days for the site visits from Halifax (departing Halifax one morning and returning to Halifax the next evening). A memo will be issued by the Consultant after the site visit summarizing the key information points that were gathered.

Health and safety is a top priority of NS Lands on the Project. The Consultant is responsible for preparing and regularly updating a health and safety plan for the Assignment. The Assignment H&SP will meet the minimum requirements of the site NS Lands Contractors Master Health and Safety Plan and will include, but not be limited to, details with regard to assignment hazard assessments, required safe work practices and procedures, personal protective equipment, training, decontamination procedures, safety meetings, and emergency response plans. A copy of the Consultant's Clearance letter from the Workers Compensation Board will be appended to the Assignment H&SP. A copy of the NS Lands Master Contractors Health and Safety Plan is provided in Attachment B.

5.4 TASK 4 – GAP ANALYSIS

Based on the completion of Task 2 (background information review) and Task 3 (site visit), the Consultant is to conduct an analysis that identifies the gaps that should be filled to develop a complete closure plan for the sites (Stages 1 and Stage 2) and indicate the highest priority gaps that would prevent meeting the objectives of Stage 1. The results of the gap analysis are to be discussed with NS Lands and those gaps that should be filled as part of Stage 1 are to be identified.

A separate memo describing the results of the gap analysis is to be issued for each site.

5.5 TASK 5 – FIELD PROGRAM

For Stage 1, a field program is to be conducted at both sites to gain information that addresses the high priority gaps identified in Task 4. It is recognized that there could be a range of approaches and methodologies proposed with an associated range of pricing. For budgeting purposes, the Consultant is to provide a field program that does not exceed $150,000 (excluding taxes) for both sites (e.g., 75,000 per site, or any split of costs totaling a maximum of $150,000 for the two sites). The conceptual field program to be provided in the proposal is to be based on the Consultant's review of the information that is provided with this RFP, and is to include travel and expenses, sampling locations and anticipated sampling numbers and rationale, analytical costs, and field time (reporting costs should be included in Task 10, Section 5.11). It is recognized that after the site visit and gap analysis, modifications may be made to the conceptual field program provided in the proposal submission. The budget for the field program should be sufficiently itemized to allow NS Lands to make a determination of the changes to the budget that may be required as a result of changes to the field program. The focus of the conceptual field program is to be within Crown lands, and can include downstream environments at both sites. Off site (outside of Crown lands) sampling may be required during the course of this project, but that will be determined at a later date, following contract award, and costs associated with this would be captured under a separate budget.

Prior to conducting the field program, a detailed work plan describing the objectives of the field program, methodology, locations, testing, Health and Safety plan, etc. is to be provided for review and approval by NS Lands. The Health and Safety Plan from the Site Visit task will require updating to account for additional tasks associated with the field work, and therefore budgeting should account for this.

5.6 TASK 6 – CRITERIA DEVELOPMENT

The Consultant will work with NS Lands to develop criteria that are to be met by the closure options that will be considered. The criteria are to consider human health, terrestrial, wildlife, surface water, aquatic, and ground water.

5.7 TASK 7 – OPTION DEVELOPMENT AND ASSESSMENT

The Consultant is to identify possible options for closure of the sites that could be considered and undertake an evaluation of the options to select a preferred closure option for each site. The options are to be developed to a level sufficient to support a decision.

5.8 TASK 8 – OPTION SELECTION

The Consultant will work with NS Lands to select a preferred option for each site. It is recognized that it may not be possible to select a single closure option for each site. The outcome may be a short list of viable options that may require additional studies to determine a preferred option, or a site may have differing options to address different aspects or part of the site.

5.9 TASK 9 – CLOSURE COST ESTIMATE AND SCHEDULING

For the preferred option, a Class D cost estimate is to be developed. A Class D cost estimate is defined as follows (adapted from PWGSC Minimum Requirements for Construction Estimate Preparation – Checklist):

- Project plan detailing the project function, purpose and characteristics including information relating to the tailings facility and the planned closure measures.
- General information related to the size and dimensions of the planned closure measures.
- Geographical location, site configuration, planning limitations, known soil and rock information, known geochemical information, environmental setting; availability of utility services; borrow sources; etc.
- Procurement methodology and notional timing.
- Cost limitations and allowances.

A Level 1 schedule is to be prepared in accordance with the following requirements:

- Highlights major project activities, milestones, and key deliverables for the whole project.
- Usually on one page.
- Lists major tasks and associated timelines.
- Shows interdependencies of tasks.
- Starts at the start of an undefined government fiscal year

With the cost and schedule developed, a cost per half year is to be provided.

If there is more than one preferred option identified, then one of the options is to be selected for the Class D cost estimate and Level 1 schedule and comments offered about how the other options compare.

5.10 TASK 10 - STAKEHOLDER ENGAGEMENT PLAN

The stakeholders that could be affected by the current site conditions and the potential closure plan(s) should be identified and a plan developed that would indicate at what point in the closure planning process these stakeholders should be involved, to what degree, and what the expected outcome of such engagement should be. The approach for developing the stakeholder engagement plan should be outlined in the proposal. Costs for the implementation of the stakeholder engagement are not to be included at this time; however, costs associated with the development of the engagement plan should be included in the proposal.

5.11 TASK 11 - REPORTING

A report is to be prepared that summarizes the work, including the field program (methods, mapping, interpretation of the data); development and outcomes of criteria to be met for closure planning purposes; development of closure options and selection of final option(s); closure costing and schedule; stakeholder engagement plan.

COPIES, TRANSMISSION, FORMAT

A table of contents for the study report is to be provided to NS Lands for review and approval prior to issuing the report. Note: field program methods and outcomes should be reported shortly following completion of the field work, to enable consideration of the data in the closure planning process.

5.12 TASK 12 - SCOPE OF WORK FOR STAGE 2

After the report has been issued, a scope of work Stage 2 should be developed. This will include describing the objectives of Stage 2 and the tasks that are to be undertaken to meet those objectives, including additional field work and testing as required.

5.13 TASK 13 – SCHEDULE, PROJECT MEETINGS, AND COMMUNICATION

It is expected that this project will commence in October 2018. Table 5.1 indicates the general outline for project meetings. The field work is expected to be completed in Fall 2018 with the closure criteria developed in early Winter 2018, followed by the option development and selection to be completed by late Winter 2019. Reporting and the scope of work for Stage 2 is to be completed by the March 1, 2019 (Note: reporting for the field program is anticipated to be required shortly after the completion of that program).

Table 5.1 presents the anticipated project meetings in support of the study.

Table 5.1 Study Project Meetings

Project Meeting	Location	Schedule
Anticipated award date	Not applicable	
Kickoff meeting	Conference call and/or Halifax	Within 1 week of Contract award
Site Visits	At Both Sites	Within 3 weeks of contract award
Option Selection	Halifax	January 2019
Presentation of study findings	Halifax	March 2019

Over the course of the study, progress conference calls will be held every two weeks with the Consultant and NS Lands with minutes prepared after each meeting and issued within one week after the meeting.

Costs associated with these meetings, and the development of materials/memos, etc., (communications) should be included in Task 13 (Note: Kick off meeting costs should be included in Task 1, and not in this task).

The bidder should provide a schedule of activities that illustrate the dates and duration of each of the tasks. Bidders will be evaluated on the overall content of their plan. The schedule will be sufficiently detailed, so NS Lands may fully understand the Assignment schedule including field work, analytical time requirements, report delivery dates, meeting times and comment periods allocated for NS Lands.

6.0 QUALIFICATIONS OF THE STUDY TEAM

Due to the complexities of these sites, NS Lands requires the services of senior level expertise for this project, with specific expertise related to mine closure, arsenic geochemistry, human health and ecological toxicology and risk assessment related to arsenic and, to a lesser extent, mercury.

Specific senior level expertise and experience for this project includes individuals with:

- Over 15 years of experience with the development of closure plans for mine sites;
- Over 15 years of experience in arsenic geochemistry, associated with tailings sites
- Over 15 years of experience in human health toxicology and risk assessment – with specific expertise related to arsenic and mercury
- Over 15 years of experience in ecological toxicology and risk assessment expertise –with specific expertise related to arsenic and mercury

For each individual, the following must be provided:

- 2 page CV with education, relative years of experience, and pertinent project experience
- Biography describing the expert's qualifications, relative to this project (limited to ¾ of a page in length)
- For each named expert, 2 projects related to their areas of expertise must be provided, highlighting their role in the project; the project scope/requirements (relative to the area of expertise), year(s) project was conducted, client, and budget. Each project description should be no longer than 1 page. Projects involving arsenic and/or mercury are of greatest interest, and will be scored higher. Recent projects will be given greater consideration (e.g., those in last 8 years). One reference for each expert should be provided, from one of the submitted project examples.

The specifics related to scoring of study qualifications are provided in Evaluation Table Attachment C.

In addition to these experts, additional experience is also required on the study team. These individuals will include the project manager, and remaining team members, including field technicians, etc. Two-page CVs for each proposed team member must be provided, as well as biographies describing their qualifications.

Corporate experience, relative to the RFP, should also be provided, highlighting the firm's experience in the area of interest.

7.0 PROPOSAL CONTENT

Offerors' proposals must be submitted in the format, including heading descriptions, of the Evaluation Ratings Table attached. The proposal must be presented in a clear and concise manner and respond to all requirements in this RFP and meet the goals and expectations of the project.

The Consultant, if they so wish, can offer an additional or alternate proposal, providing proven experience and/or advanced technical knowledge is clearly demonstrated.

Each proposal must consist of two (2) separately sealed submittals – Envelope A: Technical Submission; and Envelope B: Costs of Services Submittal - **See Attachment C – Evaluation Creiteria.**

8.0 DELIVERABLES:

The following deliverables will be required for the project:

- Site visit memo
- Three (3) hard copies, and one electronic copy of the final study report.

- All developed drawings and geo-tagged photographs, in their native formats (CAD, MicroStation, JPEG, GeoTIFF, etc.)
- Meeting minutes
- Closeout presentations
- Biweekly status updates (updates every two weeks)

ATTACHMENT A

CCDC

CCDC 2

stipulated price contract

2008

NSLAND97
FORMER GOLD MINE SITES
MONTAGUE AND GOLDENVILLE

CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE

CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE
CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE

TABLE OF CONTENTS

The Canadian Construction Documents Committee (CCDC) is a national joint committee responsible for the development, production and review of standard Canadian construction contracts, forms and guides. Formed in 1974 the CCDC is made up of volunteer representatives from:

Public Sector Owners
Private Sector Owners
Canadian Bar Association (Ex-Officio)
* The Association of Canadian Engineering Companies
* The Canadian Construction Association
* Construction Specifications Canada
* The Royal Architectural Institute of Canada

*Committee policy and procedures are directed and approved by the four constituent national organizations.

CCDC 2 is the product of a consensus-building process aimed at balancing the interests of all parties on the construction project. It reflects recommended industry practices. CCDC 2 can have important consequences. The CCDC and its constituent member organizations do not accept any responsibility or liability for loss or damage which may be suffered as a result of the use or interpretation of CCDC 2.

AGREEMENT BETWEEN OWNER AND CONTRACTOR

For use when a stipulated price is the basis of payment.

This Agreement made on the ____________ day of _________ in the year ______ .

by and between the parties

____

hereinafter called the "*Owner*"

and

____

hereinafter called the *"Contractor"*

The *Owner* and the *Contractor* agree as follows:

ARTICLE A-1 THE WORK

The *Contractor* shall:

1.1 perform the *Work* required by the *Contract Documents* for

____

insert above the name of the Work

located at

____

insert above the Place of the Work

for which the Agreement has been signed by the parties, and for which

____

insert above the name of the Consultant

is acting as and is hereinafter called the "*Consultant*" and

1.2 do and fulfill everything indicated by the *Contract Documents*, and

1.3 commence the *Work* by the ____________ day of _________ in the year ______ and, subject to adjustment in *Contract Time* as provided for in the *Contract Documents*, attain *Substantial Performance of the Work*, by the ____________ day of _________ in the year ______ .

ARTICLE A-2 AGREEMENTS AND AMENDMENTS

2.1 The *Contract* supersedes all prior negotiations, representations or agreements, either written or oral, relating in any manner to the *Work*, including the bidding documents that are not expressly listed in Article A-3 of the Agreement - CONTRACT DOCUMENTS.

2.2 The *Contract* may be amended only as provided in the *Contract Documents*.

ARTICLE A-3 CONTRACT DOCUMENTS

3.1 The following are the *Contract Documents* referred to in Article A-1 of the Agreement - THE WORK:

- Agreement between *Owner* and *Contractor*
- Definitions
- The General Conditions of the Stipulated Price Contract

*

- Instruction to Bidders
- Attachment B - Bid Form
- Attachment C - Evaluation Form
- Attachment D - Resource Information
- Attachment E - NSLI Contractors Health and Safety Plan

* *(Insert here, attaching additional pages if required, a list identifying all other Contract Documents e.g. supplementary conditions; information documents; specifications, giving a list of contents with section numbers and titles, number of pages and date; material finishing schedules; drawings, giving drawing number, title, date, revision date or mark; addenda, giving title, number, date)*

ARTICLE A-4 CONTRACT PRICE

4.1 The *Contract Price*, which excludes *Value Added Taxes*, is:

____/100 dollars $ ____________

4.2 *Value Added Taxes* (of ________%) payable by the *Owner* to the *Contractor* are:

____/100 dollars $ ____________

4.3 Total amount payable by the *Owner* to the *Contractor* for the construction of the *Work* is:

____/100 dollars $ ____________

4.4 These amounts shall be subject to adjustments as provided in the *Contract Documents*.

4.5 All amounts are in Canadian funds.

ARTICLE A-5 PAYMENT

5.1 Subject to the provisions of the *Contract Documents*, and in accordance with legislation and statutory regulations respecting holdback percentages and, where such legislation or regulations do not exist or apply, subject to a holdback of ____ percent (________%), the *Owner* shall:

.1 make progress payments to the *Contractor* on account of the *Contract Price* when due in the amount certified by the *Consultant* together with such *Value Added Taxes* as may be applicable to such payments, and

.2 upon *Substantial Performance of the Work*, pay to the *Contractor* the unpaid balance of the holdback amount when due together with such *Value Added Taxes* as may be applicable to such payment, and

.3 upon the issuance of the final certificate for payment, pay to the *Contractor* the unpaid balance of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payment.

5.2 In the event of loss or damage occurring where payment becomes due under the property and boiler insurance policies, payments shall be made to the *Contractor* in accordance with the provisions of GC 11.1 – INSURANCE.

5.3 Interest

.1 Should either party fail to make payments as they become due under the terms of the *Contract* or in an award by arbitration or court, interest at the following rates on such unpaid amounts shall also become due and payable until payment:

(1) 2% per annum above the prime rate for the first 60 days.

(2) 4% per annum above the prime rate after the first 60 days.

Such interest shall be compounded on a monthly basis. The prime rate shall be the rate of interest quoted by

____

(Insert name of chartered lending institution whose prime rate is to be used)

for prime business loans as it may change from time to time.

.2 Interest shall apply at the rate and in the manner prescribed by paragraph 5.3.1 of this Article on the settlement amount of any claim in dispute that is resolved either pursuant to Part 8 of the General Conditions – DISPUTE RESOLUTION or otherwise, from the date the amount would have been due and payable under the *Contract*, had it not been in dispute, until the date it is paid.

ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

6.1 *Notices in Writing* will be addressed to the recipient at the address set out below. The delivery of a *Notice in Writing* will be by hand, by courier, by prepaid first class mail, or by facsimile or other form of electronic communication during the transmission of which no indication of failure of receipt is communicated to the sender. A *Notice in Writing* delivered by one party in accordance with this *Contract* will be deemed to have been received by the other party on the date of delivery if delivered by hand or courier, or if sent by mail it shall be deemed to have been received five calendar days after the date on which it was mailed, provided that if either such day is not a *Working Day*, then the *Notice in Writing* shall be deemed to have been received on the *Working Day* next following such day. A *Notice in Writing* sent by facsimile or other form of electronic communication shall be deemed to have been received on the date of its transmission provided that if such day is not a *Working Day* or if it is received after the end of normal business hours on the date of its transmission at the place of receipt, then it shall be deemed to have been received at the opening of business at the place of receipt on the first *Working Day* next following the transmission thereof. An address for a party may be changed by *Notice in Writing* to the other party setting out the new address in accordance with this Article.

Owner

*name of Owner**

PO Box 430, Station A, Sydney, Nova Scotia B1P 6H2

address

facsimile number *email address*

Contractor

*name of Contractor**

address

facsimile number *email address*

Consultant

*name of Consultant**

address

facsimile number *email address*

** If it is intended that the notice must be received by a specific individual, that individual's name shall be indicated.*

ARTICLE A-7 LANGUAGE OF THE CONTRACT

7.1 When the *Contract Documents* are prepared in both the English and French languages, it is agreed that in the event of any apparent discrepancy between the English and French versions, the English / French # language shall prevail.
 # Complete this statement by striking out inapplicable term.

7.2 This Agreement is drawn in English at the request of the parties hereto. La présente convention est rédigée en anglais à la demande des parties.

ARTICLE A-8 SUCCESSION

8.1 The *Contract* shall enure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors, and assigns.

In witness whereof the parties hereto have executed this Agreement by the hands of their duly authorized representatives.

SIGNED AND DELIVERED
in the presence of:

WITNESS	**OWNER**
	Nova Scotia Lands Inc.
	name of owner
signature	*signature*
name of person signing	*name and title of person signing*
signature	*signature*
name of person signing	*name and title of person signing*

WITNESS	**CONTRACTOR**
	name of Contractor
signature	*signature*
name of person signing	*name and title of person signing*
signature	*signature*
name of person signing	*name and title of person signing*

N.B. Where legal jurisdiction, local practice or Owner or Contractor requirement calls for:

(a) proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership; or

(b) the affixing of a corporate seal, this Agreement should be properly sealed.

DEFINITIONS

The following Definitions shall apply to all *Contract Documents.*

1. **Change Directive**
   A *Change Directive* is a written instruction prepared by the *Consultant* and signed by the *Owner* directing the *Contractor* to proceed with a change in the *Work* within the general scope of the *Contract Documents* prior to the *Owner* and the *Contractor* agreeing upon adjustments in the *Contract Price* and the *Contract Time.*

2. **Change Order**
   A *Change Order* is a written amendment to the *Contract* prepared by the *Consultant* and signed by the *Owner* and the *Contractor* stating their agreement upon:
   - a change in the *Work*;
   - the method of adjustment or the amount of the adjustment in the *Contract Price*, if any; and
   - the extent of the adjustment in the *Contract Time*, if any.

3. **Construction Equipment**
   Construction Equipment means all machinery and equipment, either operated or not operated, that is required for preparing, fabricating, conveying, erecting, or otherwise performing the *Work* but is not incorporated into the *Work.*

4. **Consultant**
   The *Consultant* is the person or entity engaged by the *Owner* and identified as such in the Agreement. The *Consultant* is the Architect, the Engineer or entity licensed to practise in the province or territory of the *Place of the Work.* The term *Consultant* means the *Consultant* or the *Consultant*'s authorized representative.

5. **Contract**
   The *Contract* is the undertaking by the parties to perform their respective duties, responsibilities and obligations as prescribed in the *Contract Documents* and represents the entire agreement between the parties.

6. **Contract Documents**
   The *Contract Documents* consist of those documents listed in Article A-3 of the Agreement - CONTRACT DOCUMENTS and amendments agreed upon between the parties.

7. **Contract Price**
   The *Contract Price* is the amount stipulated in Article A-4 of the Agreement - CONTRACT PRICE.

8. **Contract Time**
   The *Contract Time* is the time stipulated in paragraph 1.3 of Article A-1 of the Agreement - THE WORK from commencement of the *Work* to *Substantial Performance of the Work.*

9. **Contractor**
   The *Contractor* is the person or entity identified as such in the Agreement. The term *Contractor* means the *Contractor* or the *Contractor*'s authorized representative as designated to the *Owner* in writing.

10. **Drawings**
    The *Drawings* are the graphic and pictorial portions of the *Contract Documents*, wherever located and whenever issued, showing the design, location and dimensions of the *Work*, generally including plans, elevations, sections, details, and diagrams.

11. **Notice in Writing**
    A *Notice in Writing*, where identified in the *Contract Documents*, is a written communication between the parties or between them and the *Consultant* that is transmitted in accordance with the provisions of Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

12. **Owner**
    The *Owner* is the person or entity identified as such in the Agreement. The term *Owner* means the *Owner* or the *Owner*'s authorized agent or representative as designated to the *Contractor* in writing, but does not include the *Consultant.*

13. **Place of the Work**
    The *Place of the Work* is the designated site or location of the *Work* identified in the *Contract Documents.*

14. **Product**
    Product or Products means material, machinery, equipment, and fixtures forming the *Work*, but does not include *Construction Equipment.*

15. **Project**
The *Project* means the total construction contemplated of which the *Work* may be the whole or a part.

16. **Provide**
Provide means to supply and install.

17. **Shop Drawings**
Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, *Product* data, and other data which the *Contractor* provides to illustrate details of portions of the *Work.*

18. **Specifications**
The *Specifications* are that portion of the *Contract Documents*, wherever located and whenever issued, consisting of the written requirements and standards for *Products*, systems, workmanship, quality, and the services necessary for the performance of the *Work.*

19. **Subcontractor**
A *Subcontractor* is a person or entity having a direct contract with the *Contractor* to perform a part or parts of the *Work* at the *Place of the Work.*

20. **Substantial Performance of the Work**
Substantial Performance of the Work is as defined in the lien legislation applicable to the *Place of the Work.* If such legislation is not in force or does not contain such definition, or if the *Work* is governed by the Civil Code of Quebec, *Substantial Performance of the Work* shall have been reached when the *Work* is ready for use or is being used for the purpose intended and is so certified by the *Consultant.*

21. **Supplemental Instruction**
A *Supplemental Instruction* is an instruction, not involving adjustment in the *Contract Price* or *Contract Time*, in the form of *Specifications*, *Drawings*, schedules, samples, models or written instructions, consistent with the intent of the *Contract Documents.* It is to be issued by the *Consultant* to supplement the *Contract Documents* as required for the performance of the *Work.*

22. **Supplier**
A *Supplier* is a person or entity having a direct contract with the *Contractor* to supply *Products.*

23. **Temporary Work**
Temporary Work means temporary supports, structures, facilities, services, and other temporary items, excluding *Construction Equipment*, required for the execution of the *Work* but not incorporated into the *Work.*

24. **Value Added Taxes**
Value Added Taxes means such sum as shall be levied upon the *Contract Price* by the Federal or any Provincial or Territorial Government and is computed as a percentage of the *Contract Price* and includes the Goods and Services Tax, the Quebec Sales Tax, the Harmonized Sales Tax, and any similar tax, the collection and payment of which have been imposed on the *Contractor* by the tax legislation.

25. **Work**
The *Work* means the total construction and related services required by the *Contract Documents.*

26. **Working Day**
Working Day means a day other than a Saturday, Sunday, statutory holiday, or statutory vacation day that is observed by the construction industry in the area of the *Place of the Work.*

GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

1.1.1 The intent of the *Contract Documents* is to include the labour, *Products* and services necessary for the performance of the *Work* by the *Contractor* in accordance with these documents. It is not intended, however, that the *Contractor* shall supply products or perform work not consistent with, not covered by, or not properly inferable from the *Contract Documents*.

1.1.2 Nothing contained in the *Contract Documents* shall create any contractual relationship between:
  .1 the *Owner* and a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.
  .2 the *Consultant* and the *Contractor*, a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.

1.1.3 The *Contract Documents* are complementary, and what is required by any one shall be as binding as if required by all.

1.1.4 Words and abbreviations which have well known technical or trade meanings are used in the *Contract Documents* in accordance with such recognized meanings.

1.1.5 References in the *Contract Documents* to the singular shall be considered to include the plural as the context requires.

1.1.6 Neither the organization of the *Specifications* nor the arrangement of *Drawings* shall control the *Contractor* in dividing the work among *Subcontractors* and *Suppliers*.

1.1.7 If there is a conflict within the *Contract Documents*:
  .1 the order of priority of documents, from highest to lowest, shall be
    - the Agreement between the *Owner* and the *Contractor*,
    - the Definitions,
    - Supplementary Conditions,
    - the General Conditions,
    - Division 1 of the *Specifications*,
    - technical *Specifications*,
    - material and finishing schedules,
    - the *Drawings*.
  .2 *Drawings* of larger scale shall govern over those of smaller scale of the same date.
  .3 dimensions shown on *Drawings* shall govern over dimensions scaled from *Drawings*.
  .4 later dated documents shall govern over earlier documents of the same type.

1.1.8 The *Owner* shall provide the *Contractor*, without charge, sufficient copies of the *Contract Documents* to perform the *Work*.

1.1.9 *Specifications*, *Drawings*, models, and copies thereof furnished by the *Consultant* are and shall remain the *Consultant*'s property, with the exception of the signed *Contract* sets, which shall belong to each party to the *Contract*. All *Specifications*, *Drawings* and models furnished by the *Consultant* are to be used only with respect to the *Work* and are not to be used on other work. These *Specifications*, *Drawings* and models are not to be copied or altered in any manner without the written authorization of the *Consultant*.

1.1.10 Models furnished by the *Contractor* at the *Owner*'s expense are the property of the *Owner*.

GC 1.2 LAW OF THE CONTRACT

1.2.1 The law of the *Place of the Work* shall govern the interpretation of the *Contract*.

GC 1.3 RIGHTS AND REMEDIES

1.3.1 Except as expressly provided in the *Contract Documents*, the duties and obligations imposed by the *Contract Documents* and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

1.3.2 No action or failure to act by the *Owner*, *Consultant* or *Contractor* shall constitute a waiver of any right or duty afforded any of them under the *Contract*, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

GC 1.4 ASSIGNMENT

1.4.1 Neither party to the *Contract* shall assign the *Contract* or a portion thereof without the written consent of the other, which consent shall not be unreasonably withheld.

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.1 AUTHORITY OF THE CONSULTANT

2.1.1 The *Consultant* will have authority to act on behalf of the *Owner* only to the extent provided in the *Contract Documents*, unless otherwise modified by written agreement as provided in paragraph 2.1.2.

2.1.2 The duties, responsibilities and limitations of authority of the *Consultant* as set forth in the *Contract Documents* shall be modified or extended only with the written consent of the *Owner*, the *Contractor* and the *Consultant*.

2.1.3 If the *Consultant*'s employment is terminated, the *Owner* shall immediately appoint or reappoint a *Consultant* against whom the *Contractor* makes no reasonable objection and whose status under the *Contract Documents* shall be that of the former *Consultant*.

GC 2.2 ROLE OF THE CONSULTANT

2.2.1 The *Consultant* will provide administration of the *Contract* as described in the *Contract Documents*.

2.2.2 The *Consultant* will visit the *Place of the Work* at intervals appropriate to the progress of construction to become familiar with the progress and quality of the work and to determine if the *Work* is proceeding in general conformity with the *Contract Documents*.

2.2.3 If the *Owner* and the *Consultant* agree, the *Consultant* will provide at the *Place of the Work*, one or more project representatives to assist in carrying out the *Consultant*'s responsibilities. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in writing to the *Contractor*.

2.2.4 The *Consultant* will promptly inform the *Owner* of the date of receipt of the *Contractor*'s applications for payment as provided in paragraph 5.3.1.1 of GC 5.3 – PROGRESS PAYMENT.

2.2.5 Based on the *Consultant*'s observations and evaluation of the *Contractor*'s applications for payment, the *Consultant* will determine the amounts owing to the *Contractor* under the *Contract* and will issue certificates for payment as provided in Article A-5 of the Agreement - PAYMENT, GC 5.3 - PROGRESS PAYMENT and GC 5.7 - FINAL PAYMENT.

2.2.6 The *Consultant* will not be responsible for and will not have control, charge or supervision of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs required in connection with the *Work* in accordance with the applicable construction safety legislation, other regulations or general construction practice. The *Consultant* will not be responsible for the *Contractor*'s failure to carry out the *Work* in accordance with the *Contract Documents*. The *Consultant* will not have control over, charge of or be responsible for the acts or omissions of the *Contractor*, *Subcontractors*, *Suppliers*, or their agents, employees, or any other persons performing portions of the *Work*.

2.2.7 Except with respect to GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER, the *Consultant* will be, in the first instance, the interpreter of the requirements of the *Contract Documents*.

2.2.8 Matters in question relating to the performance of the *Work* or the interpretation of the *Contract Documents* shall be initially referred in writing to the *Consultant* by the party raising the question for interpretations and findings and copied to the other party.

2.2.9 Interpretations and findings of the *Consultant* shall be consistent with the intent of the *Contract Documents*. In making such interpretations and findings the *Consultant* will not show partiality to either the *Owner* or the *Contractor*.

2.2.10 The *Consultant*'s interpretations and findings will be given in writing to the parties within a reasonable time.

2.2.11 With respect to claims for a change in *Contract Price*, the *Consultant* will make findings as set out in GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.

2.2.12 The *Consultant* will have authority to reject work which in the *Consultant*'s opinion does not conform to the requirements of the *Contract Documents*. Whenever the *Consultant* considers it necessary or advisable, the *Consultant* will have authority to require inspection or testing of work, whether or not such work is fabricated, installed or completed. However, neither the authority of the *Consultant* to act nor any decision either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the *Consultant* to the *Contractor*, *Subcontractors*, *Suppliers*, or their agents, employees, or other persons performing any of the *Work*.

2.2.13 During the progress of the *Work* the *Consultant* will furnish *Supplemental Instructions* to the *Contractor* with reasonable promptness or in accordance with a schedule for such instructions agreed to by the *Consultant* and the *Contractor.*

2.2.14 The *Consultant* will review and take appropriate action upon *Shop Drawings*, samples and other *Contractor*'s submittals, in accordance with the *Contract Documents*.

2.2.15 The *Consultant* will prepare *Change Orders* and *Change Directives* as provided in GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

2.2.16 The *Consultant* will conduct reviews of the *Work* to determine the date of *Substantial Performance of the Work* as provided in GC 5.4 - SUBSTANTIAL PERFORMANCE OF THE WORK.

2.2.17 All certificates issued by the *Consultant* will be to the best of the *Consultant*'s knowledge, information and belief. By issuing any certificate, the *Consultant* does not guarantee the *Work* is correct or complete.

2.2.18 The *Consultant* will receive and review written warranties and related documents required by the *Contract* and provided by the *Contractor* and will forward such warranties and documents to the *Owner* for the *Owner*'s acceptance.

GC 2.3 REVIEW AND INSPECTION OF THE WORK

2.3.1 The *Owner* and the *Consultant* shall have access to the *Work* at all times. The *Contractor* shall provide sufficient, safe and proper facilities at all times for the review of the *Work* by the *Consultant* and the inspection of the *Work* by authorized agencies. If parts of the *Work* are in preparation at locations other than the *Place of the Work*, the *Owner* and the *Consultant* shall be given access to such work whenever it is in progress.

2.3.2 If work is designated for tests, inspections or approvals in the *Contract Documents*, or by the *Consultant*'s instructions, or by the laws or ordinances of the *Place of the Work*, the *Contractor* shall give the *Consultant* reasonable notification of when the work will be ready for review and inspection. The *Contractor* shall arrange for and shall give the *Consultant* reasonable notification of the date and time of inspections by other authorities.

2.3.3 The *Contractor* shall furnish promptly to the *Consultant* two copies of certificates and inspection reports relating to the *Work.*

2.3.4 If the *Contractor* covers, or permits to be covered, work that has been designated for special tests, inspections or approvals before such special tests, inspections or approvals are made, given or completed, the *Contractor* shall, if so directed, uncover such work, have the inspections or tests satisfactorily completed, and make good covering work at the *Contractor*'s expense.

2.3.5 The *Consultant* may order any portion or portions of the *Work* to be examined to confirm that such work is in accordance with the requirements of the *Contract Documents*. If the work is not in accordance with the requirements of the *Contract Documents*, the *Contractor* shall correct the work and pay the cost of examination and correction. If the work is in accordance with the requirements of the *Contract Documents*, the *Owner* shall pay the cost of examination and restoration.

2.3.6 The *Contractor* shall pay the cost of making any test or inspection, including the cost of samples required for such test or inspection, if such test or inspection is designated in the *Contract Documents* to be performed by the *Contractor* or is designated by the laws or ordinances applicable to the *Place of the Work.*

2.3.7 The *Contractor* shall pay the cost of samples required for any test or inspection to be performed by the *Consultant* or the *Owner* if such test or inspection is designated in the *Contract Documents*.

GC 2.4 DEFECTIVE WORK

2.4.1 The *Contractor* shall promptly correct defective work that has been rejected by the *Consultant* as failing to conform to the *Contract Documents* whether or not the defective work has been incorporated in the *Work* and whether or not the defect is the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the *Contractor*.

2.4.2 The *Contractor* shall make good promptly other contractors' work destroyed or damaged by such corrections at the *Contractor*'s expense.

2.4.3 If in the opinion of the *Consultant* it is not expedient to correct defective work or work not performed as provided in the *Contract Documents*, the *Owner* may deduct from the amount otherwise due to the *Contractor* the difference in value between the work as performed and that called for by the *Contract Documents*. If the *Owner* and the *Contractor* do not agree on the difference in value, they shall refer the matter to the *Consultant* for a determination.

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

3.1.1 The *Contractor* shall have total control of the *Work* and shall effectively direct and supervise the *Work* so as to ensure conformity with the *Contract Documents*.

3.1.2 The *Contractor* shall be solely responsible for construction means, methods, techniques, sequences, and procedures and for co-ordinating the various parts of the *Work* under the *Contract*.

GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

3.2.1 The *Owner* reserves the right to award separate contracts in connection with other parts of the *Project* to other contractors and to perform work with own forces.

3.2.2 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Owner* shall:

- .1 provide for the co-ordination of the activities and work of other contractors and *Owner*'s own forces with the *Work* of the *Contract*;
- .2 assume overall responsibility for compliance with the applicable health and construction safety legislation at the *Place of the Work*;
- .3 enter into separate contracts with other contractors under conditions of contract which are compatible with the conditions of the *Contract*;
- .4 ensure that insurance coverage is provided to the same requirements as are called for in GC 11.1 - INSURANCE and co-ordinate such insurance with the insurance coverage of the *Contractor* as it affects the *Work*; and
- .5 take all reasonable precautions to avoid labour disputes or other disputes on the *Project* arising from the work of other contractors or the *Owner*'s own forces.

3.2.3 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Contractor* shall:

- .1 afford the *Owner* and other contractors reasonable opportunity to store their products and execute their work;
- .2 cooperate with other contractors and the *Owner* in reviewing their construction schedules; and
- .3 promptly report to the *Consultant* in writing any apparent deficiencies in the work of other contractors or of the *Owner*'s own forces, where such work affects the proper execution of any portion of the *Work*, prior to proceeding with that portion of the *Work*.

3.2.4 Where the *Contract Documents* identify work to be performed by other contractors or the *Owner*'s own forces, the *Contractor* shall co-ordinate and schedule the *Work* with the work of other contractors and the *Owner*'s own forces as specified in the *Contract Documents*.

3.2.5 Where a change in the *Work* is required as a result of the co-ordination and integration of the work of other contractors or *Owner*'s own forces with the *Work*, the changes shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

3.2.6 Disputes and other matters in question between the *Contractor* and other contractors shall be dealt with as provided in Part 8 of the General Conditions - DISPUTE RESOLUTION provided the other contractors have reciprocal obligations. The *Contractor* shall be deemed to have consented to arbitration of any dispute with any other contractor whose contract with the *Owner* contains a similar agreement to arbitrate.

GC 3.3 TEMPORARY WORK

3.3.1 The *Contractor* shall have the sole responsibility for the design, erection, operation, maintenance, and removal of *Temporary Work*.

3.3.2 The *Contractor* shall engage and pay for registered professional engineering personnel skilled in the appropriate disciplines to perform those functions referred to in paragraph 3.3.1 where required by law or by the *Contract Documents* and in all cases where such *Temporary Work* is of such a nature that professional engineering skill is required to produce safe and satisfactory results.

3.3.3 Notwithstanding the provisions of GC 3.1 - CONTROL OF THE WORK, paragraphs 3.3.1 and 3.3.2 or provisions to the contrary elsewhere in the *Contract Documents* where such *Contract Documents* include designs for *Temporary Work* or specify a method of construction in whole or in part, such designs or methods of construction shall be considered to be part of the design of the *Work* and the *Contractor* shall not be held responsible for that part of the design or the specified method of construction. The *Contractor* shall, however, be responsible for the execution of such design or specified method of construction in the same manner as for the execution of the *Work*.

GC 3.4 DOCUMENT REVIEW

3.4.1 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency or omission the *Contractor* may discover. Such review by the *Contractor* shall be to the best of the *Contractor*'s knowledge, information and belief and in making such review the *Contractor* does not assume any responsibility to the *Owner* or the *Consultant* for the accuracy of the review. The *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies or omissions in the *Contract Documents,* which the *Contractor* did not discover. If the *Contractor* does discover any error, inconsistency or omission in the *Contract Documents*, the *Contractor* shall not proceed with the work affected until the *Contractor* has received corrected or missing information from the *Consultant*.

GC 3.5 CONSTRUCTION SCHEDULE

3.5.1 The *Contractor* shall:

.1 prepare and submit to the *Owner* and the *Consultant* prior to the first application for payment, a construction schedule that indicates the timing of the major activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time*;

.2 monitor the progress of the *Work* relative to the construction schedule and update the schedule on a monthly basis or as stipulated by the *Contract Documents*; and

.3 advise the *Consultant* of any revisions required to the schedule as the result of extensions of the *Contract Time* as provided in Part 6 of the General Conditions - CHANGES IN THE WORK.

GC 3.6 SUPERVISION

3.6.1 The *Contractor* shall provide all necessary supervision and appoint a competent representative who shall be in attendance at the *Place of the Work* while work is being performed. The appointed representative shall not be changed except for valid reason.

3.6.2 The appointed representative shall represent the *Contractor* at the *Place of the Work*. Information and instructions provided by the *Consultant* to the *Contractor*'s appointed representative shall be deemed to have been received by the *Contractor*, except with respect to Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

GC 3.7 SUBCONTRACTORS AND SUPPLIERS

3.7.1 The *Contractor* shall preserve and protect the rights of the parties under the *Contract* with respect to work to be performed under subcontract, and shall:

.1 enter into contracts or written agreements with *Subcontractors* and *Suppliers* to require them to perform their work as provided in the *Contract Documents*;

.2 incorporate the terms and conditions of the *Contract Documents* into all contracts or written agreements with *Subcontractors* and *Suppliers*; and

.3 be as fully responsible to the *Owner* for acts and omissions of *Subcontractors*, *Suppliers* and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the *Contractor*.

3.7.2 The *Contractor* shall indicate in writing, if requested by the *Owner*, those *Subcontractors* or *Suppliers* whose bids have been received by the *Contractor* which the *Contractor* would be prepared to accept for the performance of a portion of the *Work*. Should the *Owner* not object before signing the *Contract*, the *Contractor* shall employ those *Subcontractors* or *Suppliers* so identified by the *Contractor* in writing for the performance of that portion of the *Work* to which their bid applies.

3.7.3 The *Owner* may, for reasonable cause, at any time before the *Owner* has signed the *Contract*, object to the use of a proposed *Subcontractor* or *Supplier* and require the *Contractor* to employ one of the other subcontract bidders.

3.7.4 If the *Owner* requires the *Contractor* to change a proposed *Subcontractor* or *Supplier*, the *Contract Price* and *Contract Time* shall be adjusted by the differences occasioned by such required change.

3.7.5 The *Contractor* shall not be required to employ as a *Subcontractor* or *Supplier*, a person or firm to which the *Contractor* may reasonably object.

3.7.6 The *Owner*, through the *Consultant*, may provide to a *Subcontractor* or *Supplier* information as to the percentage of the *Subcontractor*'s or *Supplier*'s work which has been certified for payment.

GC 3.8 LABOUR AND PRODUCTS

3.8.1 The *Contractor* shall provide and pay for labour, *Products*, tools, *Construction Equipment*, water, heat, light, power, transportation, and other facilities and services necessary for the performance of the *Work* in accordance with the *Contract*.

3.8.2 Unless otherwise specified in the *Contract Documents*, *Products* provided shall be new. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*.

3.8.3 The *Contractor* shall maintain good order and discipline among the *Contractor*'s employees engaged on the *Work* and shall not employ on the *Work* anyone not skilled in the tasks assigned.

GC 3.9 DOCUMENTS AT THE SITE

3.9.1 The *Contractor* shall keep one copy of current *Contract Documents*, submittals, reports, and records of meetings at the *Place of the Work*, in good order and available to the *Owner* and the *Consultant*.

GC 3.10 SHOP DRAWINGS

3.10.1 The *Contractor* shall provide *Shop Drawings* as required in the *Contract Documents*.

3.10.2 The *Contractor* shall provide *Shop Drawings* to the *Consultant* to review in orderly sequence and sufficiently in advance so as to cause no delay in the *Work* or in the work of other contractors.

3.10.3 Upon request of the *Contractor* or the *Consultant*, they shall jointly prepare a schedule of the dates for provision, review and return of *Shop Drawings*.

3.10.4 The *Contractor* shall provide *Shop Drawings* in the form specified, or if not specified, as directed by the *Consultant*.

3.10.5 *Shop Drawings* provided by the *Contractor* to the *Consultant* shall indicate by stamp, date and signature of the person responsible for the review that the *Contractor* has reviewed each one of them.

3.10.6 The *Consultant*'s review is for conformity to the design concept and for general arrangement only.

3.10.7 *Shop Drawings* which require approval of any legally constituted authority having jurisdiction shall be provided to such authority by the *Contractor* for approval.

3.10.8 The *Contractor* shall review all *Shop Drawings* before providing them to the *Consultant*. The *Contractor* represents by this review that:

.1 the *Contractor* has determined and verified all applicable field measurements, field construction conditions, *Product* requirements, catalogue numbers and similar data, or will do so, and

.2 the *Contractor* has checked and co-ordinated each *Shop Drawing* with the requirements of the *Work* and of the *Contract Documents*.

3.10.9 At the time of providing *Shop Drawings*, the *Contractor* shall expressly advise the *Consultant* in writing of any deviations in a *Shop Drawing* from the requirements of the *Contract Documents*. The *Consultant* shall indicate the acceptance or rejection of such deviation expressly in writing.

3.10.10 The *Consultant*'s review shall not relieve the *Contractor* of responsibility for errors or omissions in the *Shop Drawings* or for meeting all requirements of the *Contract Documents*.

3.10.11 The *Contractor* shall provide revised *Shop Drawings* to correct those which the *Consultant* rejects as inconsistent with the *Contract Documents*, unless otherwise directed by the *Consultant*. The *Contractor* shall notify the *Consultant* in writing of any revisions to the *Shop Drawings* other than those requested by the *Consultant*.

3.10.12 The *Consultant* will review and return *Shop Drawings* in accordance with the schedule agreed upon, or, in the absence of such schedule, with reasonable promptness so as to cause no delay in the performance of the *Work*.

GC 3.11 USE OF THE WORK

3.11.1 The *Contractor* shall confine *Construction Equipment*, *Temporary Work*, storage of *Products*, waste products and debris, and operations of employees and *Subcontractors* to limits indicated by laws, ordinances, permits, or the *Contract Documents* and shall not unreasonably encumber the *Place of the Work*.

3.11.2 The *Contractor* shall not load or permit to be loaded any part of the *Work* with a weight or force that will endanger the safety of the *Work*.

GC 3.12 CUTTING AND REMEDIAL WORK

3.12.1 The *Contractor* shall perform the cutting and remedial work required to make the affected parts of the *Work* come together properly.

3.12.2 The *Contractor* shall co-ordinate the *Work* to ensure that the cutting and remedial work is kept to a minimum.

3.12.3 Should the *Owner*, the *Consultant*, other contractors or anyone employed by them be responsible for ill-timed work necessitating cutting or remedial work to be performed, the cost of such cutting or remedial work shall be valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

3.12.4 Cutting and remedial work shall be performed by specialists familiar with the *Products* affected and shall be performed in a manner to neither damage nor endanger the *Work*.

GC 3.13 CLEANUP

3.13.1 The *Contractor* shall maintain the *Work* in a safe and tidy condition and free from the accumulation of waste products and debris, other than that caused by the *Owner*, other contractors or their employees.

3.13.2 Before applying for *Substantial Performance of the Work* as provided in GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK, the *Contractor* shall remove waste products and debris, other than that resulting from the work of the *Owner*, other contractors or their employees, and shall leave the *Place of the Work* clean and suitable for use or occupancy by the *Owner*. The *Contractor* shall remove products, tools, *Construction Equipment*, and *Temporary Work* not required for the performance of the remaining work.

3.13.3 Prior to application for the final payment, the *Contractor* shall remove any remaining products, tools, *Construction Equipment*, *Temporary Work*, and waste products and debris, other than those resulting from the work of the *Owner*, other contractors or their employees.

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

4.1.1 The *Contract Price* includes the cash allowances, if any, stated in the *Contract Documents*. The scope of work or costs included in such cash allowances shall be as described in the *Contract Documents*.

4.1.2 The *Contract Price*, and not the cash allowances, includes the *Contractor*'s overhead and profit in connection with such cash allowances.

4.1.3 Expenditures under cash allowances shall be authorized by the *Owner* through the *Consultant*.

4.1.4 Where the actual cost of the *Work* under any cash allowance exceeds the amount of the allowance, the *Contractor* shall be compensated for the excess incurred and substantiated plus an amount for overhead and profit on the excess as set out in the *Contract Documents*. Where the actual cost of the *Work* under any cash allowance is less than the amount of the allowance, the *Owner* shall be credited for the unexpended portion of the cash allowance, but not for the *Contractor*'s overhead and profit on such amount. Multiple cash allowances shall not be combined for the purpose of calculating the foregoing.

4.1.5 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the amount of each cash allowance and the actual cost of the work under that cash allowance.

4.1.6 The value of the work performed under a cash allowance is eligible to be included in progress payments.

4.1.7 The *Contractor* and the *Consultant* shall jointly prepare a schedule that shows when the *Consultant* and *Owner* must authorize ordering of items called for under cash allowances to avoid delaying the progress of the *Work*.

GC 4.2 CONTINGENCY ALLOWANCE

4.2.1 The *Contract Price* includes the contingency allowance, if any, stated in the *Contract Documents*.

4.2.2 The contingency allowance includes the *Contractor*'s overhead and profit in connection with such contingency allowance.

4.2.3 Expenditures under the contingency allowance shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

4.2.4 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the expenditures authorized under paragraph 4.2.3 and the contingency allowance.

PART 5 PAYMENT

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

5.1.1 The *Owner* shall, at the request of the *Contractor*, before signing the *Contract*, and promptly from time to time thereafter, furnish to the *Contractor* reasonable evidence that financial arrangements have been made to fulfill the *Owner*'s obligations under the *Contract*.

5.1.2 The *Owner* shall give the *Contractor Notice in Writing* of any material change in the *Owner*'s financial arrangements to fulfill the *Owner*'s obligations under the *Contract* during the performance of the *Contract*.

GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

5.2.1 Applications for payment on account as provided in Article A-5 of the Agreement - PAYMENT may be made monthly as the *Work* progresses.

5.2.2 Applications for payment shall be dated the last day of each payment period, which is the last day of the month or an alternative day of the month agreed in writing by the parties.

5.2.3 The amount claimed shall be for the value, proportionate to the amount of the *Contract*, of *Work* performed and *Products* delivered to the *Place of the Work* as of the last day of the payment period.

5.2.4 The *Contractor* shall submit to the *Consultant*, at least 15 calendar days before the first application for payment, a schedule of values for the parts of the *Work*, aggregating the total amount of the *Contract Price*, so as to facilitate evaluation of applications for payment.

5.2.5 The schedule of values shall be made out in such form and supported by such evidence as the *Consultant* may reasonably direct and when accepted by the *Consultant*, shall be used as the basis for applications for payment, unless it is found to be in error.

5.2.6 The *Contractor* shall include a statement based on the schedule of values with each application for payment.

5.2.7 Applications for payment for *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* shall be supported by such evidence as the *Consultant* may reasonably require to establish the value and delivery of the *Products*.

GC 5.3 PROGRESS PAYMENT

5.3.1 After receipt by the *Consultant* of an application for payment submitted by the *Contractor* in accordance with GC 5.2 - APPLICATIONS FOR PROGRESS PAYMENT:

.1 the *Consultant* will promptly inform the *Owner* of the date of receipt of the *Contractor*'s application for payment,

.2 the *Consultant* will issue to the *Owner* and copy to the *Contractor*, no later than 10 calendar days after the receipt of the application for payment, a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due. If the *Consultant* amends the application, the *Consultant* will promptly advise the *Contractor* in writing giving reasons for the amendment,

.3 the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement - PAYMENT on or before 20 calendar days after the later of:

- receipt by the *Consultant* of the application for payment, or
- the last day of the monthly payment period for which the application for payment is made.

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK

5.4.1 When the *Contractor* considers that the *Work* is substantially performed, or if permitted by the lien legislation applicable to the *Place of the Work* a designated portion thereof which the *Owner* agrees to accept separately is substantially performed, the *Contractor* shall, within one *Working Day*, deliver to the *Consultant* and to the *Owner* a comprehensive list of items to be completed or corrected, together with a written application for a review by the *Consultant* to establish *Substantial Performance of the Work* or substantial performance of the designated portion of the *Work*. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.

5.4.2 The *Consultant* will review the *Work* to verify the validity of the application and shall promptly, and in any event, no later than 20 calendar days after receipt of the *Contractor*'s list and application:

.1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or

.2 state the date of *Substantial Performance of the Work* or a designated portion of the *Work* in a certificate and issue a copy of that certificate to each of the *Owner* and the *Contractor*.

5.4.3 Immediately following the issuance of the certificate of *Substantial Performance of the Work*, the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable date for finishing the *Work*.

GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

5.5.1 After the issuance of the certificate of *Substantial Performance of the Work*, the *Contractor* shall:

.1 submit an application for payment of the holdback amount,

.2 submit CCDC 9A 'Statutory Declaration' to state that all accounts for labour, subcontracts, *Products*, *Construction Equipment*, and other indebtedness which may have been incurred by the *Contractor* in the *Substantial Performance of the Work* and for which the *Owner* might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute.

5.5.2 After the receipt of an application for payment from the *Contractor* and the statement as provided in paragraph 5.5.1, the *Consultant* will issue a certificate for payment of the holdback amount.

5.5.3 Where the holdback amount required by the applicable lien legislation has not been placed in a separate holdback account, the *Owner* shall, 10 calendar days prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.

5.5.4 In the common law jurisdictions, the holdback amount authorized by the certificate for payment of the holdback amount is due and payable on the first calendar day following the expiration of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*. Where lien legislation does not exist or apply, the holdback amount shall be due and payable in accordance with other legislation, industry practice or provisions which may be agreed to between the parties. The *Owner* may retain out of the holdback amount any sums required by law to satisfy any liens against the *Work* or, if permitted by the lien legislation applicable to the *Place of the Work*, other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

5.5.5 In the Province of Quebec, the holdback amount authorized by the certificate for payment of the holdback amount is due and payable 30 calendar days after the issuance of the certificate. The *Owner* may retain out of the holdback amount any sums required to satisfy any legal hypothecs that have been taken, or could be taken, against the *Work* or other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

GC 5.6 PROGRESSIVE RELEASE OF HOLDBACK

5.6.1 In the common law jurisdictions, where legislation permits and where, upon application by the *Contractor*, the *Consultant* has certified that the work of a *Subcontractor* or *Supplier* has been performed prior to *Substantial Performance of the Work*, the *Owner* shall pay the *Contractor* the holdback amount retained for such subcontract work, or the *Products* supplied by such *Supplier*, on the first calendar day following the expiration of the holdback period for such work stipulated in the lien legislation applicable to the *Place of the Work*. The *Owner* may retain out of the holdback amount any sums required by law to satisfy any liens against the *Work* or, if permitted by the lien legislation applicable to the *Place of the Work*, other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

5.6.2 In the Province of Quebec, where, upon application by the *Contractor*, the *Consultant* has certified that the work of a *Subcontractor* or *Supplier* has been performed prior to *Substantial Performance of the Work*, the *Owner* shall pay the *Contractor* the holdback amount retained for such subcontract work, or the *Products* supplied by such *Supplier*, no later than 30 calendar days after such certification by the *Consultant*. The *Owner* may retain out of the holdback amount any sums required to satisfy any legal hypothecs that have been taken, or could be taken, against the *Work* or other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

5.6.3 Notwithstanding the provisions of the preceding paragraphs, and notwithstanding the wording of such certificates, the *Contractor* shall ensure that such subcontract work or *Products* are protected pending the issuance of a final certificate for payment and be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when such certificates were issued.

GC 5.7 FINAL PAYMENT

5.7.1 When the *Contractor* considers that the *Work* is completed, the *Contractor* shall submit an application for final payment.

5.7.2 The *Consultant* will, no later than 10 calendar days after the receipt of an application from the *Contractor* for final payment, review the *Work* to verify the validity of the application and advise the *Contractor* in writing that the application is valid or give reasons why it is not valid.

5.7.3 When the *Consultant* finds the *Contractor*'s application for final payment valid, the *Consultant* will promptly issue a final certificate for payment.

5.7.4 Subject to the provision of paragraph 10.4.1 of GC 10.4 - WORKERS' COMPENSATION, and any lien legislation applicable to the *Place of the Work*, the *Owner* shall, no later than 5 calendar days after the issuance of a final certificate for payment, pay the *Contractor* as provided in Article A-5 of the Agreement - PAYMENT.

GC 5.8 WITHHOLDING OF PAYMENT

5.8.1 If because of climatic or other conditions reasonably beyond the control of the *Contractor*, there are items of work that cannot be performed, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* determines is sufficient and reasonable to cover the cost of performing such remaining work.

GC 5.9 NON-CONFORMING WORK

5.9.1 No payment by the *Owner* under the *Contract* nor partial or entire use or occupancy of the *Work* by the *Owner* shall constitute an acceptance of any portion of the *Work* or *Products* which are not in accordance with the requirements of the *Contract Documents*.

PART 6 CHANGES IN THE WORK

GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

6.1.1 The *Owner*, through the *Consultant*, without invalidating the *Contract*, may make:

- .1 changes in the *Work* consisting of additions, deletions or other revisions to the *Work* by *Change Order* or *Change Directive*, and
- .2 changes to the *Contract Time* for the *Work*, or any part thereof, by *Change Order*.

6.1.2 The *Contractor* shall not perform a change in the *Work* without a *Change Order* or a *Change Directive*.

GC 6.2 CHANGE ORDER

6.2.1 When a change in the *Work* is proposed or required, the *Consultant* will provide the *Contractor* with a written description of the proposed change in the *Work*. The *Contractor* shall promptly present, in a form acceptable to the *Consultant*, a method of adjustment or an amount of adjustment for the *Contract Price*, if any, and the adjustment in the *Contract Time*, if any, for the proposed change in the *Work*.

6.2.2 When the *Owner* and *Contractor* agree to the adjustments in the *Contract Price* and *Contract Time* or to the method to be used to determine the adjustments, such agreement shall be effective immediately and shall be recorded in a *Change Order*. The value of the work performed as the result of a *Change Order* shall be included in the application for progress payment.

GC 6.3 CHANGE DIRECTIVE

6.3.1 If the *Owner* requires the *Contractor* to proceed with a change in the *Work* prior to the *Owner* and the *Contractor* agreeing upon the corresponding adjustment in *Contract Price* and *Contract Time*, the *Owner*, through the *Consultant*, shall issue a *Change Directive*.

6.3.2 A *Change Directive* shall only be used to direct a change in the *Work* which is within the general scope of the *Contract Documents*.

6.3.3 A *Change Directive* shall not be used to direct a change in the *Contract Time* only.

6.3.4 Upon receipt of a *Change Directive*, the *Contractor* shall proceed promptly with the change in the *Work*.

6.3.5 For the purpose of valuing *Change Directives*, changes in the *Work* that are not substitutions or otherwise related to each other shall not be grouped together in the same *Change Directive*.

6.3.6 The adjustment in the *Contract Price* for a change carried out by way of a *Change Directive* shall be determined on the basis of the cost of the *Contractor*'s actual expenditures and savings attributable to the *Change Directive*, valued in accordance with paragraph 6.3.7 and as follows:

.1 If the change results in a net increase in the *Contractor*'s cost, the *Contract Price* shall be increased by the amount of the net increase in the *Contractor*'s cost, plus the *Contractor*'s percentage fee on such net increase.

.2 If the change results in a net decrease in the *Contractor*'s cost, the *Contract Price* shall be decreased by the amount of the net decrease in the *Contractor*'s cost, without adjustment for the *Contractor*'s percentage fee.

.3 The *Contractor*'s fee shall be as specified in the *Contract Documents* or as otherwise agreed by the parties.

6.3.7 The cost of performing the work attributable to the *Change Directive* shall be limited to the actual cost of the following:

.1 salaries, wages and benefits paid to personnel in the direct employ of the *Contractor* under a salary or wage schedule agreed upon by the *Owner* and the *Contractor*, or in the absence of such a schedule, actual salaries, wages and benefits paid under applicable bargaining agreement, and in the absence of a salary or wage schedule and bargaining agreement, actual salaries, wages and benefits paid by the *Contractor*, for personnel

(1) stationed at the *Contractor*'s field office, in whatever capacity employed;
(2) engaged in expediting the production or transportation of material or equipment, at shops or on the road;
(3) engaged in the preparation or review of *Shop Drawings*, fabrication drawings, and coordination drawings; or
(4) engaged in the processing of changes in the *Work*.

.2 contributions, assessments or taxes incurred for such items as employment insurance, provincial or territorial health insurance, workers' compensation, and Canada or Quebec Pension Plan, insofar as such cost is based on wages, salaries or other remuneration paid to employees of the *Contractor* and included in the cost of the *Work* as provided in paragraph 6.3.7.1;

.3 travel and subsistence expenses of the *Contractor*'s personnel described in paragraph 6.3.7.1;

.4 all *Products* including cost of transportation thereof;

.5 materials, supplies, *Construction Equipment*, *Temporary Work*, and hand tools not owned by the workers, including transportation and maintenance thereof, which are consumed in the performance of the *Work*; and cost less salvage value on such items used but not consumed, which remain the property of the *Contractor*;

.6 all tools and *Construction Equipment*, exclusive of hand tools used in the performance of the *Work*, whether rented from or provided by the *Contractor* or others, including installation, minor repairs and replacements, dismantling, removal, transportation, and delivery cost thereof;

.7 all equipment and services required for the *Contractor*'s field office;

.8 deposits lost;

.9 the amounts of all subcontracts;

.10 quality assurance such as independent inspection and testing services;

.11 charges levied by authorities having jurisdiction at the *Place of the Work*;

.12 royalties, patent licence fees and damages for infringement of patents and cost of defending suits therefor subject always to the *Contractor*'s obligations to indemnify the *Owner* as provided in paragraph 10.3.1 of GC 10.3 - PATENT FEES;

.13 any adjustment in premiums for all bonds and insurance which the *Contractor* is required, by the *Contract Documents*, to purchase and maintain;

.14 any adjustment in taxes, other than *Value Added Taxes*, and duties for which the *Contractor* is liable;

.15 charges for long distance telephone and facsimile communications, courier services, expressage, and petty cash items incurred in relation to the performance of the *Work*;

.16 removal and disposal of waste products and debris; and

.17 safety measures and requirements.

6.3.8 Notwithstanding any other provisions contained in the General Conditions of the *Contract*, it is the intention of the parties that the cost of any item under any cost element referred to in paragraph 6.3.7 shall cover and include any and all costs or liabilities attributable to the *Change Directive* other than those which are the result of or occasioned by any failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor*'s attention to the *Work*. Any cost due to failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor*'s attention to the *Work* shall be borne by the *Contractor*.

6.3.9 The *Contractor* shall keep full and detailed accounts and records necessary for the documentation of the cost of performing the *Work* attributable to the *Change Directive* and shall provide the *Consultant* with copies thereof when requested.

6.3.10 For the purpose of valuing *Change Directives*, the *Owner* shall be afforded reasonable access to all of the *Contractor*'s pertinent documents related to the cost of performing the *Work* attributable to the *Change Directive*.

6.3.11 Pending determination of the final amount of a *Change Directive*, the undisputed value of the *Work* performed as the result of a *Change Directive* is eligible to be included in progress payments.

6.3.12 If the *Owner* and the *Contractor* do not agree on the proposed adjustment in the *Contract Time* attributable to the change in the *Work*, or the method of determining it, the adjustment shall be referred to the *Consultant* for determination.

6.3.13 When the *Owner* and the *Contractor* reach agreement on the adjustment to the *Contract Price* and to the *Contract Time*, this agreement shall be recorded in a *Change Order*.

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

6.4.1 If the *Owner* or the *Contractor* discover conditions at the *Place of the Work* which are:

.1 subsurface or otherwise concealed physical conditions which existed before the commencement of the *Work* which differ materially from those indicated in the *Contract Documents*; or

.2 physical conditions, other than conditions due to weather, that are of a nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the *Contract Documents*,

then the observing party shall give *Notice in Writing* to the other party of such conditions before they are disturbed and in no event later than 5 *Working Days* after first observance of the conditions.

6.4.2 The *Consultant* will promptly investigate such conditions and make a finding. If the finding is that the conditions differ materially and this would cause an increase or decrease in the *Contractor*'s cost or time to perform the *Work*, the *Consultant*, with the *Owner*'s approval, will issue appropriate instructions for a change in the *Work* as provided in GC 6.2 - CHANGE ORDER or GC 6.3 - CHANGE DIRECTIVE.

6.4.3 If the *Consultant* finds that the conditions at the *Place of the Work* are not materially different or that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* will report the reasons for this finding to the *Owner* and the *Contractor* in writing.

6.4.4 If such concealed or unknown conditions relate to toxic and hazardous substances and materials, artifacts and fossils, or mould, the parties will be governed by the provisions of GC 9.2 - TOXIC AND HAZARDOUS SUBSTANCES, GC 9.3 - ARTIFACTS AND FOSSILS and GC 9.5 – MOULD.

GC 6.5 DELAYS

6.5.1 If the *Contractor* is delayed in the performance of the *Work* by an action or omission of the *Owner*, *Consultant* or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the *Contract Documents*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.

6.5.2 If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or any person employed or engaged by the *Contractor* directly or indirectly, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.

6.5.3 If the *Contractor* is delayed in the performance of the *Work* by:

- .1 labour disputes, strikes, lock-outs (including lock-outs decreed or recommended for its members by a recognized contractors' association, of which the *Contractor* is a member or to which the *Contractor* is otherwise bound),
- .2 fire, unusual delay by common carriers or unavoidable casualties,
- .3 abnormally adverse weather conditions, or
- .4 any cause beyond the *Contractor*'s control other than one resulting from a default or breach of *Contract* by the *Contractor*,

then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The extension of time shall not be less than the time lost as the result of the event causing the delay, unless the *Contractor* agrees to a shorter extension. The *Contractor* shall not be entitled to payment for costs incurred by such delays unless such delays result from actions by the *Owner*, *Consultant* or anyone employed or engaged by them directly or indirectly.

6.5.4 No extension shall be made for delay unless *Notice in Writing* of the cause of delay is given to the *Consultant* not later than 10 *Working Days* after the commencement of the delay. In the case of a continuing cause of delay only one *Notice in Writing* shall be necessary.

6.5.5 If no schedule is made under paragraph 2.2.13 of GC 2.2 - ROLE OF THE CONSULTANT, then no request for extension shall be made because of failure of the *Consultant* to furnish instructions until 10 *Working Days* after demand for such instructions has been made.

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

6.6.1 If the *Contractor* intends to make a claim for an increase to the *Contract Price*, or if the *Owner* intends to make a claim against the *Contractor* for a credit to the *Contract Price*, the party that intends to make the claim shall give timely *Notice in Writing* of intent to claim to the other party and to the *Consultant*.

6.6.2 Upon commencement of the event or series of events giving rise to a claim, the party intending to make the claim shall:

- .1 take all reasonable measures to mitigate any loss or expense which may be incurred as a result of such event or series of events, and
- .2 keep such records as may be necessary to support the claim.

6.6.3 The party making the claim shall submit within a reasonable time to the *Consultant* a detailed account of the amount claimed and the grounds upon which the claim is based.

6.6.4 Where the event or series of events giving rise to the claim has a continuing effect, the detailed account submitted under paragraph 6.6.3 shall be considered to be an interim account and the party making the claim shall, at such intervals as the *Consultant* may reasonably require, submit further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.

6.6.5 The *Consultant's* findings, with respect to a claim made by either party, will be given by *Notice in Writing* to both parties within 30 *Working Days* after receipt of the claim by the *Consultant*, or within such other time period as may be agreed by the parties.

6.6.6 If such finding is not acceptable to either party, the claim shall be settled in accordance with Part 8 of the General Conditions - DISPUTE RESOLUTION.

PART 7 DEFAULT NOTICE

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

7.1.1 If the *Contractor* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Contractor*'s insolvency, or if a receiver is appointed because of the *Contractor*'s insolvency, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, terminate the *Contractor*'s right to continue with the *Work*, by giving the *Contractor* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.

7.1.2 If the *Contractor* neglects to prosecute the *Work* properly or otherwise fails to comply with the requirements of the *Contract* to a substantial degree and if the *Consultant* has given a written statement to the *Owner* and *Contractor* that sufficient cause exists to justify such action, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, give the *Contractor Notice in Writing* that the *Contractor* is in default of the *Contractor*'s contractual obligations and instruct the *Contractor* to correct the default in the 5 *Working Days* immediately following the receipt of such *Notice in Writing*.

7.1.3 If the default cannot be corrected in the 5 *Working Days* specified or in such other time period as may be subsequently agreed in writing by the parties, the *Contractor* shall be in compliance with the *Owner*'s instructions if the *Contractor*:
- .1 commences the correction of the default within the specified time, and
- .2 provides the *Owner* with an acceptable schedule for such correction, and
- .3 corrects the default in accordance with the *Contract* terms and with such schedule.

7.1.4 If the *Contractor* fails to correct the default in the time specified or in such other time period as may be subsequently agreed in writing by the parties, without prejudice to any other right or remedy the *Owner* may have, the *Owner* may:
- .1 correct such default and deduct the cost thereof from any payment then or thereafter due the *Contractor* provided the *Consultant* has certified such cost to the *Owner* and the *Contractor*, or
- .2 terminate the *Contractor*'s right to continue with the *Work* in whole or in part or terminate the *Contract*.

7.1.5 If the *Owner* terminates the *Contractor*'s right to continue with the *Work* as provided in paragraphs 7.1.1 and 7.1.4, the *Owner* shall be entitled to:
- .1 take possession of the *Work* and *Products* at the *Place of the Work*; subject to the rights of third parties, utilize the *Construction Equipment* at the *Place of the Work*; finish the *Work* by whatever method the *Owner* may consider expedient, but without undue delay or expense, and
- .2 withhold further payment to the *Contractor* until a final certificate for payment is issued, and
- .3 charge the *Contractor* the amount by which the full cost of finishing the *Work* as certified by the *Consultant*, including compensation to the *Consultant* for the *Consultant*'s additional services and a reasonable allowance as determined by the *Consultant* to cover the cost of corrections to work performed by the *Contractor* that may be required under GC 12.3 - WARRANTY, exceeds the unpaid balance of the *Contract Price*; however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference, and
- .4 on expiry of the warranty period, charge the *Contractor* the amount by which the cost of corrections to the *Contractor*'s work under GC 12.3 - WARRANTY exceeds the allowance provided for such corrections, or if the cost of such corrections is less than the allowance, pay the *Contractor* the difference.

7.1.6 The *Contractor*'s obligation under the *Contract* as to quality, correction and warranty of the work performed by the *Contractor* up to the time of termination shall continue after such termination of the *Contract*.

GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

7.2.1 If the *Owner* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Owner*'s insolvency, or if a receiver is appointed because of the *Owner*'s insolvency, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.

7.2.2 If the *Work* is suspended or otherwise delayed for a period of 20 *Working Days* or more under an order of a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or of anyone directly or indirectly employed or engaged by the *Contractor*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner Notice in Writing* to that effect.

7.2.3 The *Contractor* may give *Notice in Writing* to the *Owner*, with a copy to the *Consultant*, that the *Owner* is in default of the *Owner*'s contractual obligations if:
- .1 the *Owner* fails to furnish, when so requested by the *Contractor*, reasonable evidence that financial arrangements have been made to fulfill the *Owner*'s obligations under the *Contract*, or
- .2 the *Consultant* fails to issue a certificate as provided in GC 5.3 - PROGRESS PAYMENT, or
- .3 the *Owner* fails to pay the *Contractor* when due the amounts certified by the *Consultant* or awarded by arbitration or court, or
- .4 the *Owner* violates the requirements of the *Contract* to a substantial degree and the *Consultant*, except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER, confirms by written statement to the *Contractor* that sufficient cause exists.

7.2.4 The *Contractor*'s *Notice in Writing* to the *Owner* provided under paragraph 7.2.3 shall advise that if the default is not corrected within 5 *Working Days* following the receipt of the *Notice in Writing*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, suspend the *Work* or terminate the *Contract*.

7.2.5 If the *Contractor* terminates the *Contract* under the conditions set out above, the *Contractor* shall be entitled to be paid for all work performed including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*.

PART 8 DISPUTE RESOLUTION

GC 8.1 AUTHORITY OF THE CONSULTANT

8.1.1 Differences between the parties to the *Contract* as to the interpretation, application or administration of the *Contract* or any failure to agree where agreement between the parties is called for, herein collectively called disputes, which are not resolved in the first instance by findings of the *Consultant* as provided in GC 2.2 - ROLE OF THE CONSULTANT, shall be settled in accordance with the requirements of Part 8 of the General Conditions - DISPUTE RESOLUTION.

8.1.2 If a dispute arises under the *Contract* in respect of a matter in which the *Consultant* has no authority under the *Contract* to make a finding, the procedures set out in paragraph 8.1.3 and paragraphs 8.2.3 to 8.2.8 of GC 8.2 - NEGOTIATION, MEDIATION AND ARBITRATION, and in GC 8.3 - RETENTION OF RIGHTS apply to that dispute with the necessary changes to detail as may be required.

8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instructions as in the *Consultant*'s opinion are necessary for the proper performance of the *Work* and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by so doing neither party will jeopardize any claim the party may have. If it is subsequently determined that such instructions were in error or at variance with the *Contract Documents*, the *Owner* shall pay the *Contractor* costs incurred by the *Contractor* in carrying out such instructions which the *Contractor* was required to do beyond what the *Contract Documents* correctly understood and interpreted would have required, including costs resulting from interruption of the *Work*.

GC 8.2 NEGOTIATION, MEDIATION AND ARBITRATION

8.2.1 In accordance with the Rules for Mediation of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing, the parties shall appoint a Project Mediator

.1 within 20 *Working Days* after the *Contract* was awarded, or
.2 if the parties neglected to make an appointment within the 20 *Working Days*, within 10 *Working Days* after either party by *Notice in Writing* requests that the Project Mediator be appointed.

8.2.2 A party shall be conclusively deemed to have accepted a finding of the *Consultant* under GC 2.2 - ROLE OF THE CONSULTANT and to have expressly waived and released the other party from any claims in respect of the particular matter dealt with in that finding unless, within 15 *Working Days* after receipt of that finding, the party sends a *Notice in Writing* of dispute to the other party and to the *Consultant*, which contains the particulars of the matter in dispute and the relevant provisions of the *Contract Documents*. The responding party shall send a *Notice in Writing* of reply to the dispute within 10 *Working Days* after receipt of such *Notice in Writing* setting out particulars of this response and any relevant provisions of the *Contract Documents*.

8.2.3 The parties shall make all reasonable efforts to resolve their dispute by amicable negotiations and agree to provide, without prejudice, frank, candid and timely disclosure of relevant facts, information and documents to facilitate these negotiations.

8.2.4 After a period of 10 *Working Days* following receipt of a responding party's *Notice in Writing* of reply under paragraph 8.2.2, the parties shall request the Project Mediator to assist the parties to reach agreement on any unresolved dispute. The mediated negotiations shall be conducted in accordance with the Rules for Mediation of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing.

8.2.5 If the dispute has not been resolved within 10 *Working Days* after the Project Mediator was requested under paragraph 8.2.4 or within such further period agreed by the parties, the Project Mediator shall terminate the mediated negotiations by giving *Notice in Writing* to the *Owner*, the *Contractor* and the *Consultant*.

8.2.6 By giving a *Notice in Writing* to the other party and the *Consultant*, not later than 10 *Working Days* after the date of termination of the mediated negotiations under paragraph 8.2.5, either party may refer the dispute to be finally resolved by arbitration under the Rules for Arbitration of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing. The arbitration shall be conducted in the jurisdiction of the *Place of the Work*.

8.2.7 On expiration of the 10 *Working Days*, the arbitration agreement under paragraph 8.2.6 is not binding on the parties and, if a *Notice in Writing* is not given under paragraph 8.2.6 within the required time, the parties may refer the unresolved dispute to the courts or to any other form of dispute resolution, including arbitration, which they have agreed to use.

8.2.8 If neither party, by *Notice in Writing*, given within 10 *Working Days* of the date of *Notice in Writing* requesting arbitration in paragraph 8.2.6, requires that a dispute be arbitrated immediately, all disputes referred to arbitration as provided in paragraph 8.2.6 shall be

.1 held in abeyance until
  (1) *Substantial Performance of the Work*,
  (2) the *Contract* has been terminated, or
  (3) the *Contractor* has abandoned the *Work*,
  whichever is earlier; and
.2 consolidated into a single arbitration under the rules governing the arbitration under paragraph 8.2.6.

GC 8.3 RETENTION OF RIGHTS

8.3.1 It is agreed that no act by either party shall be construed as a renunciation or waiver of any rights or recourses, provided the party has given the *Notice in Writing* required under Part 8 of the General Conditions - DISPUTE RESOLUTION and has carried out the instructions as provided in paragraph 8.1.3 of GC 8.1 – AUTHORITY OF THE CONSULTANT.

8.3.2 Nothing in Part 8 of the General Conditions - DISPUTE RESOLUTION shall be construed in any way to limit a party from asserting any statutory right to a lien under applicable lien legislation of the jurisdiction of the *Place of the Work* and the assertion of such right by initiating judicial proceedings is not to be construed as a waiver of any right that party may have under paragraph 8.2.6 of GC 8.2 – NEGOTIATION, MEDIATION AND ARBITRATION to proceed by way of arbitration to adjudicate the merits of the claim upon which such a lien is based.

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

9.1.1 The *Contractor* shall protect the *Work* and the *Owner*'s property and property adjacent to the *Place of the Work* from damage which may arise as the result of the *Contractor*'s operations under the *Contract*, and shall be responsible for such damage, except damage which occurs as the result of:

.1 errors in the *Contract Documents*;
.2 acts or omissions by the *Owner*, the *Consultant*, other contractors, their agents and employees.

9.1.2 Before commencing any work, the *Contractor* shall determine the location of all underground utilities and structures indicated in the *Contract Documents* or that are reasonably apparent in an inspection of the *Place of the Work*.

9.1.3 Should the *Contractor* in the performance of the *Contract* damage the *Work*, the *Owner*'s property or property adjacent to the *Place of the Work*, the *Contractor* shall be responsible for making good such damage at the *Contractor*'s expense.

9.1.4 Should damage occur to the *Work* or *Owner*'s property for which the *Contractor* is not responsible, as provided in paragraph 9.1.1, the *Contractor* shall make good such damage to the *Work* and, if the *Owner* so directs, to the *Owner*'s property. The *Contract Price* and *Contract Time* shall be adjusted as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

9.2.1 For the purposes of applicable legislation related to toxic and hazardous substances, the *Owner* shall be deemed to have control and management of the *Place of the Work* with respect to existing conditions.

9.2.2 Prior to the *Contractor* commencing the *Work*, the *Owner* shall,

.1 take all reasonable steps to determine whether any toxic or hazardous substances are present at the *Place of the Work*, and
.2 provide the *Consultant* and the *Contractor* with a written list of any such substances that are known to exist and their locations.

9.2.3 The *Owner* shall take all reasonable steps to ensure that no person's exposure to any toxic or hazardous substances exceeds the time weighted levels prescribed by applicable legislation at the *Place of the Work* and that no property is damaged or destroyed as a result of exposure to, or the presence of, toxic or hazardous substances which were at the *Place of the Work* prior to the *Contractor* commencing the *Work*.

9.2.4 Unless the *Contract* expressly provides otherwise, the *Owner* shall be responsible for taking all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to dispose of, store or otherwise render harmless toxic or hazardous substances which were present at the *Place of the Work* prior to the *Contractor* commencing the *Work*.

9.2.5 If the *Contractor*

.1 encounters toxic or hazardous substances at the *Place of the Work*, or

.2 has reasonable grounds to believe that toxic or hazardous substances are present at the *Place of the Work*,

which were not brought to the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible and which were not disclosed by the *Owner* or which were disclosed but have not been dealt with as required under paragraph 9.2.4, the *Contractor* shall

.3 take all reasonable steps, including stopping the *Work*, to ensure that no person's exposure to any toxic or hazardous substances exceeds any applicable time weighted levels prescribed by applicable legislation at the *Place of the Work*, and

.4 immediately report the circumstances to the *Consultant* and the *Owner* in writing.

9.2.6 If the *Owner* and *Contractor* do not agree on the existence, significance of, or whether the toxic or hazardous substances were brought onto the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and the *Contractor*.

9.2.7 If the *Owner* and *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were not brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall promptly at the *Owner's* own expense:

.1 take all steps as required under paragraph 9.2.4;

.2 reimburse the *Contractor* for the costs of all steps taken pursuant to paragraph 9.2.5;

.3 extend the *Contract* time for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in 9.2.6 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay; and

.4 indemnify the *Contractor* as required by GC 12.1 - INDEMNIFICATION.

9.2.8 If the *Owner* and *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Contractor* shall promptly at the *Contractor's* own expense:

.1 take all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to safely remove and dispose the toxic or hazardous substances;

.2 make good any damage to the *Work*, the *Owner*'s property or property adjacent to the place of the *Work* as provided in paragraph 9.1.3 of GC 9.1 – PROTECTION OF WORK AND PROPERTY;

.3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.2.6; and

.4 indemnify the Owner as required by GC 12.1 - INDEMNIFICATION.

9.2.9 If either party does not accept the expert's findings under paragraph 9.2.6, the disagreement shall be settled in accordance with Part 8 of the General Conditions - Dispute Resolution. If such disagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraph 9.2.7 or 9.2.8 it being understood that by so doing, neither party will jeopardize any claim that party may have to be reimbursed as provided by GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.

GC 9.3 ARTIFACTS AND FOSSILS

9.3.1 Fossils, coins, articles of value or antiquity, structures and other remains or things of scientific or historic interest discovered at the *Place or Work* shall, as between the *Owner* and the *Contractor*, be deemed to be the absolute property of the *Owner*.

9.3.2 The *Contractor* shall take all reasonable precautions to prevent removal or damage to discoveries as identified in paragraph 9.3.1, and shall advise the *Consultant* upon discovery of such items.

9.3.3 The *Consultant* will investigate the impact on the *Work* of the discoveries identified in paragraph 9.3.1. If conditions are found that would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Consultant*, with the *Owner's* approval, will issue appropriate instructions for a change in the *Work* as provided in GC 6.2 - CHANGE ORDER or GC 6.3 CHANGE DIRECTIVE.

GC 9.4 CONSTRUCTION SAFETY

9.4.1 Subject to paragraph 3.2.2.2 of GC 3.2 - CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, the *Contractor* shall be solely responsible for construction safety at the *Place of the Work* and for compliance with the rules, regulations and practices required by the applicable construction health and safety legislation and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the *Work*.

GC 9.5 MOULD

9.5.1 If the *Contractor* or *Owner* observes or reasonably suspects the presence of mould at the *Place of the Work*, the remediation of which is not expressly part of the *Work*,

.1 the observing party shall promptly report the circumstances to the other party in writing, and

.2 the *Contractor* shall promptly take all reasonable steps, including stopping the *Work* if necessary, to ensure that no person suffers injury, sickness or death and that no property is damaged as a result of exposure to or the presence of the mould, and

.3 if the *Owner* and *Contractor* do not agree on the existence, significance or cause of the mould or as to what steps need be taken to deal with it, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and *Contractor*.

9.5.2 If the *Owner* and *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was caused by the *Contractor*'s operations under the *Contract*, the *Contractor* shall promptly, at the *Contractor*'s own expense:

.1 take all reasonable and necessary steps to safely remediate or dispose of the mould, and

.2 make good any damage to the *Work*, the *Owner*'s property or property adjacent to the *Place of the Work* as provided in paragraph 9.1.3 of GC 9.1 - PROTECTION OF WORK AND PROPERTY, and

.3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.5.1.3, and

.4 indemnify the *Owner* as required by GC 12.1 - INDEMNIFICATION.

9.5.3 If the *Owner* and *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was not caused by the *Contractor*'s operations under the *Contract*, the *Owner* shall promptly, at the *Owner*'s own expense:

.1 take all reasonable and necessary steps to safely remediate or dispose of the mould, and

.2 reimburse the *Contractor* for the cost of taking the steps under paragraph 9.5.1.2 and making good any damage to the *Work* as provided in paragraph 9.1.4 of GC 9.1 - PROTECTION OF WORK AND PROPERTY, and

.3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in paragraph 9.5.1.3 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay, and

.4 indemnify the *Contractor* as required by GC 12.1 - INDEMNIFICATION.

9.5.4 If either party does not accept the expert's finding under paragraph 9.5.1.3, the disagreement shall be settled in accordance with Part 8 of the General Conditions - DISPUTE RESOLUTION. If such desagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraphs 9.5.2 or 9.5.3, it being understood that by so doing neither party will jeopardize any claim the party may have to be reimbursed as provided by GC 9.5 - MOULD.

PART 10 GOVERNING REGULATIONS

GC 10.1 TAXES AND DUTIES

10.1.1 The *Contract Price* shall include all taxes and customs duties in effect at the time of the bid closing except for *Value Added Taxes* payable by the *Owner* to the *Contractor* as stipulated in Article A-4 of the Agreement - CONTRACT PRICE.

10.1.2 Any increase or decrease in costs to the *Contractor* due to changes in such included taxes and duties after the time of the bid closing shall increase or decrease the *Contract Price* accordingly.

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

10.2.1 The laws of the *Place of the Work* shall govern the *Work*.

10.2.2 The *Owner* shall obtain and pay for development approvals, building permit, permanent easements, rights of servitude, and all other necessary approvals and permits, except for the permits and fees referred to in paragraph 10.2.3 or for which the *Contract Documents* specify as the responsibility of the *Contractor*.

10.2.3 The *Contractor* shall be responsible for the procurement of permits, licences, inspections, and certificates, which are necessary for the performance of the *Work* and customarily obtained by contractors in the jurisdiction of the *Place of the Work* after the issuance of the building permit. The *Contract Price* includes the cost of these permits, licences, inspections, and certificates, and their procurement.

10.2.4 The *Contractor* shall give the required notices and comply with the laws, ordinances, rules, regulations, or codes which are or become in force during the performance of the *Work* and which relate to the *Work*, to the preservation of the public health, and to construction safety.

10.2.5 The *Contractor* shall not be responsible for verifying that the *Contract Documents* are in compliance with the applicable laws, ordinances, rules, regulations, or codes relating to the *Work*. If the *Contract Documents* are at variance therewith, or if, subsequent to the time of bid closing, changes are made to the applicable laws, ordinances, rules, regulations, or codes which require modification to the *Contract Documents*, the *Contractor* shall advise the *Consultant* in writing requesting direction immediately upon such variance or change becoming known. The *Consultant* will make the changes required to the *Contract Documents* as provided in GC 6.1 - OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

10.2.6 If the *Contractor* fails to advise the *Consultant* in writing; and fails to obtain direction as required in paragraph 10.2.5; and performs work knowing it to be contrary to any laws, ordinances, rules, regulations, or codes; the *Contractor* shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations, or codes.

10.2.7 If, subsequent to the time of bid closing, changes are made to applicable laws, ordinances, rules, regulations, or codes of authorities having jurisdiction which affect the cost of the *Work*, either party may submit a claim in accordance with the requirements of GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.

GC 10.3 PATENT FEES

10.3.1 The *Contractor* shall pay the royalties and patent licence fees required for the performance of the *Contract*. The *Contractor* shall hold the *Owner* harmless from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention by the *Contractor* or anyone for whose acts the *Contractor* may be liable.

10.3.2 The *Owner* shall hold the *Contractor* harmless against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention in executing anything for the purpose of the *Contract*, the model, plan or design of which was supplied to the *Contractor* as part of the *Contract Documents*.

GC 10.4 WORKERS' COMPENSATION

10.4.1 Prior to commencing the *Work*, again with the *Contractor*'s application for payment of the holdback amount following *Substantial Performance of the Work* and again with the *Contractor*'s application for final payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation at the *Place of the Work*, including payments due thereunder.

10.4.2 At any time during the term of the *Contract*, when requested by the *Owner*, the *Contractor* shall provide such evidence of compliance by the *Contractor* and *Subcontractors*.

PART 11 INSURANCE AND CONTRACT SECURITY

GC 11.1 INSURANCE

11.1.1 Without restricting the generality of GC 12.1 - INDEMNIFICATION, the *Contractor* shall provide, maintain and pay for the following insurance coverages, the minimum requirements of which are specified in CCDC 41 – CCDC Insurance Requirements in effect at the time of bid closing except as hereinafter provided:

.1 General liability insurance in the name of the *Contractor* and include, or in the case of a single, blanket policy, be endorsed to name, the *Owner* and the *Consultant* as insureds but only with respect to liability, other than legal liability arising out of their sole negligence, arising out of the operations of the *Contractor* with regard to the *Work*. General liability insurance shall be maintained from the date of commencement of the *Work* until one year from the date of *Substantial Performance of the Work*. Liability coverage shall be provided for completed operations hazards from the date of *Substantial Performance of the Work*, as set out in the certificate of *Substantial Performance of the Work*, on an ongoing basis for a period of 6 years following *Substantial Performance of the Work*.

.2 Automobile Liability Insurance from the date of commencement of the *Work* until one year after the date of *Substantial Performance of the Work*.

.3 Aircraft or Watercraft Liability Insurance when owned or non-owned aircraft or watercraft are used directly or indirectly in the performance of the *Work*

.4 "Broad form" property insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The "Broad form" property insurance shall be provided from the date of commencement of the *Work* until the earliest of:

(1) 10 calendar days after the date of *Substantial Performance of the Work*;

(2) on the commencement of use or occupancy of any part or section of the *Work* unless such use or occupancy is for construction purposes, habitational, office, banking, convenience store under 465 square metres in area, or parking purposes, or for the installation, testing and commissioning of equipment forming part of the *Work*;
(3) when left unattended for more than 30 consecutive calendar days or when construction activity has ceased for more than 30 consecutive calendar days.

.5 Boiler and machinery insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The coverage shall be maintained continuously from commencement of use or operation of the boiler and machinery objects insured by the policy and until 10 calendar days after the date of *Substantial Performance of the Work*.

.6 The "Broad form" property and boiler and machinery policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. In the event of loss or damage:
(1) the *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except that the *Contractor* shall be entitled to such reasonable extension of *Contract Time* relative to the extent of the loss or damage as the *Consultant* may recommend in consultation with the *Contractor*;
(2) the *Contractor* shall be entitled to receive from the *Owner*, in addition to the amount due under the *Contract*, the amount which the *Owner*'s interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds in accordance with the progress payment provisions. In addition the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor*'s interest in the restoration of the *Work*; and
(3) to the *Work* arising from the work of the *Owner*, the *Owner*'s own forces or another contractor, the *Owner* shall, in accordance with the *Owner*'s obligations under the provisions relating to construction by *Owner* or other contractors, pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as in accordance with the progress payment provisions.

.7 Contractors' Equipment Insurance from the date of commencement of the *Work* until one year after the date of *Substantial Performance of the Work*.

11.1.2 Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements applicable to the *Work*.

11.1.3 The parties shall pay their share of the deductible amounts in direct proportion to their responsibility in regards to any loss for which the above policies are required to pay, except where such amounts may be excluded by the terms of the *Contract*.

11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract Documents*, then the *Owner* shall have the right to provide and maintain such insurance and give evidence to the *Contractor* and the *Consultant*. The *Contractor* shall pay the cost thereof to the *Owner* on demand or the *Owner* may deduct the cost from the amount which is due or may become due to the *Contractor*.

11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*.

11.1.6 If a revised version of CCDC 41 – INSURANCE REQUIREMENTS is published, which specifies reduced insurance requirements, the parties shall address such reduction, prior to the *Contractor*'s insurance policy becoming due for renewal, and record any agreement in a *Change Order*.

11.1.7 If a revised version of CCDC 41 – INSURANCE REQUIREMENTS is published, which specifies increased insurance requirements, the *Owner* may request the increased coverage from the Contractor by way of a *Change Order*.

11.1.8 A *Change Directive* shall not be used to direct a change in the insurance requirements in response to the revision of CCDC 41 – INSURANCE REQUIREMENTS.

GC 11.2 CONTRACT SECURITY

11.2.1 The *Contractor* shall, prior to commencement of the *Work* or within the specified time, provide to the *Owner* any *Contract* security specified in the *Contract Documents*.

11.2.2 If the *Contract Documents* require surety bonds to be provided, such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the *Place of the Work* and shall be maintained in good standing until the fulfillment of the *Contract.* The form of such bonds shall be in accordance with the latest edition of the CCDC approved bond forms.

PART 12 INDEMNIFICATION, WAIVER OF CLAIMS AND WARRANTY

GC 12.1 INDEMNIFICATION

12.1.1 Without restricting the parties' obligation to indemnify as described in paragraphs 12.1.4 and 12.1.5, the *Owner* and the *Contractor* shall each indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings whether in respect to losses suffered by them or in respect to claims by third parties that arise out of, or are attributable in any respect to their involvement as parties to this *Contract*, provided such claims are:

.1 caused by:

(1) the negligent acts or omissions of the party from whom indemnification is sought or anyone for whose acts or omissions that party is liable, or

(2) a failure of the party to the *Contract* from whom indemnification is sought to fulfill its terms or conditions; and

.2 made by *Notice in Writing* within a period of 6 years from the date of *Substantial Performance of the Work* as set out in the certificate of *Substantial Performance of the Work* issued pursuant to paragraph 5.4.2.2 of GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK or within such shorter period as may be prescribed by any limitation statute of the province or territory of the *Place of the Work.*

The parties expressly waive the right to indemnity for claims other than those provided for in this *Contract.*

12.1.2 The obligation of either party to indemnify as set forth in paragraph 12.1.1 shall be limited as follows:

.1 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is to be provided by either party pursuant to GC 11.1 – INSURANCE, the general liability insurance limit for one occurrence as referred to in CCDC 41 in effect at the time of bid closing.

.2 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is not required to be provided by either party in accordance with GC 11.1 – INSURANCE, the greater of the *Contract Price* as recorded in Article A-4 – CONTRACT PRICE or $2,000,000, but in no event shall the sum be greater than $20,000,000.

.3 In respect to claims by third parties for direct loss resulting from bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, the obligation to indemnify is without limit. In respect to all other claims for indemnity as a result of claims advanced by third parties, the limits of indemnity set forth in paragraphs 12.1.2.1 and 12.1.2.2 shall apply.

12.1.3 The obligation of either party to indemnify the other as set forth in paragraphs 12.1.1 and 12.1.2 shall be inclusive of interest and all legal costs.

12.1.4 The *Owner* and the *Contractor* shall indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of their obligations described in GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.

12.1.5 The *Owner* shall indemnify and hold harmless the *Contractor* from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings:

.1 as described in paragraph 10.3.2 of GC 10.3 – PATENT FEES, and

.2 arising out of the *Contractor*'s performance of the *Contract* which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the *Place of the Work.*

12.1.6 In respect to any claim for indemnity or to be held harmless by the *Owner* or the *Contractor*:

.1 *Notice in Writing* of such claim shall be given within a reasonable time after the facts upon which such claim is based became known;

.2 should any party be required as a result of its obligation to indemnify another to pay or satisfy a final order, judgment or award made against the party entitled by this contract to be indemnified, then the indemnifying party upon assuming all liability for any costs that might result shall have the right to appeal in the name of the party against whom such final order or judgment has been made until such rights of appeal have been exhausted.

GC 12.2 WAIVER OF CLAIMS

12.2.1 Subject to any lien legislation applicable to the *Place of the Work*, as of the fifth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*, the *Contractor* waives and releases the *Owner* from all claims which the *Contractor* has or reasonably ought to have knowledge of that could be advanced by the *Contractor* against the *Owner* arising from the *Contractor*'s involvement in the *Work*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the date of *Substantial Performance of the Work*, except as follows:

- .1 claims arising prior to or on the date of *Substantial Performance of the Work* for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* no later than the sixth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*;
- .2 indemnification for claims advanced against the *Contractor* by third parties for which a right of indemnification may be asserted by the *Contractor* against the *Owner* pursuant to the provisions of this *Contract*;
- .3 claims for which a right of indemnity could be asserted by the *Contractor* pursuant to the provisions of paragraphs 12.1.4 or 12.1.5 of GC 12.1 – INDEMNIFICATION; and
- .4 claims resulting from acts or omissions which occur after the date of *Substantial Performance of the Work*.

12.2.2 The *Contractor* waives and releases the *Owner* from all claims referenced in paragraph 12.2.1.4 except for those referred in paragraphs 12.2.1.2 and 12.2.1.3 and claims for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* within 395 calendar days following the date of *Substantial Performance of the Work*.

12.2.3 Subject to any lien legislation applicable to the *Place of the Work*, as of the fifth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*, the *Owner* waives and releases the *Contractor* from all claims which the *Owner* has or reasonably ought to have knowledge of that could be advanced by the *Owner* against the *Contractor* arising from the *Owner*'s involvement in the *Work*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the date of *Substantial Performance of the Work*, except as follows:

- .1 claims arising prior to or on the date of *Substantial Performance of the Work* for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* no later than the sixth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*;
- .2 indemnification for claims advanced against the *Owner* by third parties for which a right of indemnification may be asserted by the *Owner* against the *Contractor* pursuant to the provisions of this *Contract*;
- .3 claims for which a right of indemnity could be asserted by the *Owner* against the *Contractor* pursuant to the provisions of paragraph 12.1.4 of GC 12.1 - INDEMNIFICATION;
- .4 damages arising from the *Contractor*'s actions which result in substantial defects or deficiencies in the *Work*. "Substantial defects or deficiencies" mean those defects or deficiencies in the *Work* which affect the *Work* to such an extent or in such a manner that a significant part or the whole of the *Work* is unfit for the purpose intended by the *Contract Documents*;
- .5 claims arising pursuant to GC 12.3 - WARRANTY; and
- .6 claims arising from acts or omissions which occur after the date of *Substantial Performance of the Work*.

12.2.4 The *Owner* waives and releases the *Contractor* from all claims referred to in paragraph 12.2.3.4 except claims for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* within a period of six years from the date of *Substantial Performance of the Work* should any limitation statute of the Province or Territory of the *Place of the Work* permit such agreement. If the applicable limitation statute does not permit such agreement, within such shorter period as may be prescribed by:

- .1 any limitation statute of the Province or Territory of the *Place of the Work*; or
- .2 if the *Place of the Work* is the Province of Quebec, then Article 2118 of the Civil Code of Quebec.

12.2.5 The *Owner* waives and releases the *Contractor* from all claims referenced in paragraph 12.2.3.6 except for those referred in paragraph 12.2.3.2, 12.2.3.3 and those arising under GC 12.3 – WARRANTY and claims for which *Notice in Writing* has been received by the *Contractor* from the *Owner* within 395 calendar days following the date of *Substantial Performance of the Work*.

12.2.6 "*Notice in Writing* of claim" as provided for in GC 12.2 – WAIVER OF CLAIMS to preserve a claim or right of action which would otherwise, by the provisions of GC 12.2 – WAIVER OF CLAIMS, be deemed to be waived, must include the following:

- .1 a clear and unequivocal statement of the intention to claim;
- .2 a statement as to the nature of the claim and the grounds upon which the claim is based; and
- .3 a statement of the estimated quantum of the claim.

12.2.7 The party giving "*Notice in Writing* of claim" as provided for in GC 12.2 – WAIVER OF CLAIMS shall submit within a reasonable time a detailed account of the amount claimed.

12.2.8 Where the event or series of events giving rise to a claim made under paragraphs 12.2.1 or 12.2.3 has a continuing effect, the detailed account submitted under paragraph 12.2.7 shall be considered to be an interim account and the party making the claim shall submit further interim accounts, at reasonable intervals, giving the accumulated amount of the claim and any further grounds upon which it is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.

12.2.9 If a *Notice in Writing* of claim pursuant to paragraph 12.2.1.1 is received on the seventh or sixth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*, the period within which *Notice in Writing* of claim shall be received pursuant to paragraph 12.2.3.1 shall be extended to two calendar days before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work.*

12.2.10 If a *Notice in Writing* of claim pursuant to paragraph 12.2.3.1 is received on the seventh or sixth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*, the period within which *Notice in Writing* of claim shall be received pursuant to paragraph12.2.1.1 shall be extended to two calendar days before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work.*

GC 12.3 WARRANTY

12.3.1 Except for extended warranties as described in paragraph 12.3.6, the warranty period under the *Contract* is one year from the date of *Substantial Performance of the Work.*

12.3.2 The *Contractor* shall be responsible for the proper performance of the *Work* to the extent that the design and *Contract Documents* permit such performance.

12.3.3 The *Owner*, through the *Consultant*, shall promptly give the *Contractor Notice in Writing* of observed defects and deficiencies which occur during the one year warranty period.

12.3.4 Subject to paragraph 12.3.2, the *Contractor* shall correct promptly, at the *Contractor*'s expense, defects or deficiencies in the *Work* which appear prior to and during the one year warranty period.

12.3.5 The *Contractor* shall correct or pay for damage resulting from corrections made under the requirements of paragraph 12.3.4.

12.3.6 Any extended warranties required beyond the one year warranty period as described in paragraph 12.3.1, shall be as specified in the *Contract Documents*. Extended warranties shall be issued by the warrantor to the benefit of the *Owner*. The *Contractor*'s responsibility with respect to extended warranties shall be limited to obtaining any such extended warranties from the warrantor. The obligations under such extended warranties are solely the responsibilities of the warrantor.

CCDC

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CCDC 41
CCDC INSURANCE REQUIREMENTS

PUBLICATION DATE: JANUARY 21, 2008

1. General liability insurance shall be with limits of not less than $5,000,000 per occurrence, an aggregate limit of not less than $5,000,000 within any policy year with respect to completed operations, and a deductible not exceeding $5,000. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 (including an extension for a standard provincial and territorial form of non-owned automobile liability policy) and IBC Form 2320. To achieve the desired limit, umbrella or excess liability insurance may be used. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.

2. Automobile liability insurance in respect of vehicles that are required by law to be insured under a contract by a Motor Vehicle Liability Policy, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death and damage to property, covering all vehicles owned or leased by the *Contractor*. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor*.

3. Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft (if used directly or indirectly in the performance of the *Work*), including use of additional premises, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof and limits of not less than $5,000,000 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*.

4. "Broad form" property insurance shall have limits of not less than the sum of 1.1 times *Contract Price* and the full value, as stated in the *Contract*, of *Products* and design services that are specified to be provided by the *Owner* for incorporation into the *Work*, with a deductible not exceeding $5,000. The insurance coverage shall not be less than the insurance provided by IBC Forms 4042 and 4047 (excluding flood and earthquake) or their equivalent replacement. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.

5. Boiler and machinery insurance shall have limits of not less than the replacement value of the permanent or temporary boilers and pressure vessels, and other insurable objects forming part of the *Work*. The insurance coverage shall not be less than the insurance provided by a comprehensive boiler and machinery policy.

6. "Broad form" contractors' equipment insurance coverage covering *Construction Equipment* used by the *Contractor* for the performance of the *Work*, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* may agree to waive the equipment insurance requirement.

7. Standard Exclusions

   7.1 In addition to the broad form property exclusions identified in IBC forms 4042(1995), and 4047(2000), the *Contractor* is not required to provide the following insurance coverage:
   - Asbestos
   - Cyber Risk
   - Mould
   - Terrorism

ATTACHMENT B

BID FORM

BID FORM

TASK	COMPONENT	LABOUR	EXPENSES	TOTAL
Task 1.	Kickoff meeting	________	__________	___________
Task 2.	Background information review	________	__________	___________
Task 3.	Development of Health and Safety Plan, Site visit and Meeting with NS Lands	________	__________	___________
Task 4.	Gap Analysis	________	__________	___________
Task 5.	Field program	________	__________	___________
Task 6.	Criteria development	________	__________	___________
Task 7.	Option development and assessment	________	__________	___________
Task 8.	Option selection	________	__________	___________
Task 9.	Closure Cost estimate and scheduling	________	__________	___________
Task 10.	Stakeholder engagement strategy	________	__________	___________
Task 11.	Reporting	________	__________	___________
Task 12.	Scope of work for Stage 2	________	__________	___________
Task 13.	Meetings and Communications	________	__________	___________

TOTAL (NET OF HST) ____________________

ATTACHMENT C

EVALUATION CRITERIA

EVALUATION CRITERIA

Item	Description	Maximum Points	Minimum Pass Mark Required	Notes/Reference (page number in proposal where information can be found)
I	**Understanding the Assignment** The bidder must demonstrate a clear understanding of the assignment, and the complexities of the assignment and potential for additional circumstances that may arise, relative to site closure for these two sites. In addition, discussion of special considerations associated with these sites, based on knowledge of the sites specifically, or personal experience with other similar sites. *0 – 3 points* = Unacceptable, did not submit sufficient information which could be evaluated. Lacks complete or almost complete understanding of the requirements *3 - 5 points* = Has some understanding of the requirements but lacks adequate understanding in some areas of the contract 7 *points* = Demonstrates a good understanding of the requirements *10 points* = Demonstrates an excellent understanding of the requirements	10	7	

II	***Proposed Approach for Completing the Scope of Work*** Initiation (3.5 pts) Kickoff meeting Background information review Development of Health and Safety Plan, Site visit and Meeting with NS Lands Gap Analysis Execution (16.0 pts) Field program Criteria development Option development and assessment Option selection Closure Cost estimate and scheduling Communications/Closeout (5.5 pts) Stakeholder engagement strategy Reporting Scope of work for Stage 2 Meetings and Communications	25	15	
III	***Project Schedule*** The bidder should provide a schedule of activities that Illustrate the dates and duration of each of the tasks. Bidders will be evaluated on the overall content of their plan. The schedule will be sufficiently detailed, so NS Lands may fully understand the Assignment schedule including field work, analytical time requirements, report delivery dates, meeting times and comment periods allocated for NS Lands *(0 to 5 points)* *0 to 2 points = Unsatisfactory* *3 points = Fair: Just acceptable and should meet minimum performance requirements* *4 points=Very Good: Above average and more than adequate for effective performance.*	5	3	

	5 points = Excellent: Exceptional.			
IV	***<u>Qualifications of Senior Experts on Study Team</u>*** <u>Relevant years of Experience</u>: 0 – 14 years: 1 15 – 20 years: 2 21- 25 years: 3 <u>Education</u>: Bachelor’s degree in related field: 1 Master’s Degree in related field: 2 PhD in related field (geochemistry; mine closure; toxicology/risk assessment): 3 <u>CV/Biography:</u> *Up to 2 points as determined by the evaluators. Specific expertise related to mining and site closure should be demonstrated. Supplementary credentials will be considered.* *0 points* = Expertise has limited to no applicability to current project *0.5 point* = Expertise has some applicability to the current project. *1 point* = Expertise has reasonable applicability to current project; *2 points* = Expertise has direct applicability to the current project, and considerable relevant experience. <u>Project Expertise Provided:</u> For each named expert, 2 projects related to their areas of expertise must be provided, highlighting their role in the project; the project scope/requirements (relative to the area of expertise), year(s) project was conducted, client, and budget. Projects involving arsenic and/or mercury are of greatest interest, and will score higher.	25	15	

IV Cont	*Up to 2 points for 2 projects as determined by the evaluators.* *0 points* = Has limited to no applicability to current project *0.5 point* = Has some applicability to the current project. *1 point* = Has direct applicability to the current project.			
V	***<u>Qualifications of Remaining Team Members, including Project Manager.</u>*** Team members must demonstrate experience in the project scope, and additional issues which could come up in the course of the project; *0 – 2 points* = Unacceptable, did not submit sufficient information which could be evaluated. Team lacks experience in the requirements of the project; *3 - 5 points* = Team has some experience related to the requirements but lacks adequate experience in some areas of the contract; 7 *points* = Team has considerable experience in the required project areas; *10 points* = Team has exceptional experience in the required project areas.	10	7	
VI	***<u>Corporate Experience</u>*** Corporate experience must demonstrate experience with mine closure, tailings geochemistry, ecological and human health risk assessment of mining or metals sites *0 – 1 points* = Unacceptable, corporate experience is not in keeping with project scope. *2-3 points* = Has limited corporate experience within the project scope;	5	3	

VI Cont	4 points – Has moderate corporate experience within the project scope; 5 *points* = Demonstrates strong focus in project scope area, and considerable depth of project understanding			
VII	***Cost of Services (Separate Submission)*** For ‘Cost’ Points, the lowest acceptable bid and all bidders within 5% will receive 20 point; next lowest priced bidder and all subsequent bidders will receive points based on the following formula: (20 x (low bid/bid)). Costs must be submitted under separate envelope, and need to include rates for each team member, and time for each task. Costs for each of the 12 tasks outlined above must be provided, including time and disbursements and shall include administration and management, overhead, salaries, vacation and statutory holidays, payroll burden, office supplies, communications, CAD and GIS services, overtime and any other expense associated with the provision of services. Evaluation will be based on bid form attached. In addition to fees for the services outlined in this RFP, fees for additional services for all individuals on the assignment project team, and any others that the consultant may believe it would be advantageous to include, shall be included. Unit prices quoted for Additional Services will be hourly rates for the Consultant’s personnel. The hourly rates will include administration and management, overhead, salaries, vacation and statutory holidays, payroll burden, office supplies, communications, CAD and GIS services, overtime and any other expense associated with the provision of services on an hourly rate basis	20		

ATTACHMENT D

RESOURCES

Goldenville Phase II ESA Report
(CJ MacLellan 2009)

Montaque Phase II ESA
(Maritime Testing 2009)

Toxicological Advice for Montaque and Goldenville
(Intrinsik 2009)

Geological Survey of Canada Open File
(M.B. Parsons, etal. 2012)

PHASE II ENVIRONMENTAL SITE ASSESSMENT *(FINAL)*

NOVA SCOTIA DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE RENEWAL

FORMER GOLD MINE SITE,
GOLDENVILLE
GUYSBOROUGH COUNTY, NOVA SCOTIA

January 2009

Prepared for:
Nova Scotia Department of Transportation and Infrastructure Renewal
Environmental Services Group
Attention: Ian MacCallum
1st Floor Johnston Building
1672 Granville Street
Halifax, NS B3J 2N2

Prepared by:
C.J. MacLellan & Associates Inc.
65 Beech Hill Road, Suite 2
Antigonish, NS B2G 2P9

File No. 6096-21A

C.J. MacLellan & Associates Inc.
Highland Professional Centre, Suite 2
65 Beech Hill Road , Antigonish, Nova Scotia, B2G 2P9
TEL: 902-863-1220
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CONSULTING ENGINEERS AND PLANNERS
Email: hdunnewold@cjmac.ns.ca
Website: www.cjmac.ns.ca

January 16, 2009

Our File No.: 6906-21A

Nova Scotia Department of Transportation and Public Works
Environmental Services Group
Attention: Mr. Ian MacCallum
1st Floor Johnston Building
1672 Granville Street
Halifax, NS   B3J 2N2

Dear Mr. MacCallum:

RE: Phase II Environmental Site Assessment Report *(Final)* for the Nova Scotia Department of Transportation and Infrastructure Renewal, Former Gold Mine Site in Goldenville, Guysborough County, Nova Scotia

C.J. MacLellan & Associates Inc. is pleased to provide our *Final* Phase II Environmental Site Assessment Report completed for the Former Gold Mine Site located in Goldenville, Guysborough County, Nova Scotia.

Should you have any questions, or if you require any clarification, please do not hesitate to contact me at (902) 863-1220.

Sincerely,
C.J. MacLellan & Associates Inc.

H Dunnewold

Hilda Dunnewold, P.Eng.
Environmental Engineer

HD/

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

C.J. MacLellan & Associates Inc. (CJMac) were retained by the Nova Scotia Department of Transportation and Infrastructure Renewal (NSDTIR) to conduct a Phase II Environmental Site Assessment (ESA) of a former gold mine property located in Goldenville, Guysborough, NS. The subject site is located in Goldenville and consists of a single property identified by PID 37535655. The site the location of a former gold mine which has not operated since 1961. There are gold mine tailings on the property and past analysis of the tailings have found that total arsenic concentrations exceed the CCME soil quality guidelines. Mercury concentrations are also elevated. There is limited information on the arsenic and mercury concentrations in nearby soils and residential properties adjacent to the site may be impacted by soil contamination related to offsite migration of arsenic and mercury from the tailings. Human health risk assessment has determined that remediation and/or risk management measures are necessary.

2.0 OBJECTIVES

The objectives of the Environmental Site Assessment (ESA) are as follows:

- delineate the full extent of arsenic contamination, both on unsampled tailings and adjacent surface soils, to establish potential boundaries for remediation or risk management;.
- determine the vertical extent of arsenic in undisturbed soils to assess whether the tailings related impacts can be distinguished from naturally occurring, localized arsenic “hotspots” associated with the site’s geology
- determine whether groundwater migrating through the tailings could be impacting neighboring wells

3.0 METHODOLOGY

3.1 Start-up Meetings

Two start-up meetings, were held with the client. The meetings were held on November 14 and 22, 2007 at NSDTIR offices in Halifax. The purpose of the meetings was to:

- to transfer existing information and site data from the client;
- to clarify communications plans and responsibilities between client and consultant;
- to finalize project planning to ensure that site assessments will provide all data essential for possible future health risk assessments and that sampling design is appropriate for the project requirements.

3.2 Soil Sampling Protocol - Information Session

Non-routine soil sampling protocols were required for any soils with distinct soil horizons. Specific sampling protocols were required for these samples to fulfil requirements of a study which NSDTIR was undertaking as a sub-component of the site assessment. To ensure protocols used are consistent with study requirements, at two of the lead field personnel participated in an information session prior to commencement of field work. The information session was held on November 16, 2007. All soil sampling for the contract was supervised by personnel who had participated in the information session. The information session was delivered by geochemists from NS Natural Resources and /or Natural Resources Canada.

3.3 Soil Sampling

The proposed sampling patterns and coordinates of the sample locations was provided to CJMac. Areas of tailings for which no previous data was available was to be sampled. In areas of tailings for which data are already available, three samples were to be taken for confirmation and comparison purposes. In tailings, the top 0-10 cm were to be sampled. In soils (surrounding tailings), the top 0-5 cm were to be sampled at all sampling points. At all sampling points on orphan lands which occur in undisturbed soils (if any), distinct soil horizons within the top 5 cm were also to be sampled individually, if present.

The soil sampling was undertaken as per the non-routine protocol described during the information session described in 3.2. The sample points were to be located in well-drained areas that are free of any obvious sources of anthropogenic contamination (e.g. garbage, metal scraps, waste rock, etc.). At each location, the samplers were to remove the undecomposed organic litter from the soil surface, then use a shovel to expose a cross-section of the soil to a depth of at least 10 cm to determine whether there are distinct soil horizons present in the top 5 cm. For the purposes of sampling, the bottom of any accumulations of undecomposed leaves or needles, and/or the bottom of the moss layer, will define the top of the soil interval (i.e., 0 cm). All equipment (e.g. trowels, spoons, sample containers, etc.) that comes into contact with the soil samples must be free of metal (i.e. no stainless steel implements – use only plastic or equivalent). A sample of the full 0-5 cm soil interval was to be taken at each soil sampling site. At least 500-1000 g of soil was to be collected from each site to provide sufficient material for sieving. If there are visually distinct soil horizons, separate samples were also to be taken from each horizon. If distinct layers were very thin, a large enough area of the top of the horizon was to be exposed to enable collection of sufficient sample (500-1000 g). If present, humus (i.e. decomposed organic material – original plant structures should not be discernable) is considered part of the soil profile and must be collected. Pebbles, roots, and any living plant matter should be removed from the soil prior to placement into the sampling container. If present, samples of additional visually distinct soil horizons will then be collected, to a maximum depth of 5 cm.

At each sampling point, observations were to be made on location co-ordinates (NAD 83), ground cover, vegetation, slope, drainage, thickness of organic material removed before sampling, and a soil description including Munsell colour, thicknesses of individual soil horizons within the 0-5 cm interval, presence/ absence of rock fragments in the soil, etc. Field observations were also to be made about factors that may contribute to interpretation of soil arsenic concentrations, such as proximity to waste rock or historical mine openings, possible use of waste rock or fill for roads or driveways, or proximity of preservative-treated wooden structures. All observations and samples taken were to be recorded on the standardized field observation sheet / sampling form provided. A digital colour photograph was to be taken of the 0-5 cm soil profile, with a scale for reference, at each sampling point, with sufficient clarity and resolution to show individual horizons if present.

3.4 Groundwater Assessment

The groundwater assessment was to consist of the installation of three groundwater monitoring wells to confirm the apparent hydraulic gradient. The wells were to be constructed in unconsolidated materials and water samples from each well were to be collated and analyzed for mercury and arsenic. The locations of the monitoring wells were to be selected at suitable positions to determine representative ground conditions, but were also to be selected so that the wells can be protected.

4.0 FIELD INVESTIGATION

4.1 Soil Sampling

On December 10, 2007, sixteen (16) of the pre-determined soil sample locations were sampled. On December 13, 2007, seventeen (17) of the pre-determined soil sample locations were sampled. On May 26, 2008, twelve (12) of the pre-determined soil sample locations were sampled. All of the sampling as carried out as per the protocol described in 3.3. The soil sample locations are shown on Drawing 6906-21-1, Appendix A. The field data sheets were completed and are found in Appendix B.

4.2 Monitoring Well Installation

On December 13, 2007, three (3) monitoring wells were constructed on the subject site. The test holes were drilled to total depths between 4.5 m to 6.1 m using a track mounted geotechnical drilling machine operated by Logan Drilling and Geotechnical Services of Stewiacke, Nova Scotia. W. G. Shaw & Associates Ltd. provided site supervision for the drilling program. The monitoring well locations are shown on Drawing 6906-21-1, Appendix A. Details of each of the monitoring well installations are provided in the logs presented in Appendix C.

The three monitoring wells were developed on December 13, 2007 to remove any sediment in the well and surrounding annulus. Well development consisted of purging the three wells of three well volumes of water, or alternatively until the well was bailed dry. The well development was completed using disposable bailer well sampling devices.

4.3 Groundwater Sampling

Groundwater samples were collected on December 13, 2007 from the three monitoring wells using disposable bailer well sampling devices and placed into sample containers supplied by the laboratory. All groundwater samples were submitted to Maxxam Analytics Inc. in Bedford, Nova Scotia following property chain-of-custody procedures and within acceptable hold times.

Groundwater levels were measured on December 13, 2007 using a Dipper T water level.

Groundwater samples were collected on May 26, 2008 from the three monitoring wells using disposable bailer well sampling devices and placed into sample containers supplied by the laboratory. All groundwater samples were submitted to Maxxam Analytics Inc. in Bedford, Nova Scotia following property chain-of-custody procedures and within acceptable hold times.

4.4 GPS Survey

A level survey of each of the three site monitoring wells was completed on December 13, 2007 using a sub-centimeter GPS instrument. The survey was carried out using a GPS instrument and elevations are relative to the published values established by the Nova Scotia Coordinate Monument System. The ground elevations for each of the three monitoring wells are provided in Table 1 in Appendix C.

4.5 Photographs

A digital colour photograph was taken at each sample site of the following subjects:

- General photo of sample location showing setting
- Closeup photo with scale reference of soil profile
- Photo of sample site facing north
- Photo of sample site facing east
- Photo of sample site facing south
- Photo of sample site facing west

The photos are provided in electronic format in Appendix D

5.0 ANALYTICAL PROGRAM

5.1 Soil

A total of thirty five (35) soil samples were submitted for laboratory analysis to Maxxam Analytics Inc. located in Bedford, NS. All soil samples were analyzed for the following:

- total organic carbon (<150 µm fraction)
- arsenic (<150 µm fraction)
- total organic carbon (<2 mm fraction)
- arsenic (<2 mm fraction)
- mercury (<2 mm fraction)

In addition, three tailing samples were submitted for laboratory analysis to ACME Analytical Laboratories located in Vancouver, BC (subcontracted through Maxxam). These samples were analyzed for available metals using the aqua regia digestion.

The results of the analyses are summarized in Tables 2, 3, and 4 found in Appendix E. The analytical results are also graphically shown on the following drawings in Appendix A:

Drawing 6906-21-1 (TOC & As <2 mm)
Drawing 6906-21-2 (TOC & As <150 um)
Drawing 6906-21-3 (Hg <2 mm)

Copies of the analytical reports are presented in Appendix F.

5.2 Groundwater

A total of three (3) groundwater samples (one sample from each of the newly installed groundwater monitoring wells) were submitted for laboratory analysis to Maxxam Analytics Inc.. All water samples collected on December 13, 2007 were analyzed for arsenic and mercury. The results are found in Table 5 in Appendix E. All water samples collected on May 26, 2008 were analyzed for general chemistry and metals scan. The results are found in Table 6 and Table 7 in Appendix E.

6.0 LAND USE AND RECEPTOR CHARACTERISTICS

The subject site appears to have some intermittent recreational traffic although there are no organized events being held at the site. The traffic is in the form of both off-road vehicles (ATVs) and snowmobiles. Other active uses of the site were not apparent.

In the local area, there are some residential properties. Many of these properties appear to be either abandoned or seasonal. The residential properties generally lie upslope of the subject site. Most of the properties obtain water from shallow dug wells which were also located upslope of the subject site. A great majority of the surrounding lands are undeveloped, forested areas.

Due to the proximity of the subject site to the residential properties and the exposed, open nature of the site, it is possible that dust migration to the surrounding properties is occurring and therefore creating a potential route of exposure.

Respectfully Submitted,
C.J. MacLellan & Associates Inc.

HDunnewold

Hilda Dunnewold, P.Eng.
Environmental Engineer

Appendix A

Drawings

No.	Date	Issued For	By	Ckd.
0	2008–03–10	Draft Issued To NSTIR	HJD	HJD
1	2008–08–13	Second Draft Issued To NSTIR	HJD	HJD
2	2009–01–16	Final Issued To NSTIR	HJD	HJD

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C. J. MacLellan and Associates Inc.

Project

N S DEPARTMENT OF
TRANSPORTATION AND
INFRASTRUCTURE
RENEWAL
PHASE II ESA
FORMER GOLD MINE SITE
GOLDENVILLE, NS

Title

SITE PLAN & SAMPLE RESULTS (TOC & As <2mm)

Stamp

Scale 1:1250
Date MARCH 10, 2008
Design By HJD
Drawn By HJD
Checked By
Project No. 6906-21A
Electronic File 6906-21.dwg

Sheet No. 6906-21-1
Revision 2

No.	Date	Issued For	By	Ckd.
0	2008–03–10	Draft Issued To NSTIR	HJD	HJD
1	2008–08–13	Second Draft Issued To NSTIR	HJD	HJD
2	2009–01–16	Final Issued To NSTIR	HJD	HJD

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C. J. MacLellan and Associates Inc.

Project

N S DEPARTMENT OF
TRANSPORTATION AND
INFRASTRUCTURE
RENEWAL
PHASE II ESA
FORMER GOLD MINE SITE
GOLDENVILLE, NS

Title

SITE PLAN & SAMPLE
RESULTS
(TOC & As <150um)

Stamp

Scale 1:1250
Date MARCH 10, 2008
Design By HJD
Drawn By HJD
Checked By
Project No. 6906-21A
Electronic File 6906-21.dwg

Sheet No. 6906-21-2
Revision 2

No.	Date	Issued For	By	Ckd.
0	2008–03–10	Draft Issued To NSTIR	HJD	HJD
1	2008–08–13	Second Draft Issued To NSTIR	HJD	HJD
2	2009–01–16	Final Issued To NSTIR	HJD	HJD

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Project
N S DEPARTMENT OF
TRANSPORTATION AND
INFRASTRUCTURE
RENEWAL
PHASE II ESA
FORMER GOLD MINE SITE
GOLDENVILLE, NS

Title
SITE PLAN & SAMPLE
RESULTS
(Hg <2mm)

Stamp

Scale 1:1250
Date MARCH 10, 2008
Design By HJD
Drawn By HJD
Checked By
Project No. 6906-21A
Electronic File 6906-21.dwg

Sheet No. 6906-21-3
Revision 2

Appendix B

Field Data Sheets

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time : 13:34

Northing (20TNAD83) 4997291

Easting (20TNAD83) 577292

Site ID 1

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes ➜

Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☒
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other ______

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.

– 11 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- rock piles to northwest
- stream/wet area to the north & west

1		Site ID					

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

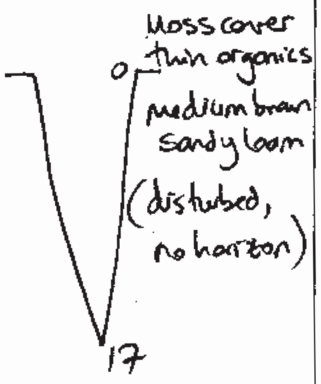
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		2.5Y 3/1		10-20	sandy loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time : 13:20

Northing (20TNAD83) 4997288

Easting (20TNAD83)

Site ID 2

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ ➜ Previous Site ID

Samples Collected
0 - 5 cm
- Depth sample (all horizons) ☑

Horizon Sample
- A - horizon ☐
- B - horizon ☐
- Other: ☐

Type of Surface Material
- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression
Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
-11 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

Cut area to northwest

2							

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

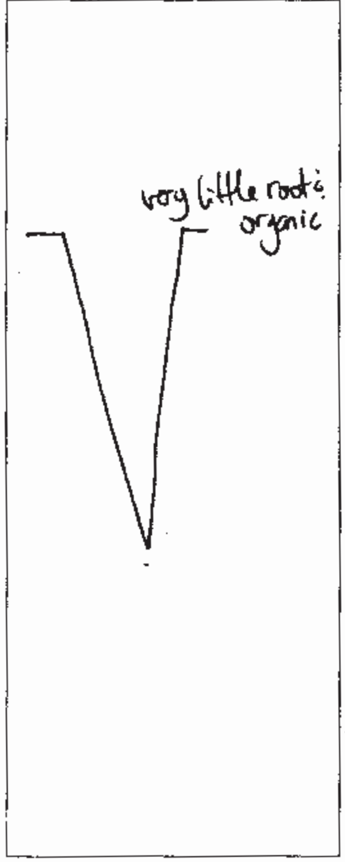
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	–	10YR 2/2		10-15	sandy loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time : 12:52

Northing (20TNAD83) 4997276

Easting (20TNAD83) 577571

Site ID 3

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No X Yes ➡

Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

A - horizon ☐

B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☒

Air Temp.

— 1 1 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

wooded area; residence to west

3 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	—	2.5Y 2.5/1		10-15	silty loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
101207

Time
 :
12:42

Northing (20TNAD83)
4997231

Easting (20TNAD83)
577495

Site ID
4

Sample Type - Horizon
No ☒ **Yes** ☐

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No ☒ **Yes** ☐ ➡
Previous Site ID

Samples Collected
0 - 5 cm
- **Depth sample** (all horizons) ☒
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other: ☐

Type of Surface Material
- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☒
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☒
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
–11 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Mine shafts to west and north west
- residence to south east
- alders & thorns

4 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
-setting
-profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	—	5Y 2.5/1		0-10	sandy clay loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time __ : __ 12:27

Northing (20TNAD83) 4997230

Easting (20TNAD83) 577432

Site ID 5

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ →

Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

A - horizon ☐

B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☒
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ______

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. -11 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- access road to west
- public road to north
- residence to east

S Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	–	5Y 2.5/1		0-10	sandy clay
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 10 12 07

Time: __ : __ 12 : 18

Northing (20TNAD83): 4997233

Easting (20TNAD83): 577379

Site ID: 6

Sample Type - Horizon: No ☒ Yes ☐

Names of Samplers: Hilda Dunnewold & Jack Gillis

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: No ☒ Yes ☐ ➡ ____ Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☒
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ____

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. -11 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- residence to west
- public road to north
- adjacent to what appear to be rock piles

6

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	–	10YR 2/2		0-10	silty clay loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time __:__ 14:20

Northing (20TNAD83) 4997207

Easting (20TNAD83) 577209

Site ID 8

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ ➡ ____________
Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☒ edge of swamp
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ____________

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

-wetlands to south

-road to north

-surface pock-marked with holes

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☒
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☒
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☒
- Very poorly drained ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. -11 °C

8			ID				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

- Pit with Samples ☐
- Looking North ☑
- Looking East ☑
- Looking South ☑
- Looking West ☑

Others
- setting
- profile

Soil Profile Diagram

Horizon Description

Horizons					Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1											Sandy clay
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time : 13:58

Northing (20TNAD83) 4997198

Easting (20TNAD83) 577264

Site ID 9

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes ➡

Previous Site ID

Samples Collected

0 - 5 cm

- Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐
- Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☒
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☒
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

on a raised area surrounded by swamp

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. -11 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

Surrounded by wet areas

9 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	—	10YR 3/2		20-30	silt loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
101207

Time
 :
12:06

Northing (20TNAD83)
4997193

Easting (20TNAD83)
577397

Site ID
11

Sample Type - Horizon
No ☒ Yes ☐

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No ☒ Yes ☐ ➡
Previous Site ID

Samples Collected
0 - 5 cm
- **Depth sample** (all horizons) ☒
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other: ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☒
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☒
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
-11 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- west of entrance
- north of open mine shaft

Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☑
Others
-setting
-profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		H			0	5	—	7.5YR 2.5/1		0	silt loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 10 12 07

Time: __ : __ 15:26

Northing (20TNAD83): 4997180

Easting (20TNAD83): 577450

Site ID: 12

Sample Type - Horizon: [✓ No] Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: [✓ No] Yes ➔ __________

Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

A - horizon ☐

B - horizon ☐

Other: ☐

Type of Surface Material

Mineral Soil ☒

Organic Soil ☐

Non-Soil ☐

Urban ☐

Local Surface Expression

Mineral Surface Form

Blanket ☐

Dissected ☐

Fan ☐

Hummocky ☐

Inclined ☒

Pitted ☐

Level ☐

Rolling ☐

Ridged ☐

Steep ☐

Terrace ☐

Undulating ☐

Veneer ☐

Vegetation Cover

Agricultural Crops ☐

Coniferous Forest ☐

Deciduous Forest ☐

Mixed Forest ☐

Meadow, Wet ☐

Field ☐

Parkland ☐

Shrubland ☒

Unvegetated Surface ☐

Drainage

Very rapidly drained ☐

Rapidly drained ☐

Well drained ☐

Moderately well drained ☐

Imperfectly drained ☒

Poorly drained ☐

Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ________

Weather

Sunny/Clear ☐

Partly cloudy ☐

Overcast ☒

Rain ☐

Sleet ☐

Snow ☐

Air Temp.

-11 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- south of residence
- alders ?, thorn bushes
- mine tailings to south

1	2		m				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

#	Horizons D	Horizons Ma	Horizons Suffix	Horizons M	Depth Up	Depth Low	HB	Colour	RM	CF %	Field Texture
1		A			0	5	–	10YR 2/1		0-5	siltyclayloam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
101207

Time
: 15:34

Northing (20TNAD83)
4997155

Easting (20TNAD83)
577493

Site ID
13

Sample Type - Horizon
No X Yes

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No X Yes ➡
Previous Site ID

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☒
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☒
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☒
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☒
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☒
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other

Weather
Sunny/Clear ☐
Partly cloudy ☒
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
–11 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- south of fenced area
- flat area
- there are east-west ruts to the west of sample location

1	3						

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	–	10YR 3/2			Sandy clay
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time : 11:43

Northing (20TNAD83) 4997162

Easting (20TNAD83) 577353

Site ID 14

Sample Type - Horizon No X Yes

Names of Samplers Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes ➡

Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

A - horizon ☐

B - horizon ☐

Other: ☐

Type of Surface Material

Mineral Soil ☒

Organic Soil ☐

Non-Soil ☐

Urban ☐

Local Surface Expression

Mineral Surface Form

Blanket ☐

Dissected ☐

Fan ☐

Hummocky ☒

Inclined ☐

Pitted ☐

Level ☐

Rolling ☐

Ridged ☐

Steep ☐

Terrace ☐

Undulating ☐

Veneer ☐

Vegetation Cover

Agricultural Crops ☐

Coniferous Forest ☐

Deciduous Forest ☐

Mixed Forest ☐

Meadow, Wet ☐

Field ☐

Parkland ☐

Shrubland ☒ alders

Unvegetated Surface ☐

Drainage

Very rapidly drained ☐

Rapidly drained ☐

Well drained ☐

Moderately well drained ☐

Imperfectly drained ☒

Poorly drained ☐

Very poorly drained ☐

Contamination

None ☐

Possible ☒

Probable ☐

Definite ☐

- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☒
- Road ☐
- Garbage ☐
- Other

Weather

Sunny/Clear ☐

Partly cloudy ☐

Overcast ☒

Rain ☐

Sleet ☐

Snow ☐

Air Temp. -11 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

-adjacent to waste rock pile and tailings area to south

-road to north

1 4 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	—	10YR 2/1		0-10	Sandyloam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time __:__ 11:22

Northing (20TNAD83) 4997155

Easting (20TNAD83) 577288

Site ID 15

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes →
Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☒
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☒
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. - 1 1 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- location is an elevated, treed area between two wet areas

1	5	Site ID					

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others

- setting profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

4cm of frost

Horizon Description

#	Horizons				Depth		HB	Colour	RM	CF	Field Texture
	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	–	2,5Y 3/1		0-10	Sandy clay
2								(grey brown)			
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time : 10:55

Northing (20TNAD83) 4997122

Easting (20TNAD83) 577364

Site ID 19

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ → Previous Site ID

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☒
Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☒

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☒
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ______

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. -11 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- adjacent (east) of concrete structure
- south of access road

1 9

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
-setting profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

5cm frost

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		2.5Y 3/3		30	Medium sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 131207

Time __:__ 15:37

Northing (20TNAD83) 4997129

Easting (20TNAD83) 577412

Site ID 20

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes → Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

A - horizon ☐

B - horizon ☐

Other: ☐

Type of Surface Material

Mineral Soil ☒

Organic Soil ☐

Non-Soil ☐

Urban ☐

Local Surface Expression

Mineral Surface Form

Blanket ☐

Dissected ☐

Fan ☐

Hummocky ☐

Inclined ☐

Pitted ☐

Level ☒

Rolling ☐

Ridged ☐

Steep ☐

Terrace ☐

Undulating ☐

Veneer ☐

Vegetation Cover

Agricultural Crops ☐

Coniferous Forest ☐

Deciduous Forest ☐

Mixed Forest ☐

Meadow, Wet ☐

Field ☒

Parkland ☐

Shrubland ☐

Unvegetated Surface ☒ mixed

Drainage

Very rapidly drained ☐

Rapidly drained ☐

Well drained ☒

Moderately well drained ☐

Imperfectly drained ☐

Poorly drained ☐

Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather

Sunny/Clear ☐

Partly cloudy ☐

Overcast ☒

Rain ☐

Sleet ☐

Snow ☐

Air Temp.

-11 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- northwest of large pit
- south & east of access road
- disturbed area; very gravelly

2	0	Site ID					

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others

- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		2.5Y 3/1		30-50	Coarse gravel in silty sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
13 12 07

Time
:
15:32

Northing (20TNAD83)
4997111

Easting (20TNAD83)
577447

Site ID
21

Sample Type - Horizon
No X Yes

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No X Yes ➔
Previous Site ID

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☒
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☒
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☒
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☒
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☒
Possible ☐
Probable ☐
Definite ☐
  Farming ☐
  Housing ☐
  Industry ☐
  Logging ☐
  Mining ☐
  Road ☐
  Garbage ☐
  Other

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☒
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
– 11 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- northwest of large shaft
- northeast of large hole
- south of access road
- disturbed area
- frost beyond 5cm

2 1 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

#	Horizons D	Horizons Ma	Horizons Suffix	Horizons M	Depth Up	Depth Low	HB	Colour	RM	CF %	Field Texture
1		A			0	5		2.5Y 4/1		20-30	silty sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 101207

Time: : 16:00

Northing (20TNAD83): 4997122

Easting (20TNAD83): 5775522

Site ID: 22

Sample Type - Horizon: **No** X **Yes**

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: **No** X **Yes** ➡

Previous Site ID

Samples Collected

0 - 5 cm

- **Depth sample** (all horizons) ☒

Horizon Sample

- A - horizon ☐
- B - horizon ☐
- Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☒
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ______

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☒
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.: – 10°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- flat area
- south of road

2 2 S ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		7.5YR 3/1		30-40	Sandy loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 101207

Time : 15:46

Northing (20TNAD83) 4997149

Easting (20TNAD83) 577568

Site ID 23

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ ➡ Previous Site ID

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☒
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☒
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Contamination
None ☒
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- South of southeast corner of fenced area
- West of public access road

Type of Surface Material
Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☒
Rain ☐
Sleet ☐
Snow ☐

Local Surface Expression
Mineral Surface Form
Blanket ☒
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Air Temp.
-11 °C

2	3						

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	—	2.5Y 3/2		5-10	silty sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 131207

Time: __:__ 15:19

Northing (20TNAD83): 4997090

Easting (20TNAD83): 577478

Site ID: 24

Sample Type - Horizon: No X Yes ☐

Names of Samplers: Hilda Dunnewold & Jack Gillis

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: No X Yes ☐ ➡ Previous Site ID

Samples Collected

0 - 5 cm

- Depth sample (all horizons) ☒
- Horizon Sample
  - A - horizon ☐
  - B - horizon ☐
- Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ______

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.

− 10 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- north of fenced mine shaft
- 2 cm of organic remainder is disturbed

2	4	Site	ID				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	–	2.5Y 4/2		5-10	fine sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
131207

Time
 :
15:51

Northing (20TNAD83)
4997071

Easting (20TNAD83)
577373

Site ID
26

Sample Type - Horizon
No X Yes

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No X Yes ➡
Previous Site ID

Samples Collected
0 - 5 cm
- **Depth sample** (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐
- Other: ☐

Type of Surface Material
- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☒
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ____

Weather
- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
-16 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- disturbed soil
- gravelly; frost
- 2cm of roots and organic mat

2 6 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		10YR 2/2		30-50	gravelly sand with sandy loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 131207

Time __ : __ 11:08

Northing (20TNAD83) 4997063

Easting (20TNAD83) 577322

Site ID 27

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ ➡ Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☒
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☒

Drainage
- Very rapidly drained ☒
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☒
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other ____

Weather
- Sunny/Clear ☒
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. - 10 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- west of stamp mill
- appears to be tailings

2	7	Si	ID				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

- 4cm of frost
- tailings

Horizon Description

Horizons					Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		2.5Y 3/3		0	very fine sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
131207

Time
__:__ 11:22

Northing (20TNAD83)
4997057

Easting (20TNAD83)
577265

Site ID
28

Sample Type - Horizon
No X Yes

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No X Yes ➡ Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ______

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- north & west of tailings in wooded area
- low lying area but no standing water

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☒
- Poorly drained ☐
- Very poorly drained ☐

Weather

- Sunny/Clear ☒
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
-11 °C

2	8						

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

- Pit with Samples ☐
- Looking North ☑
- Looking East ☑
- Looking South ☑
- Looking West ☑
- Others
  - setting
  - profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

3cm of roots & leaves
remainder is
A horizon

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		2.5Y 3/3		0-5	loamy sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
131207

Time
__ : __ 11 : 44

Northing (20TNAD83)
4997009

Easting (20TNAD83)
577158

Site ID
30

Sample Type - Horizon
No ☒ Yes ☐

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No ☒ Yes ☐ ➡

Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☒
- B - horizon ☐

Other: ☒ H

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☒
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☒
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☒
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ____

Weather

- Sunny/Clear ☒
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.

-10°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- west of race track, beyond western berm in alder & wooded area
- burn layer present

3 0 Site ID:

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

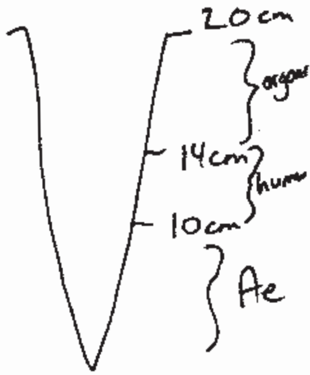
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
-setting
-profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		H			0	4	I			0	humus
2		Ae			4	5	I	2.5Y 2.5/1		0-5	Sandyloam
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 131207

Time : 12:10

Northing (20TNAD83) 4997012

Easting (20TNAD83) 577231

Site ID 31

Sample Type - Horizon No X Yes

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes → Previous Site ID

Samples Collected
0 - 5 cm
Depth sample ~~(all horizons)~~ ☒
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☒
Parkland ☐
Shrubland
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☒
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☒
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☒
- Road ☐
- Garbage ☐
- Other

Weather
Sunny/Clear ☐
Partly cloudy ☒
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. – 10 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- maybe impacted by tailings

3 1 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
-setting
-profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5	–	10YR 3/4		0-5	loamy sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
131207

Time
: 14:53

Northing (20TNAD83)
4997033

Easting (20TNAD83)
577391

Site ID
32

Sample Type - Horizon
No X Yes

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No X Yes →
Previous Site ID

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☒
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☒
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Contamination
None ☒
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

Type of Surface Material
Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Weather
Sunny/Clear ☐
Partly cloudy ☒
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☒
Pitted ☐
Level ☐
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☒
Poorly drained ☐
Very poorly drained ☐

Air Temp.
-10 °C

3	2		ID				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

Horizons					Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		10YR 2/1		0-5	sandy clay loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 131207

Time : 15:04

Northing (20TNAD83) 4997033

Easting (20TNAD83) 577438

Site ID 33

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes → Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ____________

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. -10 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- west of trail
- lots of rock in soil
- thick root mat; dense
- frozen

3	3						

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
-setting
-profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		5Y 3/2		20-50	silty sand
2											with coarse
3											rock fragments
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 131207

Time: : 13:27

Northing (20TNAD83): 4996839

Easting (20TNAD83): 577206

Site ID: 40

Sample Type - Horizon: No X Yes

Names of Samplers: Hilda Dunnewold & Jack Gillis

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: No X Yes → Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☒
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☒
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☒
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ______

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.

-10 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

in wooded area

4 0 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low		(black)		%	
1		H			0	5		10YR 2/1		0-5	loam
2		Ae			5	+		grey			
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 131207

Time __ : __ 13:43

Northing (20TNAD83) 4996868

Easting (20TNAD83) 577146

Site ID 41

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes → Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☒ until water table
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☒
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other ______

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. – 10 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- appears to be tailings
- located in flat, wet area
- water @ 20cm depth

4	1	Site ID				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

tailings.

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	10		2.5Y 3/2		0-5	very fine sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 131207

Time : 13:04

Northing (20TNAD83) 4996887

Easting (20TNAD83) 577241

Site ID 42

Sample Type - Horizon No X Yes

Names of Samplers
Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes ➡
Previous Site ID

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☒
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☒
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☒

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☒
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☒
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☒
- Road ☐
- Garbage ☐
- Other

Weather
Sunny/Clear ☐
Partly cloudy ☒
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
-10°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

-tailings
-no vegetation

4	2						

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

- tailings

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	10		5Y 3/1		0-5	silt
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 131207

Time : 12:34

Northing (20TNAD83) 4996889

Easting (20TNAD83) 577342

Site ID 43

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes ➡

Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

- A - horizon ☐
- B - horizon ☐

Other ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☒
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☒
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. -10°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- in low area South of brook
- 10cm to water
- tailings

4	3	So.	(P)				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

- Pit with Samples ☐
- Looking North ☑
- Looking East ☑
- Looking South ☑
- Looking West ☑
- Others
  - Setting
  - profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	10		2.5Y 3/1		0.5	silty sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 131207

Time: __ : __ 14:07

Northing (20TNAD83): 4996978

Easting (20TNAD83): 577202

Site ID: 46

Sample Type - Horizon: No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: No X Yes → Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☒
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☒
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other ____________

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.: -10°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

-tailings

- on or near racetrack

4 6 Site ID -

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

tailings to 20cm depth

Horizon Description

Horizons					Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	10		2.5Y 3/2		0-5	silty sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 131207

Time: __ : __ 13:57

Northing (20TNAD83): 4996965

Easting (20TNAD83): 577139

Site ID: 47

Sample Type - Horizon: No ☒ Yes ☐

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: No ☒ Yes ☐ → Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

A - horizon ☐

B - horizon ☐

Other: ☐

Type of Surface Material

Mineral Soil ☒

Organic Soil ☐

Non-Soil ☐

Urban ☐

Local Surface Expression

Mineral Surface Form

Blanket ☐

Dissected ☐

Fan ☐

Hummocky ☐

Inclined ☐

Pitted ☐

Level ☒

Rolling ☐

Ridged ☐

Steep ☐

Terrace ☐

Undulating ☐

Veneer ☐

Vegetation Cover

Agricultural Crops ☐

Coniferous Forest ☐

Deciduous Forest ☐

Mixed Forest ☐

Meadow, Wet ☐

Field ☐

Parkland ☐

Shrubland ☐

Unvegetated Surface ☒

Drainage

Very rapidly drained ☐

Rapidly drained ☐

Well drained ☐

Moderately well drained ☐

Imperfectly drained ☒

Poorly drained ☐

Very poorly drained ☐

Contamination

None ☐

Possible ☐

Probable ☐

Definite ☒

- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☒
- Road ☐
- Garbage ☐
- Other

Weather

Sunny/Clear ☐

Partly cloudy ☒

Overcast ☐

Rain ☐

Sleet ☐

Snow ☐

Air Temp.

-10 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- South of wooded area
- in tailings
-

4 7 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- Setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	10		2.5Y 4/1		0-5	Sandy clay
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 131207

Time : | 14:34

Northing (20TNAD83) 4997021

Easting (20TNAD83) 577304

Site ID 48

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold & Jack Gillis

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes →

Previous Site ID

Samples Collected

0 - 5 cm

- **Depth sample** (all horizons) ☒

Horizon Sample

- A - horizon ☐
- B - horizon ☐
- Other: ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☒
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☒
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. -10 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- tailings

4	8	SG	F				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☑
Looking East ☑
Looking South ☑
Looking West ☑
Others
- setting
- profile

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

Horizons					Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	10		2.5Y 3/1		0-5	fine sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 080526

Time: : | 14:55

Northing (20TNAD83): 4997062

Easting (20TNAD83): 577446

Site ID: 25

Sample Type - Horizon: No ☒ Yes ☐

Names of Samplers

Hilda Dunnewold
Alphonse Peters

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: No ☒ Yes ☐ →

Previous Site ID

Samples Collected

0 - 5 cm

- Depth sample (all horizons) ☒

Horizon Sample

- A - horizon ☐
- B - horizon ☐
- Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other ____

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 20m east of proposed original location (reflected in coordinate location)

2	5	SH	ID				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		10YR 3/2		30%	Sandy loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
080526

Time
:
16:00

Northing (20TNAD83)
4997035

Easting (20TNAD83)
577479

Site ID
34

Sample Type - Horizon
No ☒ Yes ☐

Names of Samplers
Hildo Dunnewold
Alphonse Peters

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No ☒ Yes ☐ ➡
Previous Site ID

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☒
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☒
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☒
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☒
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Weather
Sunny/Clear ☐
Partly cloudy ☒
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- adjacent to a trench to the east
- 10m west of original location (reflected in coordinate location)

3	4	SITE	ID				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

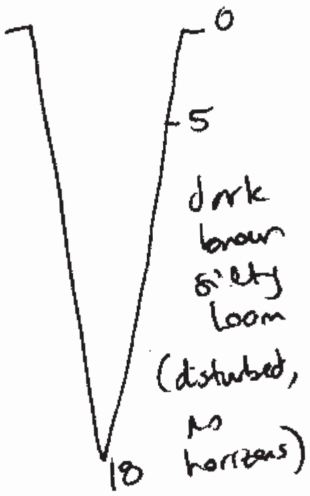
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



dark brown silty loam (disturbed, no horizons)

Horizon Description

#	Horizons				Depth		HB	Colour	RM	CF	Field Texture
	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		2.5Y 4/3		10%	silty loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 080526

Time : 13:56

Northing (20TNAD83) 4997017

Easting (20TNAD83) 577543

Site ID 35

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers
Hilda Dunnewold
Alphonse Peters

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ → Previous Site ID

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☒
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☒
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☒
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☒
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other ______

Weather
Sunny/Clear ☐
Partly cloudy ☒
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- South of open mine shaft
- West of water filled mine shaft
- adjacent to residential
- adjacent to public road

3	5	Site ID					

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

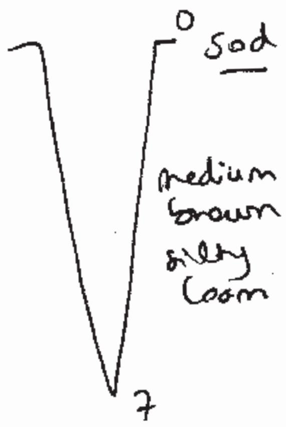
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		10YR 3/2		10-20%	silty loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
080526

Time
: 14:20

Northing (20TNAD83)
4996877

Easting (20TNAD83)
577451

Site ID
37

Sample Type - Horizon
No X Yes

Names of Samplers
Hilda Dunnewold
Alphonse Peters

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No X Yes ➡
Previous Site ID

Samples Collected
0 - 5 cm
- Depth sample (all horizons) ☒
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other: ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Contamination
- None ☐
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

Type of Surface Material
- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Air Temp.
°C

37 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF %	Field Texture
#	D	Ma	Suffix	M	Up	Low					
1		A			0	5		5Y 3/1		20-30%	silty loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
080526

Time
: 11:40

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
38

Sample Type - Horizon
No ☐ Yes ☒

Names of Samplers
Hilda Dunnewold
Alphonse Peters

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No ☒ Yes ☐ →
Previous Site ID

Samples Collected

0 - 5 cm

- Depth sample (all horizons) ☒
- **Horizon Sample**
  - A - horizon ☒
  - B - horizon ☐
- Other: humus ☒

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☒
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

in wooded area

3	8	Site	ID				

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

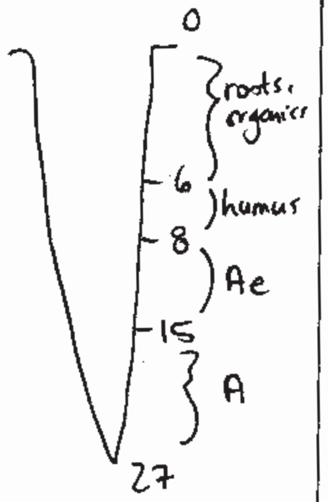
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
- Pit with Samples ☒
- Looking North ☒
- Looking East ☒
- Looking South ☒
- Looking West ☒
- Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		H					I	5Y 3/2		0	humus
2		Ae					I	grey		0.5	Silty clayloam
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
GOLDENVILLE

Date
080526

Time
 :
11:15

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
39

Sample Type - Horizon
No ☐ Yes ☒

Names of Samplers
Hilda Dunnewold
Alplonse Peters

RepStat
00

Sampling Depth
0 - 5 cm

Resampled Site
No ☒ Yes ☐ ➡
Previous Site ID

Samples Collected

0 - 5 cm

- Depth sample (all horizons) ☒
- **Horizon Sample**
  - A - horizon ☒
  - B - horizon ☐
- Other: humus ☒

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☒
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☒
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- waste rock piles
- on east facing slope

39

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

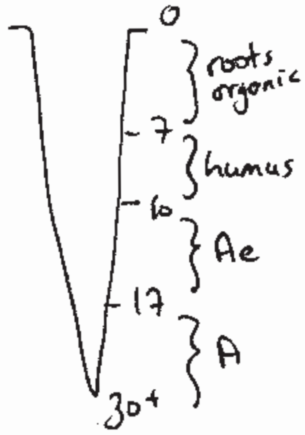
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Soil Profile Diagram



Horizon Description

#	Horizons D	Horizons Ma	Horizons Suffix	Horizons M	Depth Up	Depth Low	HB	Colour	RM	CF %	Field Texture
1		H			0	3	I	10YR 2/1		0	
2		Ae			3	5	I			0-5%	silty clay loam
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 080526

Time: __ : __ 12 : 50

Northing (20TNAD83): 4996941

Easting (20TNAD83): 577301

Site ID: 44

Sample Type - Horizon: No ☒ Yes ☐

Names of Samplers

Hilda Dunnewold
Alphonse Peters

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: No ☒ Yes ☐ ➡ Previous Site ID

Samples Collected

0 - 5 cm

- Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐
- Other: ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☒

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☒
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- in flat tailings area

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☒
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Air Temp.

°C

4	4						

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Soil Profile Diagram

tailings throughout depth

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	S		2.5Y 4/2		0-5	fine sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 080526

Time : 12:45

Northing (20TNAD83) 4996970

Easting (20TNAD83) 577255

Site ID 45

Sample Type - Horizon No X Yes

Names of Samplers

Hilda Dunnewold
Alphonse Peters

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No X Yes → Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☒

Drainage
- Very rapidly drained ☐
- Rapidly drained ☒
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☒
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

– in flat tailings area

4 5

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

tailings
throughout
depth

Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		2.5Y 4/3		0-5	fine sand
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 260508

Time __ : __ 13:00

Northing (20TNAD83) 4996892

Easting (20TNAD83) 577382

Site ID S1

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers

Hilda Dunnewold
Alphonse Peters

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ ➡ Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☒
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☒
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other ______

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. __ °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

on a sloped area
adjacent to the
tailings area

5 1 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

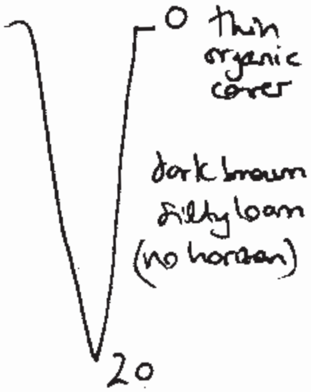
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

- Pit with Samples ☒
- Looking North ☒
- Looking East ☒
- Looking South ☒
- Looking West ☒
- Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	RM	CF	Field Texture
	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		2.5Y 3/3		10%	silty loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 080526

Time : 16:20

Northing (20TNAD83)

Easting (20TNAD83)

Site ID 52

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers
Hilda Dunnewold
Alphonse Peters

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ →
Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☒
Unvegetated Surface ☐

Contamination

- None ☐
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- adjacent to pits and trenches
- adjacent to trail

Type of Surface Material

Mineral Soil ☒
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☒
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☒
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Weather

Sunny/Clear ☐
Partly cloudy ☒
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. °C

52

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

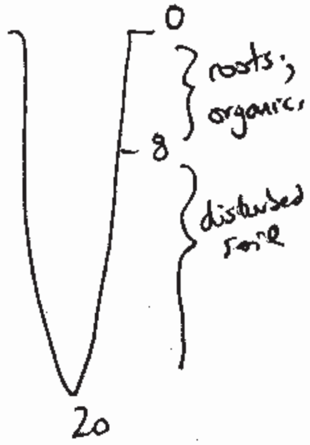
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		5Y 3/2		10-20%	silty clay loam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site GOLDENVILLE

Date 080526

Time : 16:30

Northing (20TNAD83)

Easting (20TNAD83)

Site ID 53

Sample Type - Horizon No ☒ Yes ☐

Names of Samplers

Hilda Dunnewold
Alphonse Peters

RepStat 00

Sampling Depth 0 - 5 cm

Resampled Site No ☒ Yes ☐ ➡

Previous Site ID

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☒

Horizon Sample

- A - horizon ☐
- B - horizon ☐

Other ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Contamination

- None ☐
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- adjacent to pits and trenches
- adjacent to trail

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☒
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☒
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Air Temp. °C

53

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

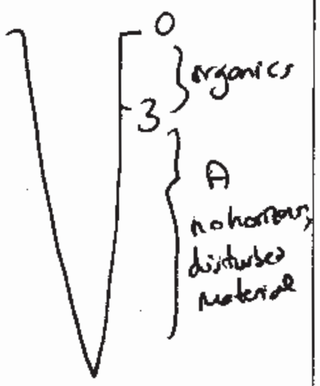
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		10YR 3/2		3040	Siltyclayloam
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: GOLDENVILLE

Date: 080526

Time: : :

Northing (20TNAD83):

Easting (20TNAD83):

Site ID: 54

Sample Type - Horizon: No X Yes

Names of Samplers

Hilda Dunnewold
Alphonse Peters

RepStat: 00

Sampling Depth: 0 - 5 cm

Resampled Site: No X Yes →

Previous Site ID

Samples Collected

0 - 5 cm

- Depth sample (all horizons) ☒
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other: ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☒
- Field ☐
- Parkland ☐
- Shrubland ☒
- Unvegetated Surface ☐

Contamination

- None ☐
- Possible ☒
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☒
  - Road ☐
  - Garbage ☐
  - Other

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- adjacent to public road
- located in wet area

Type of Surface Material

- Mineral Soil ☒
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☒
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☒
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☒
- Poorly drained ☐
- Very poorly drained ☐

Air Temp. °C

5 4 Site ID

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☒
Looking North ☒
Looking East ☒
Looking South ☒
Looking West ☒
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

Horizons					Depth		HB	Colour	RM	CF	Field Texture
#	D	Ma	Suffix	M	Up	Low				%	
1		A			0	5		10YR 2/1		5-10	
2											
3											
4											
5											
6											
7											
8											
9											
10											

Appendix C

Groundwater Monitoring Well Details

Goldenville Mine Site - MW No.2007-01

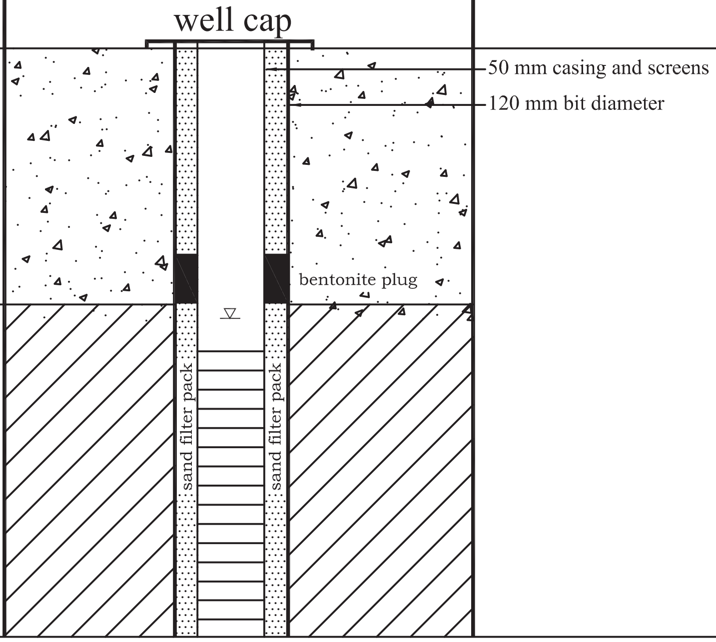
Client : Nova Scotia Department of Transportation and Public Works

Location : Goldenville, Guysborough County, Nova Scotia

Date Started : December 13, 2007 Date Completed : December 13, 2007

W.G. Shaw & Associates Ltd.
Consulting Geoscientists
4546 Highway No.7
Antigonish, Nova Scotia
Canada B2G 2L3

Depth (m)	Boundary Depth (m)	Lithologic Description	Well Construction	Notes
		datum = ground surface		
0		Silty Sand (fine mill tailings) medium grey colour		
01				
02	2.70m			
03		Slate (Bedrock) dark grey to black colour		
04				
05				
06	6.10m			
		Bottom of Well @ 6.10 metres		
08				
10				
12				
14				
16				



Goldenville Mine Site - MW No.2007-03

W.G. Shaw & Associates Ltd.
Consulting Geoscientists
4546 Highway No.7
Antigonish, Nova Scotia
Canada B2G 2L3

Client : Nova Scotia Department of Transportation and Public Works

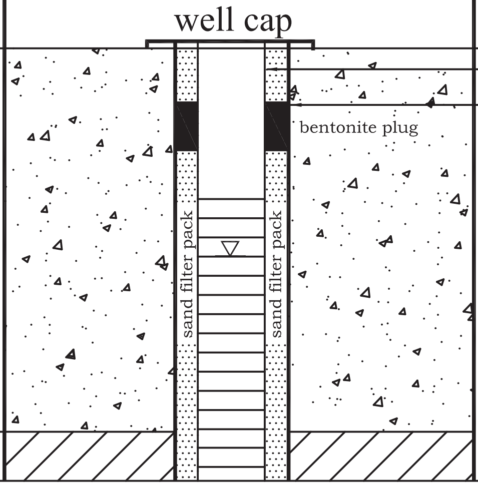
Location : Goldenville, Guysborough County, Nova Scotia

Date Started : December 13, 2007 Date Completed : December 13, 2007

datum = ground surface

Depth (m)	Boundary Depth (m)	Lithologic Description
0		Silty Sand (fine mill tailings) medium grey colour
01		
02		
03		
04	4.00m	Slate (Bedrock) dark grey to black colour
	4.50m	Bottom of Well @ 4.50 metres
05		
06		
08		
10		
12		
14		
16		

Well Construction



Notes

50 mm casing and screens

120 mm bit diameter

20 slot well screen (1.4-4.4m)

Goldenville Mine Site - MW No.2007-01

W.G. Shaw & Associates Ltd.
Consulting Geoscientists

4546 Highway No.7
Antigonish, Nova Scotia
Canada B2G 2L3

Client : Nova Scotia Department of Transportation and Public Works

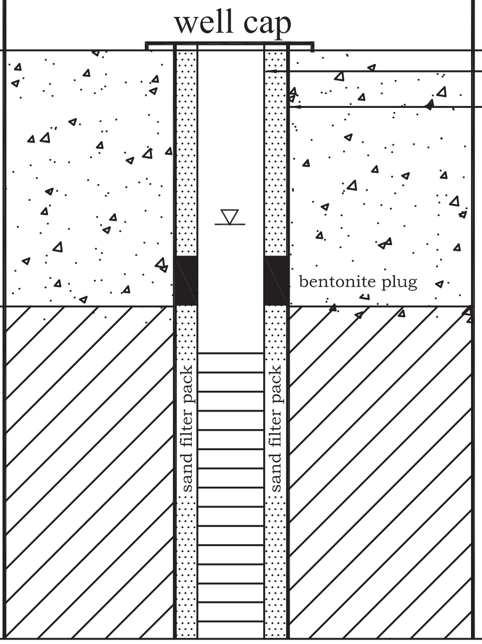
Location : Goldenville, Guysborough County, Nova Scotia

Date Started : December 13, 2007 Date Completed : December 13, 2007

datum = ground surface

Depth (m)	Boundary Depth (m)	Lithologic Description	Notes
0		Silty Sand (fine mill tailings) medium grey colour	50 mm casing and screens 120 mm bit diameter
01			
02			
	2.70m		
03		Slate (Bedrock) dark grey to black colour	
04			20 slot well screen (3.0-6.0m)
05			
06	6.10m		
		Bottom of Well @ 6.10 metres	
08			
10			
12			
14			
16			

Well Construction



Appendix D

Photographs

(provided electronically)

Appendix E

Data Tables

Table 1 - Groundwater Elevations
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Well	**Date Completed** y/m/d	**Elevation**		**Total Depth** (m)	**PVC Screen**		**Static Water Level**		
		Ground Surface (m)	Top of PVC Casing (m)		Depth (m)	Diameter I.D. (cm)	Level metres	Elevation metres a.s.l.	Date y/m/d
MW#1	20087-12-13	55.95	55.75	6.10	3.0 - 6.0	5.0	2.85	52.90	2007-12-13
MW#2	20087-12-13	50.16	50.05	4.50	1.4 - 4.4	5.0	1.85	48.20	2007-12-13
MW#3	20087-12-13	53.64	53.52	4.50	1.4 - 4.4	5.0	2.10	51.42	2007-12-13
MW#1							2.05	53.70	2008-05-26
MW#2							0.34	49.71	2008-05-26
MW#3							0.60	52.92	2008-05-26

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**1**		**2**		**3**		**4**		**5**	
Site Description										
Northing (20T, NAD 83)	4997291		4997288		4997276		4997231		4997230	
Easting (20T, NAD 83)	577292		577327		577571		577495		577432	
Date	12/10/2007		12/10/2007		12/10/2007		12/10/2007		12/10/2007	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**1**		**2**		**3**		**4**		**5**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Sample Wet Weight (g)	23.4733				23.7897				25.0088	
Sample Dry Weight (g)	16.1966				16.6528				14.7552	
Water Content (%)	31				30				41	
Original Weight (g)	-				-				-	
<150 µm (g)	6.235				2.5466				4.5536	
<150 µm (%)	38				15				31	
Soil Description	sandy loam		sandy loam		silty loam		sandy clay loam		sandy clay	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	36	37	48	45	32	40	54	59	51	54
As (mg/kg)	180	180	710	650	270	220	850	880	380	350

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**6**		**8**		**9**		**11**		**12**	
Site Description										
Northing (20T, NAD 83)	4997233		4997207		4997198		4997193		4997180	
Easting (20T, NAD 83)	577379		577209		577264		577397		577450	
Date	12/10/2007		12/10/2007		12/10/2007		12/10/2007		12/10/2007	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**6**		**8**		**9**		**11**		**12**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Sample Wet Weight (g)	16.5839								24.4205	
Sample Dry Weight (g)	10.6137								15.3849	
Water Content (%)	36								37	
Original Weight (g)	-								-	
<150 µm (g)	1.988								6.3521	
<150 µm (%)	19								41	
Soil Description	silty clay loam		sandy clay		silty loam		silt loam		silty clay loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	57	54	87	90	44	37	72	75	44	50
As (mg/kg)	230	230	130	130	2500	1900	700	730	420	370

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**13**		**14**		**15**		**19**		**20**	
Site Description										
Northing (20T, NAD 83)	4997155		4997162		4997155		4997122		4997129	
Easting (20T, NAD 83)	577493		577353		577288		577364		577412	
Date	12/10/2007		12/10/2007		12/10/2007		12/10/2007		12/13/2007	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**13**		**14**		**15**		**19**		**20**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Sample Wet Weight (g)	24.3372									
Sample Dry Weight (g)	17.2794									
Water Content (%)	29									
Original Weight (g)	-									
<150 µm (g)	8.5633									
<150 µm (%)	50									
Soil Description	sandy loam		sandy loam		sandy clay		medium sand		silty sand	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	19	20	67	75	33	40	4.8	2.3	15	14
As (mg/kg)	5600	5700	1800	1700	1400	1100	7400	5300	1300	960

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**21**		**22**		**23**		**24**		**25**	
Site Description										
Northing (20T, NAD 83)	4997111		4997122		4997149		4997090		4997062	
Easting (20T, NAD 83)	577447		577522		577568		577478		577446	
Date	12/13/2007		12/10/2007		12/10/2007		12/13/2007		5/26/2008	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**21**		**22**		**23**		**24**		**25**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Sample Wet Weight (g)							29.4094		5.510	
Sample Dry Weight (g)							24.7039		4.190	
Water Content (%)							16		24	
Original Weight (g)							-		-	
<150 µm (g)							12.9195		5.56	
<150 µm (%)							52		41	
Soil Description	silty sand		sandy loam		silty sand		fine sand		sandy loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	11	9.1	26	33	7.2	6.2	9.7	9.8	27	26
As (mg/kg)	1300	1400	1700	1600	2500	1900	350	290	980	770

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**26**		**27**		**28**		**30**		**30**	
Site Description										
Northing (20T, NAD 83)	4997071		4997063		4997057		4997009		4997009	
Easting (20T, NAD 83)	577373		577322		577265		577158		577158	
Date	12/13/2007		12/13/2007		12/13/2007		12/13/2007		12/13/2007	
Depth or Horizon Sample	D		D		D		D		H	
Subsample ID	**26**		**27**		**28**		**30-PH**		**30-0/4**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		4	
Sample Wet Weight (g)							21.0744		23.7907	
Sample Dry Weight (g)							13.4876		13.7986	
Water Content (%)							36		42	
Original Weight (g)							-		-	
<150 µm (g)							4.5249		3.6293	
<150 µm (%)							34		26	
Soil Description	sandy loam		very fine sand		loamy sand		-		humus	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	33	26	1.3	1	36	49	39	64	62	97
As (mg/kg)	2100	1400	6000	3700	1300	1000	90	51	150	150

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**30**		**31**		**32**		**33**		**34**	
Site Description										
Northing (20T, NAD 83)	4997009		4997012		4997033		4997033		4997035	
Easting (20T, NAD 83)	577158		577231		577391		577438		577479	
Date	12/13/2007		12/13/2007		12/13/2007		12/13/2007		5/26/2008	
Depth or Horizon Sample	H		D		D		D		D	
Subsample ID	**30-4/5**		**31**		**32**		**33**		**34**	
Top Sample Interval (cm)	4		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Sample Wet Weight (g)	36.9389								3.590	
Sample Dry Weight (g)	29.9205								2.760	
Water Content (%)	19								23	
Original Weight (g)	-								-	
<150 µm (g)	22.2229								3.85	
<150 µm (%)	74								24	
Soil Description	sandy loam		loamy sand		sandy clay loam		silty sand		silty loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	8.1	9.1	6.5	6.3	58	59	29	32	21	17
As (mg/kg)	61	68	5300	2700	8800	9600	1800	960	51	35

Table 2 - Soil Sample Analysis (TOC, As)

Nova Scotia Department of Transportation and Infrastructure Renewal

Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**35**		**37**		**38**		**38**		**38**	
Site Description										
Northing (20T, NAD 83)	4997017		4996877		4996805		4996805		4996805	
Easting (20T, NAD 83)	577543		577451		577320		577320		577320	
Date	5/26/2008		5/26/2008		5/26/2008		5/26/2008		5/26/2008	
Depth or Horizon Sample	D		D		D		H		H	
Subsample ID	**35**		**37**		**38-PH**		**38-0/2**		**38-2/5**	
Top Sample Interval (cm)	0		0		0		0		2	
Bottom Sample Interval (cm)	5		5		5		2		5	
Sample Wet Weight (g)	4.420		2.980		5.080		3.310		4.560	
Sample Dry Weight (g)	3.410		2.420		3.700		1.710		3.120	
Water Content (%)	23		19		27		48		32	
Original Weight (g)	-		-		-		-		-	
<150 µm (g)	4.06		3.85		4.89		4.30		7.80	
<150 µm (%)	25		25		29		46		43	
Soil Description	silty loam		silty loam		silty clay loam		-		-	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	17	17	14	17	24	31	57	75	20	28
As (mg/kg)	360	410	190	180	64	70	78	91	67	79

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**39**		**39**		**39**		**40**		**41**	
Site Description										
Northing (20T, NAD 83)	4996839		4996839		4996839		4996839		4996868	
Easting (20T, NAD 83)	577348		577348		577348		577206		577146	
Date	5/26/2008		5/26/2008		5/26/2008		12/13/2007		12/13/2007	
Depth or Horizon Sample	D		H		H		D		D	
Subsample ID	**39-PH**		**39-0/3**		**39-3/5**		**40**		**41**	
Top Sample Interval (cm)	0		0		3		0		0	
Bottom Sample Interval (cm)	5		3		5		5		5	
Sample Wet Weight (g)	3.410		3.160		4.700		22.2283		34.0491	
Sample Dry Weight (g)	2.150		1.560		3.550		6.4462		26.2178	
Water Content (%)	37		51		24		71		23	
Original Weight (g)	-		-		-		-		-	
<150 µm (g)	4.19		1.40		5.57		2.032		5.6826	
<150 µm (%)	41		21		36		32		22	
Soil Description	silty clay loam		-		-		loam		very fine sand	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	47	91	110	190	12	14	110	220	3	1.4
As (mg/kg)	17	20	61	61	210	240	77	51	17000	5800

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**42**		**43**		**44**		**45**		**46**	
Site Description										
Northing (20T, NAD 83)	4996887		4996889		4996941		4996970		4996978	
Easting (20T, NAD 83)	577241		577342		577301		577255		577202	
Date	12/13/2007		12/13/2007		5/26/2008		5/26/2008		12/13/2007	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**42**		**43**		**44**		**45**		**46**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Sample Wet Weight (g)					4.610		5.390		21.5683	
Sample Dry Weight (g)					3.750		4.690		17.4703	
Water Content (%)					19		13		19	
Original Weight (g)					-		-		-	
<150 µm (g)					2.11		1.21		7.9162	
<150 µm (%)					7.7		6.0		45	
Soil Description	silt		silty sand		fine sand		fine sand		silty sand	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	2.7	2.7	4	2.7	0.7	0.4	1.4	0.9	7	3.8
As (mg/kg)	4000	4700	7800	7100	3000	1200	8700	3700	4800	3500

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**47**		**48**		**49**		**50**		**51**	
Site Description										
Northing (20T, NAD 83)	4996965		4997021		4997122		4997207		4996892	
Easting (20T, NAD 83)	577139		577304		577522		577209		577382	
Date	12/13/2007		12/13/2007		12/10/2007		12/10/2007		5/26/2008	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**47**		**48**		**49**		**50**		**51**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Sample Wet Weight (g)			38.2158				20.7461		3.070	
Sample Dry Weight (g)			31.7191				9.5432		1.940	
Water Content (%)			17				54		37	
Original Weight (g)			-				-		-	
<150 µm (g)			15.0102				2.7587		3.64	
<150 µm (%)			47				29		30	
Soil Description	sandy clay		fine sand		sandy loam		sandy clay		silty loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	5.5	6	1.3	0.9	29	29	78	86	37	47
As (mg/kg)	2300	2500	4200	2200	1800	1600	140	130	2500	2000

Table 2 - Soil Sample Analysis (TOC, As)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**52**		**53**		**54**		**55**	
Site Description								
Northing (20T, NAD 83)	4997375		4997395		4996965		4996805	
Easting (20T, NAD 83)	577485		577570		577605		577320	
Date	5/26/2008		5/26/2008		5/26/2008		5/26/2008	
Depth or Horizon Sample	D		D		D		D	
Subsample ID	**52**		**53**		**54**		**55**	
Top Sample Interval (cm)	0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5	
Sample Wet Weight (g)	4.590		2.840		3.540		4.500	
Sample Dry Weight (g)	2.920		2.030		0.670		3.080	
Water Content (%)	36		29		81		32	
Original Weight (g)	-		-		-		-	
<150 µm (g)	2.08		3.32		0.91		6.26	
<150 µm (%)	28		34		16		43	
Soil Description	silty clay loam		silty clay loam		-		silty clay loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Total Carbon (g/kg)	60	65	39	40	210	290	22	29
As (mg/kg)	110	120	1200	1200	51	69	68	76

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**1**		**2**		**3**		**4**		**5**	
Site Description										
Northing (20T, NAD 83)	4997291		4997288		4997276		4997231		4997230	
Easting (20T, NAD 83)	577292		577327		577571		577495		577432	
Date	12/10/2007		12/10/2007		12/10/2007		12/10/2007		12/10/2007	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**1**		**2**		**3**		**4**		**5**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Soil Description	sandy loam		sandy loam		silty loam		sandy clay loam		sandy clay	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	0.1	-	2	-	0.54	-	2.4	-	1.3

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**6**		**8**		**9**		**11**		**12**	
Site Description										
Northing (20T, NAD 83)	4997233		4997207		4997198		4997193		4997180	
Easting (20T, NAD 83)	577379		577209		577264		577397		577450	
Date	12/10/2007		12/10/2007		12/10/2007		12/10/2007		12/10/2007	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**6**		**8**		**9**		**11**		**12**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Soil Description	silty clay loam		sandy clay		silty loam		silt loam		silty clay loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	1.7	-	0.71	-	0.06	-	20	-	1.4

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**13**		**14**		**15**		**19**		**20**	
Site Description										
Northing (20T, NAD 83)	4997155		4997162		4997155		4997122		4997129	
Easting (20T, NAD 83)	577493		577353		577288		577364		577412	
Date	12/10/2007		12/10/2007		12/10/2007		12/10/2007		12/13/2007	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**13**		**14**		**15**		**19**		**20**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Soil Description	sandy loam		sandy loam		sandy clay		medium sand		silty sand	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	13	-	2.4	-	0.38	-	0.3	-	0.92

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**21**		**22**		**23**		**24**		**25**	
Site Description										
Northing (20T, NAD 83)	4997111		4997122		4997149		4997090		4997062	
Easting (20T, NAD 83)	577447		577522		577568		577478		577446	
Date	12/13/2007		12/10/2007		12/10/2007		12/13/2007		5/26/2008	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**21**		**22**		**23**		**24**		**25**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Soil Description	silty sand		sandy loam		silty sand		fine sand		sandy loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	1.1	-	1.6	-	2.5	-	0.46	-	0.44

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**26**		**27**		**28**		**30**		**30**	
Site Description										
Northing (20T, NAD 83)	4997071		4997063		4997057		4997009		4997009	
Easting (20T, NAD 83)	577373		577322		577265		577158		577158	
Date	12/13/2007		12/13/2007		12/13/2007		12/13/2007		12/13/2007	
Depth or Horizon Sample	D		D		D		D		H	
Subsample ID	**26**		**27**		**28**		**30-PH**		**30-0/4**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		4	
Soil Description	sandy loam		very fine sand		loamy sand		-		humus	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	1.4	-	0.55	-	2.1	-	0.44	-	0.59

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**30**		**31**		**32**		**33**		**34**	
Site Description										
Northing (20T, NAD 83)	4997009		4997012		4997033		4997033		4997035	
Easting (20T, NAD 83)	577158		577231		577391		577438		577479	
Date	12/13/2007		12/13/2007		12/13/2007		12/13/2007		5/26/2008	
Depth or Horizon Sample	H		D		D		D		D	
Subsample ID	**30-4/5**		**31**		**32**		**33**		**34**	
Top Sample Interval (cm)	4		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Soil Description	sandy loam		loamy sand		sandy clay loam		silty sand		silty loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	0.05	-	0.32	-	2.2	-	0.09	-	0.02

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**35**		**37**		**38**		**38**		**38**	
Site Description										
Northing (20T, NAD 83)	4997017		4996877		4996805		4996805		4996805	
Easting (20T, NAD 83)	577543		577451		577320		577320		577320	
Date	5/26/2008		5/26/2008		5/26/2008		5/26/2008		5/26/2008	
Depth or Horizon Sample	D		D		D		H		H	
Subsample ID	**35**		**37**		**38-PH**		**38-0/2**		**38-2/5**	
Top Sample Interval (cm)	0		0		0		0		2	
Bottom Sample Interval (cm)	5		5		5		2		5	
Soil Description	silty loam		silty loam		silty clay loam		-		-	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	0.31	-	0.05	-	0.08	-	0.29	-	0.11

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**39**		**39**		**39**		**40**		**41**	
Site Description										
Northing (20T, NAD 83)	4996839		4996839		4996839		4996839		4996868	
Easting (20T, NAD 83)	577348		577348		577348		577206		577146	
Date	5/26/2008		5/26/2008		5/26/2008		12/13/2007		12/13/2007	
Depth or Horizon Sample	D		H		H		D		D	
Subsample ID	**39-PH**		**39-0/3**		**39-3/5**		**40**		**41**	
Top Sample Interval (cm)	0		0		3		0		0	
Bottom Sample Interval (cm)	5		3		5		5		5	
Soil Description	silty clay loam		-		-		loam		very fine sand	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	0.18	-	0.37	-	0.06	-	0.84	-	0.09

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**42**		**43**		**44**		**45**		**46**	
Site Description										
Northing (20T, NAD 83)	4996887		4996889		4996941		4996970		4996978	
Easting (20T, NAD 83)	577241		577342		577301		577255		577202	
Date	12/13/2007		12/13/2007		5/26/2008		5/26/2008		12/13/2007	
Depth or Horizon Sample	D		D				D		D	
Subsample ID	**42**		**43**		**44**		**45**		**46**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Soil Description	silt		silty sand		fine sand		fine sand		silty sand	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	8.6	-	0.18	-	0.17	-	0.33	-	0.52

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**47**		**48**		**49**		**50**		**51**	
Site Description										
Northing (20T, NAD 83)	4996965		4997021		4997122		4997207		4996892	
Easting (20T, NAD 83)	577139		577304		577522		577209		577382	
Date	12/13/2007		12/13/2007		12/10/2007		12/10/2007		5/26/2008	
Depth or Horizon Sample	D		D		D		D		D	
Subsample ID	**47**		**48**		**49**		**50**		**51**	
Top Sample Interval (cm)	0		0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5		5	
Soil Description	sandy clay		fine sand		sandy loam		sandy clay		silty loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	1	-	0.16	-	1.8	-	0.68	-	0.32

Table 3 - Soil Sample Analysis (Hg)
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Sample Site	**52**		**53**		**54**		**55**	
Site Description								
Northing (20T, NAD 83)	4997375		4997395		4996965		4996805	
Easting (20T, NAD 83)	577485		577570		577605		577320	
Date	5/26/2008		5/26/2008		5/26/2008		5/26/2008	
Depth or Horizon Sample	D		D		D		D	
Subsample ID	**52**		**53**		**54**		**55**	
Top Sample Interval (cm)	0		0		0		0	
Bottom Sample Interval (cm)	5		5		5		5	
Soil Description	silty clay loam		silty clay loam		silty clay loam		silty clay loam	
Size Fraction	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm	<150µm	<2mm
Hg (mg/kg)	-	0.17	-	0.07	-	0.57	-	0.11

Table 4 - Metal Scan
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Parameter	MDL	Units	41	46	48
Aluminium	0.01	%	0.75	1.14	1.01
Antimony	0.02	mg/kg	9.09	5.17	4.70
Arsenic	0.1	mg/kg	>10000	5172	4657
Barium	0.5	mg/kg	24.7	23.3	26.5
Bismuth	0.02	mg/kg	0.70	0.54	0.49
Boron	20	mg/kg	<20	<20	<20
Cadmium	0.01	mg/kg	0.77	0.21	0.25
Calcium	0.01	%	0.15	0.11	0.18
Chromium	0.5	mg/kg	10.1	13.7	13.9
Cobalt	0.1	mg/kg	18.7	8.7	13.0
Copper	0.01	mg/kg	35.31	21.19	38.79
Galium	0.1	mg/kg	2.1	3.0	2.7
Gold	0.2	µg/kg	458.5	129.9	223.6
Iron	0.01	%	3.21	2.44	2.78
Lanthanum	0.5	mg/kg	28.8	17.9	26.6
Lead	0.01	mg/kg	53.49	44.43	39.88
Magnesium	0.01	%	0.46	0.48	0.66
Manganese	1	mg/kg	471	377	500
Mercury	5	µg/kg	323	692	407
Molybdenum	2	mg/kg	0.69	0.64	1.15
Phosphorus	0.001	%	0.068	0.061	0.085
Potassium	0.01	%	0.13	0.11	0.17
Nickel	0.1	mg/kg	21.8	14.8	26.8
Selenium	0.1	mg/kg	0.3	0.6	0.4
Scandium	0.1	mg/kg	0.9	1.3	1.2
Silver	2	µg/kg	209	145	160
Sodium	0.001	%	0.003	0.002	0.002
Strontium	0.5	mg/kg	18.2	15.9	22.9
Sulfur	0.02	%	0.03	0.04	<0.02
Tellurium	0.02	mg/kg	0.36	0.15	0.14
Thallium	0.0	mg/kg	0.10	0.09	0.11
Thorium	0.1	mg/kg	3.9	4.0	6.3
Titanium	0.0	%	0.028	0.026	0.034
Tungsten	0.1	mg/kg	10.4	2.0	2.4
Uranium	0.1	mg/kg	0.4	0.5	0.6
Vanadium	2	mg/kg	7	13	11
Zinc	0.1	mg/kg	45.6	50.6	57.3

Table 5 - Metals in Water - December 13, 2007 Sample Event
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Parameter	RDL	Units	MW#1	MW#2	MW#3
Arsenic	2	µg/L	22	96	77
Mercury	0.01	µg/L	nd	0.04	0.01

Table 6 - General Chemistry- May 26, 2008 Sample Event
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Parameter	Units	RDL	CCME DWQG[1]	Monitoring Well No.		
				MW#1	MW#2	MW#3
INORGANICS						
Total Alkalinity (Total as CaCO3)	mg/L	30	--	nd	110	77
Dissolved Chloride (Cl)	mg/L	10	250 (AO)	5	7	5
Colour	TCU	5	15 (AO)	nd	nd	nd
Hardness (CaCO3)	mg/L	1	--	11	180	83
Nitrate + Nitrite	mg/L	0.05	--	0.05	0.17	0.06
Nitrite (N)	mg/L	0.01	3.2 (MAC)	nd	nd	nd
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	--	nd	nd	nd
Total Organic Carbon (C)	mg/L	0.5	--	nd	nd	nd
Orthophosphate (P)	mg/L	0.01	--	nd	0.12	0.01
pH	pH	N/A	6.5 - 8.5 (AO)	4.76	7.36	7.7
Reactive Silica (SiO2)	mg/L	0.5	--	5.5	12	7.7
Dissolved Sulphate (SO4)	mg/L	2	500 (AO)	10	83	8
Turbidity	NTU	10	1 (MAC)	230	>1000	>1000
Conductivity	uS/cm	1	--	57	410	190
RCAP CALCULATIONS						
Anion Sum	me/L	N/A	--	0.38	4.17	1.84
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	1	--	nd	112	76
Calculated TDS	mg/L	1	500 (AO)	30	253	108
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	--	nd	nd	nd
Cation Sum	me/L	N/A	--	0.38	4.03	1.9
Ion Balance (% Difference)	%	N/A	--	0	1.71	1.6
Langelier Index (@ 20C)	N/A	N/A	--	NC	-0.265	-0.294
Langelier Index (@ 4C)	N/A	N/A	--	NC	-0.514	-0.545
Nitrate (N)	mg/L	0.05	45 (MAC)	0.05	0.17	0.06
Saturation pH (@ 20C)	N/A	N/A	--	NC	7.63	7.99
Saturation pH (@ 4C)	N/A	N/A	--	NC	7.87	8.25
Elements (ICP-OES)						
Dissolved Calcium (Ca)	mg/L	1	--	3.4	54	29
Dissolved Magnesium (Mg)	mg/L	1	--	0.5	12	2.4
Dissolved Phosphorus (P)	mg/L	1	--	nd	nd	ND
Dissolved Potassium (K)	mg/L	1	--	0.8	6.8	4
Dissolved Sodium (Na)	mg/L	1	200 (AO)	3.1	4.8	3.1
Dissolved Sulphur (S)				3.4	27	2.6

Notes:

[1] CCME DWQG refers to the Canadian Council of Ministers of the Environment *Canadian Environmental Quality Guidelines (November 2006 Update), Chapter 2 - Community Water; IMAC - health-related "interim maximum acceptable concentration", MAC - health-related "maximum acceptable concentration", AO - "aesthetic objective"*
nd - indicates parameter below laboratory detection limit;
-- indicates no guideline available for parameter;
Highlighted cells (if any) indicate parameter exceeds the CCME DWQG

Table 7 - Metals in Water -May 26, 2008 Sample Event
Nova Scotia Department of Transportation and Infrastructure Renewal
Phase II ESA Former Gold Mine Site, Goldenville, NS

Parameter	Units	RDL	CCME DWQG(1)	Monitoring Well No.		
				MW#1	MW#2	MW#3
Aluminium	μg/L	10	100 (OGV)	230	54	16
Antimony	μg/L	2	6 (IMAC)	nd	9	nd
Arsenic	μg/L	2	25 (IMAC)	nd	450	54
Barium	μg/L	5	1000 (MAC)	15	20	6
Beryllium	μg/L	2	--	nd	nd	nd
Bismuth	μg/L	2	--	nd	nd	nd
Boron	μg/L	5	5000 (IMAC)	5	11	nd
Cadmium	μg/L	0.3	5 (MAC)	0.9	nd	nd
Chromium	μg/L	2	50 (MAC)	nd	nd	nd
Cobalt	μg/L	1	--	11	19	1
Copper	μg/L	2	1000 (AO)	6	nd	nd
Iron	μg/L	50	300 (AO)	nd	nd	nd
Lead	μg/L	0.5	10 (MAC)	nd	nd	nd
Manganese	μg/L	2	50 (AO)	220	4800	1900
Molybdenum	μg/L	2	--	nd	3	nd
Nickel	μg/L	2	--	14	21	6
Selenium	μg/L	2	10 (MAC)	nd	nd	nd
Silver	μg/L	0.5	--	nd	nd	nd
Strontium	μg/L	5	--	16	310	83
Thallium	μg/L	0.1	--	nd	nd	nd
Tin	μg/L	2	--	nd	nd	nd
Titanium	μg/L	2	--	nd	4	nd
Uranium	μg/L	0.1	20 (IMAC)	nd	0.2	0.3
Vanadium	μg/L	2	--	nd	nd	nd
Zinc	μg/L	5	5000 (AO)	98	6	nd

Notes:

(1) CCME DWQG refers to the Canadian Council of Ministers of the Environment *Canadian Environmental Quality*

nd - indicates parameter below laboratory detection limit;

Bracketed values indicate increased method detection limits due to matrix interference;

-- indicates no guideline available for parameter;

Highlighted cells (if any) indicate parameter exceeds the CCME DWQG

Appendix F

Laboratory Reports

Your C.O.C. #: S 11525

Attention: BILLY SHAW
CJ MacLellan & Associates
65 Beech Hill Rd
Antigonish, NS
B2G 2P9

Report Date: 2008/01/04

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A7E2336
Received: 2007/12/27, 8:03

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury - Total (CVAA,LL)	3	N/A	2008/01/03	ATL SOP 00026 R2	Based on EPA245.1
Metals Water Total MS	3	N/A	2007/12/27	ATL SOP 00024 R3	Based on EPA6020A

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ALAN STEWART,
Email: alan.stewart.reports@maxxamanalytics.com
Phone# (902) 420-0203

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A7E2336
Report Date: 2008/01/04

CJ MacLellan & Associates
Client Project #:
Project name:
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		W57380	W57381		
Sampling Date		2007/12/27	2007/12/27		
COC Number		S 11525	S 11525		
Registration #					
	Units	**GOLDENVILLE MW NO1**	**GOLDENVILLE MW NO2**	**RDL**	**QC Batch**
ELEMENTS					
Total Mercury (Hg)	ug/L	ND	0.04	0.01	1435485
Elements (ICP-MS)					
Total Arsenic (As)	ug/L	22	96	2	1433233

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57382	W57382		
Sampling Date		2007/12/27	2007/12/27		
COC Number		S 11525	S 11525		
Registration #					
	Units	**GOLDENVILLE MW NO3**	**GOLDENVILLE MW NO3 Lab-Dup**	**RDL**	**QC Batch**
ELEMENTS					
Total Mercury (Hg)	ug/L	0.01	0.01	0.01	1435485
Elements (ICP-MS)					
Total Arsenic (As)	ug/L	77		2	1433233

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

CJ MacLellan & Associates
Attention: BILLY SHAW
Client Project #:
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA7E2336

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1433233	DLB	MATRIX SPIKE	Total Arsenic (As)	2007/12/27		101	%	80 - 120
		QC STANDARD	Total Arsenic (As)	2007/12/27		103	%	80 - 120
		Spiked Blank	Total Arsenic (As)	2007/12/27		94	%	80 - 120
		Method Blank	Total Arsenic (As)	2007/12/27	ND, RDL=2		ug/L	
		RPD	Total Arsenic (As)	2007/12/27	NC		%	25
1435485	AMC	MATRIX SPIKE [W57381-01]	Total Mercury (Hg)	2008/01/03		100	%	N/A
		QC STANDARD	Total Mercury (Hg)	2008/01/03		93	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2008/01/03		100	%	80 - 120
		Method Blank	Total Mercury (Hg)	2008/01/03	ND, RDL=0.013		ug/L	
		RPD [W57382-01]	Total Mercury (Hg)	2008/01/03	NC		%	25

ND = Not detected
N/A = Not Applicable
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Your Project #: 6906-21
Your C.O.C. #: B 33527

Attention: Hilda Dunnewold
CJ MacLellan & Associates
65 Beech Hill Rd
Antigonish, NS
B2G 2P9

Report Date: 2008/01/11

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A7E2184
Received: 2007/12/24, 9:30

Sample Matrix: Soil
Samples Received: 74

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury (CVAA)	1	N/A	2008/01/02	ATL SOP 00026 R2	Based on EPA245.5
Mercury (CVAA)	35	N/A	2008/01/07	ATL SOP 00026 R2	Based on EPA245.5
Mercury (CVAA)	1	N/A	2008/01/09	ATL SOP 00026 R2	Based on EPA245.5
Metals Solid Avail. MS - N-per	25	N/A	2008/01/02	ATL SOP 00024 R3	Based on EPA6020A
Metals Solid Avail. MS - N-per	49	N/A	2008/01/03	ATL SOP 00024 R3	Based on EPA6020A
Total Organic Carbon in Soil	10	N/A	2008/01/07	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	17	N/A	2008/01/08	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	20	N/A	2008/01/09	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	27	N/A	2008/01/10	ATL SOP 00044 R2	LECO 203-601-224

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Sara Nicholson
11 Jan 2008 14:46:00 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ALAN STEWART, Project Manager
Email: alan.stewart.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:247

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports.   SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

RESULTS OF ANALYSES OF SOIL

Maxxam ID		W57864			W57888	W57889		
Sampling Date		2007/12/10			2007/12/10	2007/12/10		
COC Number		B 33527			B 33527	B 33527		
Registration #								
	Units	**#1 <2mm**	**RDL**	**QC Batch**	**#1 <150MM**	**#2 <2mm**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	37	1	1436867	36	45	0.3	1436247

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57890		W57891		W57892		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#2 <150MM**	**RDL**	**#3 <2mm**	**RDL**	**#3 <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	48	0.4	40	0.5	32	0.4	1436247

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57893	W57894		W57895		
Sampling Date		2007/12/10	2007/12/10		2007/12/10		
COC Number		B 33527	B 33527		B 33527		
Registration #							
	Units	**#4 <2mm**	**#4 <150MM**	**RDL**	**#5 <2mm**	**RDL**	**QC Batch**
INORGANICS							
Organic Carbon (TOC)	g/kg	59	51	0.5	54	0.7	1436247

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57896	W57897	W57897		
Sampling Date		2007/12/10	2007/12/10	2007/12/10		
COC Number		B 33527	B 33527	B 33527		
Registration #						
	Units	**#5 <150MM**	**#6 <2mm**	**#6 <2mm Lab-Dup**	**RDL**	**QC Batch**
INORGANICS						
Organic Carbon (TOC)	g/kg	51	54	48	0.8	1436247

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57898		W57899		W57900		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#6 <150MM**	**RDL**	**#8 <2mm**	**RDL**	**#8 <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	57	0.6	90	0.9	87	1	1436867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57901		W57902		W57903		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#9 <2mm**	**RDL**	**#9 <150MM**	**RDL**	**#11 <2mm**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	37	0.7	44	0.6	75	0.9	1436867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57904		W57905		W57906		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#11 <150MM**	**RDL**	**#12 <2mm**	**RDL**	**#12 <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	72	1	50	0.8	44	0.9	1436867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57907		W57908		W57909		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#13 <2mm**	**RDL**	**#13 <150MM**	**RDL**	**#14 <2mm**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	20	0.9	19	0.8	75	0.6	1436867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57909		W57910		W57911		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#14 <2mm Lab-Dup**	**RDL**	**#14 <150MM**	**RDL**	**#15 <2mm**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	83	0.6	67	1	40	0.8	1436867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57912		W57913		
Sampling Date		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		
Registration #						
	Units	**#15 <150MM**	**RDL**	**#19 <2mm**	**RDL**	**QC Batch**
INORGANICS						
Organic Carbon (TOC)	g/kg	33	1	2.3	0.6	1436867

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57914		W57915		W57916		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#19 <150MM**	**RDL**	**#20 <2mm**	**RDL**	**#20 <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	4.8	0.3	14	0.4	15	0.5	1437606

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57917	W57918		W57919	W57920		
Sampling Date		2007/12/10	2007/12/10		2007/12/10	2007/12/10		
COC Number		B 33527	B 33527		B 33527	B 33527		
Registration #								
	Units	**#21 <2mm**	**#21 <150MM**	**RDL**	**#22 <2mm**	**#22 <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	9.1	11	0.4	33	26	0.8	1437606

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57921		W57922		W57923		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#23 <2mm**	**RDL**	**#23 <150MM**	**RDL**	**#24 <2mm**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	6.2	0.4	7.2	0.5	9.8	0.4	1437606

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57924		W57925		W57926		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#24 <150MM**	**RDL**	**#26 <2mm**	**RDL**	**#26 <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	9.7	0.4	26	0.6	33	0.9	1437606

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57927		W57928		W57929		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#27 <2mm**	**RDL**	**#27 <150MM**	**RDL**	**#28 <2mm**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	1.0	0.3	1.3	0.4	49	0.5	1437606

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57930		W57932		W57933		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#28 <150MM**	**RDL**	**#30-PH <2mm**	**RDL**	**#30-PH <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	36	0.9	64	0.7	39	0.8	1437606

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57934	W57934		
Sampling Date		2007/12/10	2007/12/10		
COC Number		B 33527	B 33527		
Registration #					
	Units	**#30-0/4 <2mm**	**#30-0/4 <2mm Lab-Dup**	**RDL**	**QC Batch**
INORGANICS					
Organic Carbon (TOC)	g/kg	97	97	1	1437606

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57935		W57935		
Sampling Date		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		
Registration #						
	Units	**#30-0/4 <150MM**	**RDL**	**#30-0/4 <150MM Lab-Dup**	**RDL**	**QC Batch**
INORGANICS						
Organic Carbon (TOC)	g/kg	62	0.3	61	0.7	1437607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57936		W57937		W57938		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#30-4/5 <2mm**	**RDL**	**#30-4/5 <150MM**	**RDL**	**#31 <2mm**	**RDL**	**QC Batch**

INORGANICS								
Organic Carbon (TOC)	g/kg	9.1	0.2	8.1	0.4	6.3	0.6	1437607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57939		W57940	W57941		
Sampling Date		2007/12/10		2007/12/10	2007/12/10		
COC Number		B 33527		B 33527	B 33527		
Registration #							
	Units	**#31 <150MM**	**RDL**	**#32 <2mm**	**#32 <150MM**	**RDL**	**QC Batch**

INORGANICS							
Organic Carbon (TOC)	g/kg	6.5	0.6	59	58	4	1437607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57942	W57943		W57944		
Sampling Date		2007/12/10	2007/12/10		2007/12/10		
COC Number		B 33527	B 33527		B 33527		
Registration #							
	Units	**#33 <2mm**	**#33 <150MM**	**RDL**	**#40 <2mm**	**RDL**	**QC Batch**

INORGANICS							
Organic Carbon (TOC)	g/kg	32	29	2	220	5	1437607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57945		W57946		W57947		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#40 <150MM**	**RDL**	**#41 <2mm**	**RDL**	**#41 <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	110	4	1.4	0.7	3	1	1437607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57948		W57949		W57950		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#42 <2mm**	**RDL**	**#42 <150MM**	**RDL**	**#43 <2mm**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	2.7	0.5	2.7	0.8	2.7	0.5	1437607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57951		W57952		W57953		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#43 <150MM**	**RDL**	**#46 <2mm**	**RDL**	**#46 <150MM**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	4	1	3.8	0.9	7	1	1437607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57954			W57955		
Sampling Date		2007/12/10			2007/12/10		
COC Number		B 33527			B 33527		
Registration #							
	Units	**#47 <2mm**	**RDL**	**QC Batch**	**#47 <150MM**	**RDL**	**QC Batch**
INORGANICS							
Organic Carbon (TOC)	g/kg	6	1	1437607	5.5	0.9	1437608

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57956	W57957			W57958		
Sampling Date		2007/12/10	2007/12/10			2007/12/10		
COC Number		B 33527	B 33527			B 33527		
Registration #								
	Units	**#48 <2mm**	**#48 <150MM**	**RDL**	**QC Batch**	**#49 <2mm**	**RDL**	**QC Batch**
INORGANICS								
Organic Carbon (TOC)	g/kg	0.9	1.3	0.2	1439047	29	2	1437608

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57959		W57960	W57960		
Sampling Date		2007/12/10		2007/12/10	2007/12/10		
COC Number		B 33527		B 33527	B 33527		
Registration #							
	Units	**#49 <150MM**	**RDL**	**#50 <2mm**	**#50 <2mm Lab-Dup**	**RDL**	**QC Batch**
INORGANICS							
Organic Carbon (TOC)	g/kg	29	4	86	87	2	1437608

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam ID		W57961		
Sampling Date		2007/12/10		
COC Number		B 33527		
Registration #				
	Units	**#50 <150MM**	**RDL**	**QC Batch**

INORGANICS				
Organic Carbon (TOC)	g/kg	78	3	1437608

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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CJ MacLellan & Associates
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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57864	W57864	W57888		W57889		
Sampling Date		2007/12/10	2007/12/10	2007/12/10		2007/12/10		
COC Number		B 33527	B 33527	B 33527		B 33527		
Registration #								
	Units	**#1 <2mm**	**#1 <2mm Lab-Dup**	**#1 <150MM**	**RDL**	**#2 <2mm**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	0.10	0.09		0.01	2.0	0.1	1436306
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	180		180	2	650	2	1434547

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57889	W57890		W57891		
Sampling Date		2007/12/10	2007/12/10		2007/12/10		
COC Number		B 33527	B 33527		B 33527		
Registration #							
	Units	**#2 <2mm Lab-Dup**	**#2 <150MM**	**RDL**	**#3 <2mm**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg			0.1	0.54	0.01	1436306
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	660	710	2	220	2	1434547

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57892		W57893	W57894		
Sampling Date		2007/12/10		2007/12/10	2007/12/10		
COC Number		B 33527		B 33527	B 33527		
Registration #							
	Units	**#3 <150MM**	**RDL**	**#4 <2mm**	**#4 <150MM**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg		0.01	2.4		0.1	1436306
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	270	2	880	850	2	1434548

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57895	W57895	W57896		W57897		
Sampling Date		2007/12/10	2007/12/10	2007/12/10		2007/12/10		
COC Number		B 33527	B 33527	B 33527		B 33527		
Registration #								
	Units	**#5 <2mm**	**#5 <2mm Lab-Dup**	**#5 <150MM**	**RDL**	**#6 <2mm**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	1.3			0.05	1.7	0.1	1436306
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	350	360	380	2	230	2	1434548

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57898			W57899		
Sampling Date		2007/12/10			2007/12/10		
COC Number		B 33527			B 33527		
Registration #							
	Units	**#6 <150MM**	**RDL**	**QC Batch**	**#8 <2mm**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg		0.1	1436306	0.71	0.01	1436306
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	230	2	1435043	130	2	1434548

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57900		W57901		W57902		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#8 <150MM**	**QC Batch**	**#9 <2mm**	**QC Batch**	**#9 <150MM**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg		1436306	0.06	1436306		0.01	1436306
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	130	1435043	1900	1434548	2500	2	1435043

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57903		W57904		
Sampling Date		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		
Registration #						
	Units	**#11 <2mm**	**QC Batch**	**#11 <150MM**	**RDL**	**QC Batch**
ELEMENTS						
Mercury (Hg)	mg/kg	20	1436306		0.5	1436306
Elements (ICP-MS)						
Available Arsenic (As)	mg/kg	730	1434548	700	2	1435043

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57905		W57906	W57906		
Sampling Date		2007/12/10		2007/12/10	2007/12/10		
COC Number		B 33527		B 33527	B 33527		
Registration #							
	Units	**#12 <2mm**	**QC Batch**	**#12 <150MM**	**#12 <150MM Lab-Dup**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg	1.4	1436306			0.05	1436306
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	370	1434548	420	430	2	1435043

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57907		W57908		
Sampling Date		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		
Registration #						
	Units	**#13 <2mm**	**QC Batch**	**#13 <150MM**	**RDL**	**QC Batch**
ELEMENTS						
Mercury (Hg)	mg/kg	13	1436306		0.5	1436306
Elements (ICP-MS)						
Available Arsenic (As)	mg/kg	5700	1434548	5600	2	1435043

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57909		W57910		
Sampling Date		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		
Registration #						
	Units	**#14 <2mm**	**QC Batch**	**#14 <150MM**	**RDL**	**QC Batch**
ELEMENTS						
Mercury (Hg)	mg/kg	2.4	1436306		0.1	1436306
Elements (ICP-MS)						
Available Arsenic (As)	mg/kg	1700	1434548	1800	2	1435043

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57911		W57912		W57913		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#15 <2mm**	**QC Batch**	**#15 <150MM**	**QC Batch**	**#19 <2mm**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	0.38	1436306		1436306	0.30	0.01	1436306
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	1100	1434548	1400	1435043	5300	2	1434548

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57914		W57915		W57916		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#19 <150MM**	**QC Batch**	**#20 <2mm**	**QC Batch**	**#20 <150MM**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg		1436306	0.92	1436306		0.01	1436306
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	7400	1435043	960	1434548	1300	2	1435043

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A7E2184
Report Date: 2008/01/11

CJ MacLellan & Associates
Client Project #: 6906-21
Project name:
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57917		W57918		
Sampling Date		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		
Registration #						
	Units	**#21 <2mm**	**QC Batch**	**#21 <150MM**	**RDL**	**QC Batch**
ELEMENTS						
Mercury (Hg)	mg/kg	1.1	1436306		0.02	1436306
Elements (ICP-MS)						
Available Arsenic (As)	mg/kg	1400	1434548	1300	2	1435046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57919		W57920		W57921		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#22 <2mm**	**QC Batch**	**#22 <150MM**	**QC Batch**	**#23 <2mm**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	1.6	1436307		1436307	2.5	0.1	1436307
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	1600	1434548	1700	1435046	1900	2	1434548

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57922			W57923		
Sampling Date		2007/12/10			2007/12/10		
COC Number		B 33527			B 33527		
Registration #							
	Units	**#23 <150MM**	**RDL**	**QC Batch**	**#24 <2mm**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg		0.1	1436307	0.46	0.01	1436307
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	2500	2	1435046	290	2	1434548

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57924			W57925		
Sampling Date		2007/12/10			2007/12/10		
COC Number		B 33527			B 33527		
Registration #							
	Units	**#24 <150MM**	**RDL**	**QC Batch**	**#26 <2mm**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg		0.01	1436307	1.4	0.05	1436307
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	350	2	1435046	1400	2	1434548

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57926		W57927	W57928		
Sampling Date		2007/12/10		2007/12/10	2007/12/10		
COC Number		B 33527		B 33527	B 33527		
Registration #							
	Units	**#26 <150MM**	**RDL**	**#27 <2mm**	**#27 <150MM**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg		0.05	0.55		0.01	1436307
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	2100	2	3700	6000	2	1435046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57929	W57929	W57930		W57932		
Sampling Date		2007/12/10	2007/12/10	2007/12/10		2007/12/10		
COC Number		B 33527	B 33527	B 33527		B 33527		
Registration #								
	Units	**#28 <2mm**	**#28 <2mm Lab-Dup**	**#28 <150MM**	**RDL**	**#30-PH <2mm**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	2.1			0.1	0.44	0.01	1436307
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	1000	1000	1300	2	51	2	1435046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

CJ MacLellan & Associates
Client Project #: 6906-21
Project name:
Sampler Initials:

Maxxam Job #: A7E2184
Report Date: 2008/01/11

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57933	W57934	W57935	W57936		
Sampling Date		2007/12/10	2007/12/10	2007/12/10	2007/12/10		
COC Number		B 33527	B 33527	B 33527	B 33527		
Registration #							
	Units	**#30-PH <150MM**	**#30-0/4 <2mm**	**#30-0/4 <150MM**	**#30-4/5 <2mm**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg		0.59		0.05	0.01	1436307
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	90	150	150	68	2	1435046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57937	W57938	W57939		W57940		
Sampling Date		2007/12/10	2007/12/10	2007/12/10		2007/12/10		
COC Number		B 33527	B 33527	B 33527		B 33527		
Registration #								
	Units	**#30-4/5 <150MM**	**#31 <2mm**	**#31 <150MM**	**RDL**	**#32 <2mm**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg		0.32		0.01	2.2	0.1	1436307
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	61	2700	5300	2	9600	20	1435046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57941		W57942		W57943		
Sampling Date		2007/12/10		2007/12/10		2007/12/10		
COC Number		B 33527		B 33527		B 33527		
Registration #								
	Units	**#32 <150MM**	**RDL**	**#33 <2mm**	**QC Batch**	**#33 <150MM**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg		0.1	0.09	1436307		0.01	1436307
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	8800	2	960	1435046	1800	2	1435425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57944	W57945	W57946	W57946		
Sampling Date		2007/12/10	2007/12/10	2007/12/10	2007/12/10		
COC Number		B 33527	B 33527	B 33527	B 33527		
Registration #							
	Units	**#40 <2mm**	**#40 <150MM**	**#41 <2mm**	**#41 <2mm Lab-Dup**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg	0.84		0.09	0.09	0.01	1436307
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	51	77	5800		2	1435425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57947		W57948	W57949		
Sampling Date		2007/12/10		2007/12/10	2007/12/10		
COC Number		B 33527		B 33527	B 33527		
Registration #							
	Units	**#41 <150MM**	**RDL**	**#42 <2mm**	**#42 <150MM**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg		0.01	8.6		0.1	1436307
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	17000	20	4700	4000	2	1435425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57950	W57951	W57952	W57953		
Sampling Date		2007/12/10	2007/12/10	2007/12/10	2007/12/10		
COC Number		B 33527	B 33527	B 33527	B 33527		
Registration #							
	Units	**#43 <2mm**	**#43 <150MM**	**#46 <2mm**	**#46 <150MM**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg	0.18		0.52		0.01	1436307
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	7100	7800	3500	4800	2	1435425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A7E2184
Report Date: 2008/01/11

CJ MacLellan & Associates
Client Project #: 6906-21
Project name:
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57954	W57954	W57955		
Sampling Date		2007/12/10	2007/12/10	2007/12/10		
COC Number		B 33527	B 33527	B 33527		
Registration #						
	Units	**#47 <2mm**	**#47 <2mm Lab-Dup**	**#47 <150MM**	**RDL**	**QC Batch**
ELEMENTS						
Mercury (Hg)	mg/kg	1.0	1.0		0.02	1434793
Elements (ICP-MS)						
Available Arsenic (As)	mg/kg	2500		2300	2	1435425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57956	W57957			W57958		
Sampling Date		2007/12/10	2007/12/10			2007/12/10		
COC Number		B 33527	B 33527			B 33527		
Registration #								
	Units	**#48 <2mm**	**#48 <150MM**	**RDL**	**QC Batch**	**#49 <2mm**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	0.16		0.01	1436307	1.8	0.1	1437671
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	2200	4200	2	1435425	1600	2	1435425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W57959			W57960	W57960		
Sampling Date		2007/12/10			2007/12/10	2007/12/10		
COC Number		B 33527			B 33527	B 33527		
Registration #								
	Units	**#49 <150MM**	**RDL**	**QC Batch**	**#50 <2mm**	**#50 <2mm Lab-Dup**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg		0.1	1437671	0.68		0.01	1436307
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	1800	2	1435425	130	140	2	1435425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

CJ MacLellan & Associates
Maxxam Job #: A7E2184
Client Project #: 6906-21
Report Date: 2008/01/11
Project name:
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W57961		
Sampling Date		2007/12/10		
COC Number		B 33527		
Registration #				
	Units	**#50 <150MM**	**RDL**	**QC Batch**
Elements (ICP-MS)				
Available Arsenic (As)	mg/kg	350	2	1435425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

CJ MacLellan & Associates
Attention: Hilda Dunnewold
Client Project #: 6906-21
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA7E2184

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1434547	DLB	MATRIX SPIKE [W57889-01]	Available Arsenic (As)	2008/01/02		NC	%	75 - 125
		QC STANDARD	Available Arsenic (As)	2008/01/02		102	%	75 - 125
		Spiked Blank	Available Arsenic (As)	2008/01/02		81	%	75 - 125
		Method Blank	Available Arsenic (As)	2008/01/02	ND, RDL=2		mg/kg	
		RPD [W57889-01]	Available Arsenic (As)	2008/01/02	1.6		%	35
1434548	DLB	MATRIX SPIKE [W57895-01]	Available Arsenic (As)	2008/01/02		NC	%	75 - 125
		QC STANDARD	Available Arsenic (As)	2008/01/02		102	%	75 - 125
		Spiked Blank	Available Arsenic (As)	2008/01/02		88	%	75 - 125
		Method Blank	Available Arsenic (As)	2008/01/02	ND, RDL=2		mg/kg	
		RPD [W57895-01]	Available Arsenic (As)	2008/01/02	1.9		%	35
1434793	AMC	MATRIX SPIKE [W57954-01]	Mercury (Hg)	2008/01/02		NA	%	75 - 125
		QC STANDARD	Mercury (Hg)	2008/01/02		98	%	75 - 125
		Spiked Blank	Mercury (Hg)	2008/01/02		106	%	N/A
		Method Blank	Mercury (Hg)	2008/01/02	ND, RDL=0.01		mg/kg	
		RPD [W57954-01]	Mercury (Hg)	2008/01/02	2.8		%	35
1435043	DLB	MATRIX SPIKE [W57906-01]	Available Arsenic (As)	2008/01/03		122	%	75 - 125
		QC STANDARD	Available Arsenic (As)	2008/01/03		106	%	75 - 125
		Spiked Blank	Available Arsenic (As)	2008/01/03		94	%	75 - 125
		Method Blank	Available Arsenic (As)	2008/01/03	ND, RDL=2		mg/kg	
		RPD [W57906-01]	Available Arsenic (As)	2008/01/03	1.7		%	35
1435046	DLB	MATRIX SPIKE [W57929-01]	Available Arsenic (As)	2008/01/03		NC	%	75 - 125
		QC STANDARD	Available Arsenic (As)	2008/01/03		109	%	75 - 125
		Spiked Blank	Available Arsenic (As)	2008/01/03		93	%	75 - 125
		Method Blank	Available Arsenic (As)	2008/01/03	ND, RDL=2		mg/kg	
		RPD [W57929-01]	Available Arsenic (As)	2008/01/03	0.5		%	35
1435425	DLB	MATRIX SPIKE [W57960-01]	Available Arsenic (As)	2008/01/03		NC	%	75 - 125
		QC STANDARD	Available Arsenic (As)	2008/01/03		107	%	75 - 125
		Spiked Blank	Available Arsenic (As)	2008/01/03		99	%	75 - 125
		Method Blank	Available Arsenic (As)	2008/01/03	ND, RDL=2		mg/kg	
		RPD [W57960-01]	Available Arsenic (As)	2008/01/03	7.9		%	35
1436247	CAC	QC STANDARD	Organic Carbon (TOC)	2008/01/07		84	%	75 - 125
		Method Blank	Organic Carbon (TOC)	2008/01/07	ND, RDL=0.2		g/kg	
		RPD [W57897-01]	Organic Carbon (TOC)	2008/01/07	11.7		%	35
1436306	SSI	MATRIX SPIKE [W57864-01]	Mercury (Hg)	2008/01/07		107	%	75 - 125
		QC STANDARD	Mercury (Hg)	2008/01/07		99	%	75 - 125
		Spiked Blank	Mercury (Hg)	2008/01/07		100	%	75 - 125
		Method Blank	Mercury (Hg)	2008/01/07	ND, RDL=0.01		mg/kg	
		RPD [W57864-01]	Mercury (Hg)	2008/01/07	10.8		%	35
1436307	SSI	MATRIX SPIKE [W57946-01]	Mercury (Hg)	2008/01/07		117	%	75 - 125
		QC STANDARD	Mercury (Hg)	2008/01/07		102	%	75 - 125
		Spiked Blank	Mercury (Hg)	2008/01/07		104	%	75 - 125
		Method Blank	Mercury (Hg)	2008/01/07	ND, RDL=0.01		mg/kg	
		RPD [W57946-01]	Mercury (Hg)	2008/01/07	4.5		%	35
1436867	CAC	QC STANDARD	Organic Carbon (TOC)	2008/01/08		94	%	75 - 125
		Method Blank	Organic Carbon (TOC)	2008/01/08	ND, RDL=0.2		g/kg	
		RPD [W57909-01]	Organic Carbon (TOC)	2008/01/08	10.7		%	35
1437606	CAC	QC STANDARD	Organic Carbon (TOC)	2008/01/09		94	%	75 - 125

CJ MacLellan & Associates
Attention: Hilda Dunnewold
Client Project #: 6906-21
P.O. #:
Project name:

Quality Assurance Report (Continued)

Maxxam Job Number: DA7E2184

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1437606	CAC	Method Blank	Organic Carbon (TOC)	2008/01/09	ND, RDL=0.2		g/kg	
		RPD [W57934-01]	Organic Carbon (TOC)	2008/01/09	0.1		%	35
1437607	CAC	QC STANDARD	Organic Carbon (TOC)	2008/01/10		97	%	75 - 125
		Method Blank	Organic Carbon (TOC)	2008/01/10	ND, RDL=0.2		g/kg	
		RPD [W57935-01]	Organic Carbon (TOC)	2008/01/10	1.1		%	35
1437608	CAC	QC STANDARD	Organic Carbon (TOC)	2008/01/10		97	%	75 - 125
		Method Blank	Organic Carbon (TOC)	2008/01/10	ND, RDL=0.2		g/kg	
		RPD [W57960-01]	Organic Carbon (TOC)	2008/01/10	0.5		%	35
1437671	SSI	MATRIX SPIKE	Mercury (Hg)	2008/01/09		95	%	75 - 125
		QC STANDARD	Mercury (Hg)	2008/01/09		99	%	75 - 125
		Spiked Blank	Mercury (Hg)	2008/01/09		102	%	75 - 125
		Method Blank	Mercury (Hg)	2008/01/09	ND, RDL=0.01		mg/kg	
		RPD	Mercury (Hg)	2008/01/09	NC		%	35
1439047	CAC	QC STANDARD	Organic Carbon (TOC)	2008/01/11		94	%	75 - 125
		Method Blank	Organic Carbon (TOC)	2008/01/11	ND, RDL=0.2		g/kg	
		RPD	Organic Carbon (TOC)	2008/01/11	17.0		%	35

ND = Not detected
N/A = Not Applicable
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Maxxam Analytics Inc

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Your Project #: 6906-21
Your C.O.C. #: B 31200

Attention: Hilda Dunnewold
CJ MacLellan & Associates
65 Beech Hill Rd
Antigonish, NS
B2G 2P9

Report Date: 2008/06/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A855319
Received: 2008/05/29, 9:11

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide	3	N/A	2008/06/03		
Alkalinity	3	N/A	2008/06/02	ATL SOP 00013 R2	Based on EPA310.2
Chloride	3	N/A	2008/06/02	ATL SOP 00014 R4	Based on SM4500-Cl-
Colour	3	N/A	2008/06/03	ATL SOP 00020 R2.	Based on SM2120C
Conductance - water	3	N/A	2008/06/02	ATL SOP 00004 R3/00006 R3	Based on SM2510B
Hardness (calculated as CaCO3)	3	N/A	2008/06/03	ATL SOP 00048	Based on SM2340B
Metals Water Diss. OES	3	N/A	2008/06/02	ATL SOP 00025 R3	Based on EPA200.7
Metals Water Diss. MS	3	N/A	2008/06/02	ATL SOP 00024 R3	Based on EPA6020A
Ion Balance (% Difference)	2	N/A	2008/06/04		
Ion Balance (% Difference)	1	N/A	2008/06/05		
Anion and Cation Sum	2	N/A	2008/06/04		
Anion and Cation Sum	1	N/A	2008/06/05		
Nitrogen Ammonia - water	3	N/A	2008/06/03	ATL SOP 00015 R4	Based on USEPA 350.1
Nitrogen - Nitrate + Nitrite	3	N/A	2008/06/03	ATL SOP 00016 R3	Based on USGS - Enz.
Nitrogen - Nitrite	3	N/A	2008/06/02	ATL SOP 00017 R3	Based on USEPA 354.1
Nitrogen - Nitrate (as N)	3	N/A	2008/06/03	ATL SOP 00018 R2	Based on ASTMD3867
pH	3	N/A	2008/06/02	ATL SOP 00003 R3/00005 R3	Based on EPA150.1
Phosphorus - ortho	3	N/A	2008/06/03	ATL SOP 00021 R2	Based on USEPA 365.1
Sat. pH and Langelier Index (@ 20C)	1	N/A	2008/06/03		
Sat. pH and Langelier Index (@ 20C)	1	N/A	2008/06/04		
Sat. pH and Langelier Index (@ 20C)	1	N/A	2008/06/05		
Sat. pH and Langelier Index (@ 4C)	1	N/A	2008/06/03		
Sat. pH and Langelier Index (@ 4C)	1	N/A	2008/06/04		
Sat. pH and Langelier Index (@ 4C)	1	N/A	2008/06/05		
Reactive Silica	3	N/A	2008/06/02	ATL SOP 00022 R2	Based on EPA 366.0
Sulphate	3	N/A	2008/06/03	ATL SOP 00023 R2	Based on EPA 375.4
Total Dissolved Solids (TDS calc)	2	N/A	2008/06/04		
Total Dissolved Solids (TDS calc)	1	N/A	2008/06/05		
Organic carbon - Total (TOC) ⦶	3	N/A	2008/06/03	ATL SOP 00037 R2	Based on SM5310C
Turbidity ⦶	3	N/A	2008/06/02	ATL SOP 00011 R3	based on EPA 180.1

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) SCC/CAEAL

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MICHELLE HILL, Project Manager
Email: Michelle.Hill.Reports@maxxamanalytics.com
Phone# (902) 420-0203

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

RESULTS OF ANALYSES OF WATER

Maxxam ID		Y93272	Y93272		
Sampling Date		2008/05/26	2008/05/26		
COC Number		B 31200	B 31200		
Registration #					
	Units	**MW#1**	**MW#1 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters					
Anion Sum	me/L	0.380		N/A	1525296
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	ND		1	1525292
Calculated TDS	mg/L	30		1	1525300
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND		1	1525292
Cation Sum	me/L	0.380		N/A	1525296
Hardness (CaCO3)	mg/L	11		1	1525294
Ion Balance (% Difference)	%	0.00		N/A	1525295
Langelier Index (@ 20C)	N/A	NC			1525298
Langelier Index (@ 4C)	N/A	NC			1525299
Nitrate (N)	mg/L	0.05		0.05	1525309
Saturation pH (@ 20C)	N/A	NC			1525298
Saturation pH (@ 4C)	N/A	NC			1525299
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L	ND		5	1527646
Dissolved Chloride (Cl)	mg/L	5		1	1527661
Colour	TCU	ND		5	1527671
Nitrate + Nitrite	mg/L	0.05		0.05	1527673
Nitrite (N)	mg/L	ND		0.01	1527675
Nitrogen (Ammonia Nitrogen)	mg/L	ND		0.05	1528199
Total Organic Carbon (C)	mg/L	ND		5	1528284
Orthophosphate (P)	mg/L	ND		0.01	1527672
pH	pH	4.76	4.84	N/A	1527447
Reactive Silica (SiO2)	mg/L	5.5		0.5	1527652
Dissolved Sulphate (SO4)	mg/L	10		2	1527670
Turbidity	NTU	230		1	1527392
Conductivity	uS/cm	57	55	1	1527455

ND = Not detected
NC = Non-calculable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		Y93273		Y93274		
Sampling Date		2008/05/26		2008/05/26		
COC Number		B 31200		B 31200		
Registration #						
	Units	**MW#2**	**RDL**	**MW#3**	**RDL**	**QC Batch**
Calculated Parameters						
Anion Sum	me/L	4.17	N/A	1.84	N/A	1525296
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	112	1	76	1	1525292
Calculated TDS	mg/L	253	1	108	1	1525300
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1	ND	1	1525292
Cation Sum	me/L	4.03	N/A	1.90	N/A	1525296
Hardness (CaCO3)	mg/L	180	1	83	1	1525294
Ion Balance (% Difference)	%	1.71	N/A	1.60	N/A	1525295
Langelier Index (@ 20C)	N/A	-0.265		-0.294		1525298
Langelier Index (@ 4C)	N/A	-0.514		-0.545		1525299
Nitrate (N)	mg/L	0.17	0.05	0.06	0.05	1525309
Saturation pH (@ 20C)	N/A	7.63		7.99		1525298
Saturation pH (@ 4C)	N/A	7.87		8.25		1525299
Inorganics						
Total Alkalinity (Total as CaCO3)	mg/L	110	30	77	5	1527646
Dissolved Chloride (Cl)	mg/L	7	1	5	1	1527661
Colour	TCU	ND	5	ND	5	1527671
Nitrate + Nitrite	mg/L	0.17	0.05	0.06	0.05	1527673
Nitrite (N)	mg/L	ND	0.01	ND	0.01	1527675
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.05	ND	0.05	1528199
Total Organic Carbon (C)	mg/L	ND	30	ND	50	1528284
Orthophosphate (P)	mg/L	0.12	0.01	0.01	0.01	1527672
pH	pH	7.36	N/A	7.70	N/A	1527456
Reactive Silica (SiO2)	mg/L	12	0.5	7.7	0.5	1527652
Dissolved Sulphate (SO4)	mg/L	83	2	8	2	1527670
Turbidity	NTU	>1000	5	>1000	10	1527392
Conductivity	uS/cm	410	1	190	1	1527459

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP-AES (WATER)

Maxxam ID		Y93272	Y93273	Y93274		
Sampling Date		2008/05/26	2008/05/26	2008/05/26		
COC Number		B 31200	B 31200	B 31200		
Registration #						
	Units	**MW#1**	**MW#2**	**MW#3**	**RDL**	**QC Batch**

Metals						
Dissolved Calcium (Ca)	mg/L	3.4	54	29	0.1	1527198
Dissolved Magnesium (Mg)	mg/L	0.5	12	2.4	0.1	1527198
Dissolved Phosphorus (P)	mg/L	ND	ND	ND	0.1	1527198
Dissolved Potassium (K)	mg/L	0.8	6.8	4.0	0.1	1527198
Dissolved Sodium (Na)	mg/L	3.1	4.8	3.1	0.1	1527198
Dissolved Sulphur (S)	mg/L	3.4	27	2.6	0.5	1527198

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		Y93272	Y93272	Y93273		
Sampling Date		2008/05/26	2008/05/26	2008/05/26		
COC Number		B 31200	B 31200	B 31200		
Registration #						
	Units	**MW#1**	**MW#1 Lab-Dup**	**MW#2**	**RDL**	**QC Batch**
Metals						
Dissolved Aluminum (Al)	ug/L	230	220	54	10	1527857
Dissolved Antimony (Sb)	ug/L	ND	ND	9	2	1527857
Dissolved Arsenic (As)	ug/L	ND	ND	450	2	1527857
Dissolved Barium (Ba)	ug/L	15	14	20	5	1527857
Dissolved Beryllium (Be)	ug/L	ND	ND	ND	2	1527857
Dissolved Bismuth (Bi)	ug/L	ND	ND	ND	2	1527857
Dissolved Boron (B)	ug/L	5	5	11	5	1527857
Dissolved Cadmium (Cd)	ug/L	0.9	0.9	ND	0.3	1527857
Dissolved Chromium (Cr)	ug/L	ND	ND	ND	2	1527857
Dissolved Cobalt (Co)	ug/L	11	11	19	1	1527857
Dissolved Copper (Cu)	ug/L	6	6	ND	2	1527857
Dissolved Iron (Fe)	ug/L	ND	ND	ND	50	1527857
Dissolved Lead (Pb)	ug/L	ND	ND	ND	0.5	1527857
Dissolved Manganese (Mn)	ug/L	220	220	4800	2	1527857
Dissolved Molybdenum (Mo)	ug/L	ND	ND	3	2	1527857
Dissolved Nickel (Ni)	ug/L	14	14	21	2	1527857
Dissolved Selenium (Se)	ug/L	ND	ND	ND	2	1527857
Dissolved Silver (Ag)	ug/L	ND	ND	ND	0.5	1527857
Dissolved Strontium (Sr)	ug/L	16	16	310	5	1527857
Dissolved Thallium (Tl)	ug/L	ND	ND	ND	0.1	1527857
Dissolved Tin (Sn)	ug/L	ND	ND	ND	2	1527857
Dissolved Titanium (Ti)	ug/L	ND	ND	4	2	1527857
Dissolved Uranium (U)	ug/L	ND	ND	0.2	0.1	1527857
Dissolved Vanadium (V)	ug/L	ND	ND	ND	2	1527857
Dissolved Zinc (Zn)	ug/L	98	98	6	5	1527857

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		Y93274		
Sampling Date		2008/05/26		
COC Number		B 31200		
Registration #				
	Units	**MW#3**	**RDL**	**QC Batch**

Metals				
Dissolved Aluminum (Al)	ug/L	16	10	1527857
Dissolved Antimony (Sb)	ug/L	ND	2	1527857
Dissolved Arsenic (As)	ug/L	54	2	1527857
Dissolved Barium (Ba)	ug/L	6	5	1527857
Dissolved Beryllium (Be)	ug/L	ND	20	1527857
Dissolved Bismuth (Bi)	ug/L	ND	2	1527857
Dissolved Boron (B)	ug/L	ND	50	1527857
Dissolved Cadmium (Cd)	ug/L	ND	0.3	1527857
Dissolved Chromium (Cr)	ug/L	ND	2	1527857
Dissolved Cobalt (Co)	ug/L	1	1	1527857
Dissolved Copper (Cu)	ug/L	ND	2	1527857
Dissolved Iron (Fe)	ug/L	ND	50	1527857
Dissolved Lead (Pb)	ug/L	ND	0.5	1527857
Dissolved Manganese (Mn)	ug/L	1900	2	1527857
Dissolved Molybdenum (Mo)	ug/L	ND	2	1527857
Dissolved Nickel (Ni)	ug/L	6	2	1527857
Dissolved Selenium (Se)	ug/L	ND	2	1527857
Dissolved Silver (Ag)	ug/L	ND	0.5	1527857
Dissolved Strontium (Sr)	ug/L	83	5	1527857
Dissolved Thallium (Tl)	ug/L	ND	0.1	1527857
Dissolved Tin (Sn)	ug/L	ND	2	1527857
Dissolved Titanium (Ti)	ug/L	ND	2	1527857
Dissolved Uranium (U)	ug/L	0.3	0.1	1527857
Dissolved Vanadium (V)	ug/L	ND	2	1527857
Dissolved Zinc (Zn)	ug/L	ND	5	1527857

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Sample Y93272-01: Elevated detection limit for TOC due to turbidity from sample.

Sample Y93273-01: Elevated detection limit for TOC due to turbidity from sample.

Sample Y93274-01: Elevated detection limit for TOC due to turbidity from sample.

Elevated reporting limits for boron and beryllium due to matrix interference.

Results relate only to the items tested.

CJ MacLellan & Associates
Attention: Hilda Dunnewold
Client Project #: 6906-21
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA855319

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1527198	MLB	MATRIX SPIKE	Dissolved Calcium (Ca)	2008/06/02		93	%	80 - 120
			Dissolved Magnesium (Mg)	2008/06/02		92	%	80 - 120
			Dissolved Phosphorus (P)	2008/06/02		103	%	80 - 120
			Dissolved Potassium (K)	2008/06/02		102	%	80 - 120
			Dissolved Sodium (Na)	2008/06/02		102	%	80 - 120
			Dissolved Sulphur (S)	2008/06/02		105	%	80 - 120
		QC STANDARD	Dissolved Calcium (Ca)	2008/06/02		96	%	80 - 120
			Dissolved Magnesium (Mg)	2008/06/02		98	%	80 - 120
			Dissolved Phosphorus (P)	2008/06/02		98	%	80 - 120
			Dissolved Potassium (K)	2008/06/02		103	%	80 - 120
			Dissolved Sodium (Na)	2008/06/02		107	%	80 - 120
		Spiked Blank	Dissolved Calcium (Ca)	2008/06/02		94	%	80 - 120
			Dissolved Magnesium (Mg)	2008/06/02		95	%	80 - 120
			Dissolved Phosphorus (P)	2008/06/02		102	%	80 - 120
			Dissolved Potassium (K)	2008/06/02		100	%	80 - 120
			Dissolved Sodium (Na)	2008/06/02		102	%	80 - 120
			Dissolved Sulphur (S)	2008/06/02		99	%	80 - 120
		Method Blank	Dissolved Calcium (Ca)	2008/06/02	ND, RDL=0.1		mg/L	
			Dissolved Magnesium (Mg)	2008/06/02	ND, RDL=0.1		mg/L	
			Dissolved Phosphorus (P)	2008/06/02	ND, RDL=0.1		mg/L	
			Dissolved Potassium (K)	2008/06/02	ND, RDL=0.1		mg/L	
			Dissolved Sodium (Na)	2008/06/02	ND, RDL=0.1		mg/L	
			Dissolved Sulphur (S)	2008/06/02	ND, RDL=0.5		mg/L	
		RPD	Dissolved Calcium (Ca)	2008/06/02	0.6		%	25
			Dissolved Magnesium (Mg)	2008/06/02	0.6		%	25
			Dissolved Phosphorus (P)	2008/06/02	NC		%	25
			Dissolved Potassium (K)	2008/06/02	1.2		%	25
			Dissolved Sodium (Na)	2008/06/02	0.7		%	25
			Dissolved Sulphur (S)	2008/06/02	NC		%	25
1527392	SMT	QC STANDARD	Turbidity	2008/06/02		99	%	80 - 120
		Method Blank	Turbidity	2008/06/02	-0.030		NTU	
		RPD	Turbidity	2008/06/02	NC		%	25
1527447	SMT	QC STANDARD	pH	2008/06/02		102	%	80 - 120
		Method Blank	pH	2008/06/02	1.28, RDL=0		pH	
		RPD [Y93272-01]	pH	2008/06/02	1.7		%	25
1527455	SMT	QC STANDARD	Conductivity	2008/06/02		102	%	80 - 120
		Method Blank	Conductivity	2008/06/02	1, RDL=1		uS/cm	
		RPD [Y93272-01]	Conductivity	2008/06/02	2.5		%	25
1527456	SMT	QC STANDARD	pH	2008/06/02		102	%	80 - 120
		Method Blank	pH	2008/06/02	6.09, RDL=0		pH	
		RPD	pH	2008/06/02	1.4		%	25
1527459	SMT	QC STANDARD	Conductivity	2008/06/02		104	%	80 - 120
		Method Blank	Conductivity	2008/06/02	1, RDL=1		uS/cm	
		RPD	Conductivity	2008/06/02	0.6		%	25
1527646	DLB	MATRIX SPIKE	Total Alkalinity (Total as CaCO3)	2008/06/02		NC	%	80 - 120
		QC STANDARD	Total Alkalinity (Total as CaCO3)	2008/06/02		100	%	80 - 120
		Spiked Blank	Total Alkalinity (Total as CaCO3)	2008/06/02		98	%	80 - 120
		Method Blank	Total Alkalinity (Total as CaCO3)	2008/06/02	ND, RDL=5		mg/L	
		RPD	Total Alkalinity (Total as CaCO3)	2008/06/02	0.4		%	25
1527652	DLB	MATRIX SPIKE	Reactive Silica (SiO2)	2008/06/02		NC	%	80 - 120
		QC STANDARD	Reactive Silica (SiO2)	2008/06/02		103	%	75 - 125
		Spiked Blank	Reactive Silica (SiO2)	2008/06/02		98	%	80 - 120
		Method Blank	Reactive Silica (SiO2)	2008/06/02	ND, RDL=0.5		mg/L	
		RPD	Reactive Silica (SiO2)	2008/06/02	0.8		%	25
1527661	AHN	MATRIX SPIKE	Dissolved Chloride (Cl)	2008/06/02		99	%	80 - 120

CJ MacLellan & Associates
Attention: Hilda Dunnewold
Client Project #: 6906-21
P.O. #:
Project name:

Quality Assurance Report (Continued)

Maxxam Job Number: DA855319

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1527661	AHN	QC STANDARD	Dissolved Chloride (Cl)	2008/06/02		100	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2008/06/02		100	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2008/06/02	ND, RDL=1		mg/L	
		RPD	Dissolved Chloride (Cl)	2008/06/02	NC		%	25
1527670	ABU	MATRIX SPIKE	Dissolved Sulphate (SO4)	2008/06/03		108	%	80 - 120
		QC STANDARD	Dissolved Sulphate (SO4)	2008/06/03		105	%	80 - 120
		Spiked Blank	Dissolved Sulphate (SO4)	2008/06/03		107	%	80 - 120
		Method Blank	Dissolved Sulphate (SO4)	2008/06/03	ND, RDL=2		mg/L	
		RPD	Dissolved Sulphate (SO4)	2008/06/03	0.01		%	25
1527671	ABU	QC STANDARD	Colour	2008/06/03		99	%	80 - 120
		Method Blank	Colour	2008/06/03	ND, RDL=5		TCU	
		RPD	Colour	2008/06/03	NC		%	25
1527672	MCN	MATRIX SPIKE	Orthophosphate (P)	2008/06/03		89	%	80 - 120
		QC STANDARD	Orthophosphate (P)	2008/06/03		103	%	80 - 120
		Spiked Blank	Orthophosphate (P)	2008/06/03		99	%	80 - 120
		Method Blank	Orthophosphate (P)	2008/06/03	ND, RDL=0.01		mg/L	
		RPD	Orthophosphate (P)	2008/06/03	NC		%	25
1527673	JPU	MATRIX SPIKE	Nitrate + Nitrite	2008/06/03		101	%	80 - 120
		QC STANDARD	Nitrate + Nitrite	2008/06/03		102	%	80 - 120
		Spiked Blank	Nitrate + Nitrite	2008/06/03		98	%	80 - 120
		Method Blank	Nitrate + Nitrite	2008/06/03	ND, RDL=0.05		mg/L	
		RPD	Nitrate + Nitrite	2008/06/03	NC		%	25
1527675	AHN	MATRIX SPIKE	Nitrite (N)	2008/06/02		96	%	80 - 120
		QC STANDARD	Nitrite (N)	2008/06/02		105	%	80 - 120
		Spiked Blank	Nitrite (N)	2008/06/02		101	%	80 - 120
		Method Blank	Nitrite (N)	2008/06/02	ND, RDL=0.01		mg/L	
		RPD	Nitrite (N)	2008/06/02	NC		%	25
1527857	MPT	MATRIX SPIKE						
		[Y93273-01]	Dissolved Aluminum (Al)	2008/06/02		NC	%	80 - 120
			Dissolved Antimony (Sb)	2008/06/02		102	%	80 - 120
			Dissolved Arsenic (As)	2008/06/02		NC	%	80 - 120
			Dissolved Barium (Ba)	2008/06/02		99	%	80 - 120
			Dissolved Beryllium (Be)	2008/06/02		102	%	80 - 120
			Dissolved Bismuth (Bi)	2008/06/02		85	%	80 - 120
			Dissolved Boron (B)	2008/06/02		94	%	80 - 120
			Dissolved Cadmium (Cd)	2008/06/02		102	%	80 - 120
			Dissolved Chromium (Cr)	2008/06/02		93	%	80 - 120
			Dissolved Cobalt (Co)	2008/06/02		95	%	80 - 120
			Dissolved Copper (Cu)	2008/06/02		89	%	80 - 120
			Dissolved Lead (Pb)	2008/06/02		93	%	80 - 120
			Dissolved Manganese (Mn)	2008/06/02		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2008/06/02		101	%	80 - 120
			Dissolved Nickel (Ni)	2008/06/02		92	%	80 - 120
			Dissolved Selenium (Se)	2008/06/02		111	%	80 - 120
			Dissolved Silver (Ag)	2008/06/02		77 (1)	%	80 - 120
			Dissolved Strontium (Sr)	2008/06/02		NC	%	80 - 120
			Dissolved Thallium (Tl)	2008/06/02		92	%	80 - 120
			Dissolved Tin (Sn)	2008/06/02		100	%	80 - 120
			Dissolved Titanium (Ti)	2008/06/02		95	%	80 - 120
			Dissolved Uranium (U)	2008/06/02		94	%	80 - 120
			Dissolved Vanadium (V)	2008/06/02		98	%	80 - 120
			Dissolved Zinc (Zn)	2008/06/02		109	%	80 - 120
		QC STANDARD	Dissolved Aluminum (Al)	2008/06/02		101	%	80 - 120
			Dissolved Antimony (Sb)	2008/06/02		108	%	80 - 120
			Dissolved Arsenic (As)	2008/06/02		105	%	80 - 120

CJ MacLellan & Associates
Attention: Hilda Dunnewold
Client Project #: 6906-21
P.O. #:
Project name:

Quality Assurance Report (Continued)

Maxxam Job Number: DA855319

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1527857 MPT	QC STANDARD	Dissolved Barium (Ba)	2008/06/02		99	%	80 - 120
		Dissolved Beryllium (Be)	2008/06/02		108	%	80 - 120
		Dissolved Boron (B)	2008/06/02		101	%	80 - 120
		Dissolved Cadmium (Cd)	2008/06/02		104	%	80 - 120
		Dissolved Chromium (Cr)	2008/06/02		96	%	80 - 120
		Dissolved Cobalt (Co)	2008/06/02		99	%	80 - 120
		Dissolved Copper (Cu)	2008/06/02		96	%	80 - 120
		Dissolved Lead (Pb)	2008/06/02		97	%	80 - 120
		Dissolved Manganese (Mn)	2008/06/02		103	%	80 - 120
		Dissolved Molybdenum (Mo)	2008/06/02		103	%	80 - 120
		Dissolved Nickel (Ni)	2008/06/02		98	%	80 - 120
		Dissolved Selenium (Se)	2008/06/02		117	%	80 - 120
		Dissolved Silver (Ag)	2008/06/02		106	%	80 - 120
		Dissolved Strontium (Sr)	2008/06/02		98	%	80 - 120
		Dissolved Vanadium (V)	2008/06/02		104	%	80 - 120
		Dissolved Zinc (Zn)	2008/06/02		112	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2008/06/02		103	%	80 - 120
		Dissolved Antimony (Sb)	2008/06/02		94	%	80 - 120
		Dissolved Arsenic (As)	2008/06/02		96	%	80 - 120
		Dissolved Barium (Ba)	2008/06/02		94	%	80 - 120
		Dissolved Beryllium (Be)	2008/06/02		96	%	80 - 120
		Dissolved Bismuth (Bi)	2008/06/02		96	%	80 - 120
		Dissolved Boron (B)	2008/06/02		95	%	80 - 120
		Dissolved Cadmium (Cd)	2008/06/02		94	%	80 - 120
		Dissolved Chromium (Cr)	2008/06/02		94	%	80 - 120
		Dissolved Cobalt (Co)	2008/06/02		96	%	80 - 120
		Dissolved Copper (Cu)	2008/06/02		94	%	80 - 120
		Dissolved Lead (Pb)	2008/06/02		92	%	80 - 120
		Dissolved Manganese (Mn)	2008/06/02		104	%	80 - 120
		Dissolved Molybdenum (Mo)	2008/06/02		94	%	80 - 120
		Dissolved Nickel (Ni)	2008/06/02		96	%	80 - 120
		Dissolved Selenium (Se)	2008/06/02		94	%	80 - 120
		Dissolved Silver (Ag)	2008/06/02		96	%	80 - 120
		Dissolved Strontium (Sr)	2008/06/02		96	%	80 - 120
		Dissolved Thallium (Tl)	2008/06/02		94	%	80 - 120
		Dissolved Tin (Sn)	2008/06/02		95	%	80 - 120
		Dissolved Titanium (Ti)	2008/06/02		93	%	80 - 120
		Dissolved Uranium (U)	2008/06/02		95	%	80 - 120
		Dissolved Vanadium (V)	2008/06/02		94	%	80 - 120
		Dissolved Zinc (Zn)	2008/06/02		103	%	80 - 120
	Method Blank	Dissolved Aluminum (Al)	2008/06/02	ND, RDL=10		ug/L	
		Dissolved Antimony (Sb)	2008/06/02	ND, RDL=2		ug/L	
		Dissolved Arsenic (As)	2008/06/02	ND, RDL=2		ug/L	
		Dissolved Barium (Ba)	2008/06/02	ND, RDL=5		ug/L	
		Dissolved Beryllium (Be)	2008/06/02	ND, RDL=2		ug/L	
		Dissolved Bismuth (Bi)	2008/06/02	ND, RDL=2		ug/L	
		Dissolved Boron (B)	2008/06/02	ND, RDL=5		ug/L	
		Dissolved Cadmium (Cd)	2008/06/02	ND, RDL=0.3		ug/L	
		Dissolved Chromium (Cr)	2008/06/02	ND, RDL=2		ug/L	
		Dissolved Cobalt (Co)	2008/06/02	ND, RDL=1		ug/L	
		Dissolved Copper (Cu)	2008/06/02	ND, RDL=2		ug/L	
		Dissolved Iron (Fe)	2008/06/02	ND, RDL=50		ug/L	
		Dissolved Lead (Pb)	2008/06/02	ND, RDL=0.5		ug/L	
		Dissolved Manganese (Mn)	2008/06/02	ND, RDL=2		ug/L	
		Dissolved Molybdenum (Mo)	2008/06/02	ND, RDL=2		ug/L	

Quality Assurance Report (Continued)

Maxxam Job Number: DA855319

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1527857	MPT	Method Blank	Dissolved Nickel (Ni)	2008/06/02	ND, RDL=2		ug/L	
			Dissolved Selenium (Se)	2008/06/02	ND, RDL=2		ug/L	
			Dissolved Silver (Ag)	2008/06/02	ND, RDL=0.5		ug/L	
			Dissolved Strontium (Sr)	2008/06/02	ND, RDL=5		ug/L	
			Dissolved Thallium (Tl)	2008/06/02	ND, RDL=0.1		ug/L	
			Dissolved Tin (Sn)	2008/06/02	ND, RDL=2		ug/L	
			Dissolved Titanium (Ti)	2008/06/02	ND, RDL=2		ug/L	
			Dissolved Uranium (U)	2008/06/02	ND, RDL=0.1		ug/L	
			Dissolved Vanadium (V)	2008/06/02	ND, RDL=2		ug/L	
			Dissolved Zinc (Zn)	2008/06/02	ND, RDL=5		ug/L	
		RPD [Y93272-01]	Dissolved Aluminum (Al)	2008/06/02	0.3		%	25
			Dissolved Antimony (Sb)	2008/06/02	NC		%	25
			Dissolved Arsenic (As)	2008/06/02	NC		%	25
			Dissolved Barium (Ba)	2008/06/02	NC		%	25
			Dissolved Beryllium (Be)	2008/06/02	NC		%	25
			Dissolved Bismuth (Bi)	2008/06/02	NC		%	25
			Dissolved Boron (B)	2008/06/02	NC		%	25
			Dissolved Cadmium (Cd)	2008/06/02	NC		%	25
			Dissolved Chromium (Cr)	2008/06/02	NC		%	25
			Dissolved Cobalt (Co)	2008/06/02	1.6		%	25
			Dissolved Copper (Cu)	2008/06/02	NC		%	25
			Dissolved Iron (Fe)	2008/06/02	NC		%	25
			Dissolved Lead (Pb)	2008/06/02	NC		%	25
			Dissolved Manganese (Mn)	2008/06/02	1.8		%	25
			Dissolved Molybdenum (Mo)	2008/06/02	NC		%	25
			Dissolved Nickel (Ni)	2008/06/02	3.5		%	25
			Dissolved Selenium (Se)	2008/06/02	NC		%	25
			Dissolved Silver (Ag)	2008/06/02	NC		%	25
			Dissolved Strontium (Sr)	2008/06/02	NC		%	25
			Dissolved Thallium (Tl)	2008/06/02	NC		%	25
			Dissolved Tin (Sn)	2008/06/02	NC		%	25
			Dissolved Titanium (Ti)	2008/06/02	NC		%	25
			Dissolved Uranium (U)	2008/06/02	NC		%	25
			Dissolved Vanadium (V)	2008/06/02	NC		%	25
			Dissolved Zinc (Zn)	2008/06/02	0.7		%	25
1528199	MCN	MATRIX SPIKE	Nitrogen (Ammonia Nitrogen)	2008/06/03		94	%	80 - 120
		QC STANDARD	Nitrogen (Ammonia Nitrogen)	2008/06/03		102	%	80 - 120
		Spiked Blank	Nitrogen (Ammonia Nitrogen)	2008/06/03		100	%	80 - 120
		Method Blank	Nitrogen (Ammonia Nitrogen)	2008/06/03	ND, RDL=0.05		mg/L	
		RPD	Nitrogen (Ammonia Nitrogen)	2008/06/03	NC		%	25
1528284	AHN	MATRIX SPIKE	Total Organic Carbon (C)	2008/06/03		110	%	75 - 125
		QC STANDARD	Total Organic Carbon (C)	2008/06/03		101	%	80 - 120
		Spiked Blank	Total Organic Carbon (C)	2008/06/03		102	%	75 - 125
		Method Blank	Total Organic Carbon (C)	2008/06/03	ND, RDL=0.5		mg/L	
		RPD	Total Organic Carbon (C)	2008/06/03	NC		%	25

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample
(1) Recovery is within acceptance criteria.

Your Project #: 6906-21
Your C.O.C. #: B 42232

Attention: Hilda Dunnewold
CJ MacLellan & Associates
65 Beech Hill Rd
Antigonish, NS
B2G 2P9

Report Date: 2008/06/10

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A856148
Received: 2008/05/30, 10:04

Sample Matrix: Soil
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury (CVAA)	16	N/A	2008/06/04	ATL SOP 00026 R3	Based on EPA245.5
Mercury (CVAA)	1	N/A	2008/06/06	ATL SOP 00026 R3	Based on EPA245.5
Metals Solid Avail. MS - N-per, <150 um	17	N/A	2008/06/04	ATL SOP 00024 R3	Based on EPA6020A
Metals Solid Avail. MS - N-per	17	N/A	2008/06/04	ATL SOP 00024 R3	Based on EPA6020A
Total Organic Carbon in Soil (<150 um)	16	N/A	2008/06/05	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil (<150 um)	1	N/A	2008/06/10	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	3	N/A	2008/06/04	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	14	N/A	2008/06/05	ATL SOP 00044 R2	LECO 203-601-224

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MICHELLE HILL, Project Manager
Email: Michelle.Hill.Reports@maxxamanalytics.com
Phone# (902) 420-0203

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y97346	Y97346		Y98554		
Sampling Date		2008/05/26	2008/05/26		2008/05/26		
COC Number		B 42232	B 42232		B 42232		
Registration #							
	Units	**25**	**25 Lab-Dup**	**RDL**	**34**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	26		0.5	17	0.9	1528866
< 150 um Organic Carbon (TOC)	g/kg	27	27	0.7	21	0.5	1529953

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

Maxxam ID		Y98555			Y98556		
Sampling Date		2008/05/26			2008/05/26		
COC Number		B 42232			B 42232		
Registration #							
	Units	**35**	**RDL**	**QC Batch**	**37**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	17	0.5	1528866	17	0.5	1529954
< 150 um Organic Carbon (TOC)	g/kg	17	0.4	1529953	14	0.3	1529953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y98556		Y98557		
Sampling Date		2008/05/26		2008/05/26		
COC Number		B 42232		B 42232		
Registration #						
	Units	**37 Lab-Dup**	**RDL**	**38-PH**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	17	0.5	31	0.4	1529954
< 150 um Organic Carbon (TOC)	g/kg		0.3	24	0.2	1529953

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y98558		Y98559		
Sampling Date		2008/05/26		2008/05/26		
COC Number		B 42232		B 42232		
Registration #						
	Units	**38-0/2**	**RDL**	**38-2/5**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	75	0.6	28	0.5	1529954
< 150 um Organic Carbon (TOC)	g/kg	57	0.6	20	0.6	1529953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y98560		Y98561		
Sampling Date		2008/05/26		2008/05/26		
COC Number		B 42232		B 42232		
Registration #						
	Units	**39-PH**	**RDL**	**39-0/3**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	91	0.7	190	2	1529954
< 150 um Organic Carbon (TOC)	g/kg	47	0.5	110	1	1529953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y98562			Y98563		
Sampling Date		2008/05/26			2008/05/26		
COC Number		B 42232			B 42232		
Registration #							
	Units	**39-3/5**	**RDL**	**QC Batch**	**44**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	14	0.3	1529954	0.4	0.2	1529954
< 150 um Organic Carbon (TOC)	g/kg	12	0.4	1529953	0.7	0.2	1532491

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y98563	Y98564		
Sampling Date		2008/05/26	2008/05/26		
COC Number		B 42232	B 42232		
Registration #					
	Units	**44 Lab-Dup**	**45**	**RDL**	**QC Batch**
Inorganics					
Organic Carbon (TOC)	g/kg		0.9	0.2	1529954
< 150 um Organic Carbon (TOC)	g/kg	0.6	1.4	0.2	1532491

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

Maxxam ID		Y98565	Y98565		
Sampling Date		2008/05/26	2008/05/26		
COC Number		B 42232	B 42232		
Registration #					
	Units	**51**	**51 Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
Organic Carbon (TOC)	g/kg	47		0.4	1529954
< 150 um Organic Carbon (TOC)	g/kg	37	39	1	1533533

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

Maxxam ID		Y98566		Y98567		
Sampling Date		2008/05/26		2008/05/26		
COC Number		B 42232		B 42232		
Registration #						
	Units	**52**	**RDL**	**53**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	65	0.5	40	0.3	1529954
< 150 um Organic Carbon (TOC)	g/kg	60	0.6	39	0.4	1529953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y98568		Y98569		
Sampling Date		2008/05/26		2008/05/26		
COC Number		B 42232		B 42232		
Registration #						
	Units	**54**	**RDL**	**55**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	290	3	29	0.4	1529954
< 150 um Organic Carbon (TOC)	g/kg	210	2	22	0.3	1529953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Y97346	Y98554	Y98555	Y98556	Y98557		
Sampling Date		2008/05/26	2008/05/26	2008/05/26	2008/05/26	2008/05/26		
COC Number		B 42232	B 42232	B 42232	B 42232	B 42232		
Registration #								
	Units	**25**	**34**	**35**	**37**	**38-PH**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/kg	0.44	0.02	0.31	0.05	0.08	0.01	1528923

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y98558	Y98559	Y98560	Y98561	Y98562		
Sampling Date		2008/05/26	2008/05/26	2008/05/26	2008/05/26	2008/05/26		
COC Number		B 42232	B 42232	B 42232	B 42232	B 42232		
Registration #								
	Units	**38-0/2**	**38-2/5**	**39-PH**	**39-0/3**	**39-3/5**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/kg	0.29	0.11	0.18	0.37	0.06	0.01	1528926

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y98563		Y98564		Y98565		
Sampling Date		2008/05/26		2008/05/26		2008/05/26		
COC Number		B 42232		B 42232		B 42232		
Registration #								
	Units	**44**	**QC Batch**	**45**	**QC Batch**	**51**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/kg	0.17	1528926	0.33	1531178	0.32	0.01	1528926

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Y98566	Y98567	Y98568	Y98569		
Sampling Date		2008/05/26	2008/05/26	2008/05/26	2008/05/26		
COC Number		B 42232	B 42232	B 42232	B 42232		
Registration #							
	Units	**52**	**53**	**54**	**55**	**RDL**	**QC Batch**

Metals							
Mercury (Hg)	mg/kg	0.17	0.07	0.57	0.11	0.01	1528926

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Y97346	Y97346	Y98554	Y98555		
Sampling Date		2008/05/26	2008/05/26	2008/05/26	2008/05/26		
COC Number		B 42232	B 42232	B 42232	B 42232		
Registration #							
	Units	**25**	**25 Lab-Dup**	**34**	**35**	**RDL**	**QC Batch**
Metals							
available (<150 um) Arsenic (As)	mg/kg	980		51	360	2	1529664
Available Arsenic (As)	mg/kg	770	820	35	410	2	1529657

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

Maxxam ID		Y98556	Y98557	Y98558	Y98559		
Sampling Date		2008/05/26	2008/05/26	2008/05/26	2008/05/26		
COC Number		B 42232	B 42232	B 42232	B 42232		
Registration #							
	Units	**37**	**38-PH**	**38-0/2**	**38-2/5**	**RDL**	**QC Batch**
Metals							
available (<150 um) Arsenic (As)	mg/kg	190	64	78	67	2	1529664
Available Arsenic (As)	mg/kg	180	70	91	79	2	1529657

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y98560	Y98561	Y98562	Y98563		
Sampling Date		2008/05/26	2008/05/26	2008/05/26	2008/05/26		
COC Number		B 42232	B 42232	B 42232	B 42232		
Registration #							
	Units	**39-PH**	**39-0/3**	**39-3/5**	**44**	**RDL**	**QC Batch**
Metals							
available (<150 um) Arsenic (As)	mg/kg	17	61	210	3000	2	1529664
Available Arsenic (As)	mg/kg	20	61	240	1200	2	1529657

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Y98563	Y98564	Y98565	Y98566		
Sampling Date		2008/05/26	2008/05/26	2008/05/26	2008/05/26		
COC Number		B 42232	B 42232	B 42232	B 42232		
Registration #							
	Units	**44 Lab-Dup**	**45**	**51**	**52**	**RDL**	**QC Batch**
Metals							
available (<150 um) Arsenic (As)	mg/kg	3200	8700	2500	110	2	1529664
Available Arsenic (As)	mg/kg		3700	2000	120	2	1529657

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
QC Batch = Quality Control Batch

Maxxam ID		Y98567	Y98568	Y98569		
Sampling Date		2008/05/26	2008/05/26	2008/05/26		
COC Number		B 42232	B 42232	B 42232		
Registration #						
	Units	**53**	**54**	**55**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	1200	51	68	2	1529664
Available Arsenic (As)	mg/kg	1200	69	76	2	1529657

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

CJ MacLellan & Associates
Attention: Hilda Dunnewold
Client Project #: 6906-21
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA856148

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1528866	CAC	QC STANDARD	Organic Carbon (TOC)	2008/06/04		94	%	75 - 125
		Method Blank	Organic Carbon (TOC)	2008/06/04	ND, RDL=0.2		g/kg	
		RPD	Organic Carbon (TOC)	2008/06/04	5.5		%	35
1528923	SSI	MATRIX SPIKE	Mercury (Hg)	2008/06/04		98	%	75 - 125
		QC STANDARD	Mercury (Hg)	2008/06/04		94	%	75 - 125
		Spiked Blank	Mercury (Hg)	2008/06/04		104	%	75 - 125
		Method Blank	Mercury (Hg)	2008/06/04	ND, RDL=0.01		mg/kg	
		RPD	Mercury (Hg)	2008/06/04	NC		%	35
1528926	SSI	QC STANDARD	Mercury (Hg)	2008/06/04		82	%	75 - 125
		Spiked Blank	Mercury (Hg)	2008/06/04		106	%	75 - 125
		Method Blank	Mercury (Hg)	2008/06/04	ND, RDL=0.01		mg/kg	
1529657	MPT	MATRIX SPIKE [Y97346-02]	Available Arsenic (As)	2008/06/04		NC	%	75 - 125
		QC STANDARD	Available Arsenic (As)	2008/06/04		111	%	75 - 125
		Spiked Blank	Available Arsenic (As)	2008/06/04		95	%	75 - 125
		Method Blank	Available Arsenic (As)	2008/06/04	ND, RDL=2		mg/kg	
		RPD [Y97346-02]	Available Arsenic (As)	2008/06/04	6.9		%	35
1529664	MPT	MATRIX SPIKE [Y98563-01]	available (<150 um) Arsenic (As)	2008/06/04		NC	%	75 - 125
		QC STANDARD	available (<150 um) Arsenic (As)	2008/06/04		109	%	75 - 125
		Spiked Blank	available (<150 um) Arsenic (As)	2008/06/04		93	%	75 - 125
		Method Blank	available (<150 um) Arsenic (As)	2008/06/04	ND, RDL=2		mg/kg	
		RPD [Y98563-01]	available (<150 um) Arsenic (As)	2008/06/04	5.8		%	35
1529953	CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/05		94	%	75 - 125
		Method Blank	< 150 um Organic Carbon (TOC)	2008/06/05	ND, RDL=0.2		g/kg	
		RPD [Y97346-01]	< 150 um Organic Carbon (TOC)	2008/06/05	2.4		%	35
1529954	CAC	QC STANDARD	Organic Carbon (TOC)	2008/06/05		97	%	75 - 125
		Method Blank	Organic Carbon (TOC)	2008/06/05	ND, RDL=0.2		g/kg	
		RPD [Y98556-02]	Organic Carbon (TOC)	2008/06/05	0.2		%	35
1531178	SSI	MATRIX SPIKE	Mercury (Hg)	2008/06/06		103	%	75 - 125
		QC STANDARD	Mercury (Hg)	2008/06/06		81	%	75 - 125
		Spiked Blank	Mercury (Hg)	2008/06/06		102	%	75 - 125
		Method Blank	Mercury (Hg)	2008/06/06	ND, RDL=0.01		mg/kg	
		RPD	Mercury (Hg)	2008/06/06	NC		%	35
1532491	CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/09		100	%	75 - 125
		Method Blank	< 150 um Organic Carbon (TOC)	2008/06/09	ND, RDL=0.2		g/kg	
		RPD [Y98563-01]	< 150 um Organic Carbon (TOC)	2008/06/09	NC		%	35
1533533	CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/10		91	%	75 - 125
		Method Blank	< 150 um Organic Carbon (TOC)	2008/06/10	ND, RDL=0.2		g/kg	
		RPD [Y98565-01]	< 150 um Organic Carbon (TOC)	2008/06/10	6.5		%	35

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

MARITIME TESTING
Consulting Engineering & Environmental Services

FINAL REPORT

MODIFIED PHASE II
ENVIRONMENTAL SITE ASSESSMENT
FORMER GOLD MINE SITE
MONTAGUE MINES, NOVA SCOTIA

Prepared for

Nova Scotia Department of Transportation and Infrastructure Renewal
1672 Granville Street
P.O. Box 186 Halifax, NS
B3J 2N2

By

Maritime Testing (1985) Limited
97 Troop Avenue
Dartmouth, Nova Scotia
B3B 2A7

January 19, 2009

MTL PROJECT NO. 7442

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EXECUTIVE SUMMARY

Between January 16, 2008 and June 11, 2008, Maritime Testing (1985) Limited conducted a Modified Phase II Environmental Site Assessment (ESA) of the former Montague Mines gold mine property in Waverley, Halifax County, Nova Scotia. The Modified Phase II Environmental Site Assessment was performed as per the Request for Proposal (RFP) dated October 18, 2008 and further requests for additional testing received from the Nova Scotia Department of Transportation and Infrastructure Renewal.

Several areas of concern were identified in the RFP, including:

- Elevated arsenic and/or mercury in tailings samples from the site;
- Proximity of residential homes to the subject site and potential health implications; and
- Lack of delineation of the metals contamination toward the residential homes.

The results of the Modified Phase II ESA have identified elevated levels of arsenic and/or mercury in additional soil and/or groundwater sampling sites in excess of the CCME residential guidelines. A summary of Modified Phase II findings at the site follows:

- Elevated mercury concentrations (generally >1 mg/kg Hg) in the 2mm soil fraction appear to be associated with the locations of the former Stamp Mill, in the central tailings area and in areas downgradient of the pre-identified tailings area. Lower values (generally <1 mg/kg Hg) have been documented in the wooded areas east of the tailings area. Mercury concentrations in groundwater from all monitor wells satisfied the applicable CCME guideline for mercury.

- Three split tailings samples analyzed at ACME labs reported lower Hg and As results than the 200 mm fraction, but higher As results than the 150 μm sample analyzed by Maxxam. A value of 2.1 % arsenic was reported in sample MM-52.

- Elevated arsenic concentrations were reported in the 2mm soil fraction in the central tailings locations, in several former Stamp Mill / waste rock pile areas and the edge of the treed area east and southwest of the pre-identified tailings area. The arsenic results for the 150micron fraction are generally comparable to the 2mm fraction results. Arsenic concentrations in all groundwater samples from the January and May 2008 events all exceed the applicable CCME guideline for arsenic in groundwater. No background arsenic concentrations have been established for the site.

- Laboratory analysis indicates that TOC concentrations in the 2mm and 150 micron analyses are comparable and generally range from 2 to 400 g/kg. The lowest TOC levels were generally observed in the tailings followed by slightly higher levels in the native till samples and highest concentrations in the surface soil samples.

- Between 61% and 100% of the sample material passed the 2mm screen, while between 9.2% and 57% of the samples analyzed passed through the 150 micron screen, except for sample MM-4 (0-5cm), which had 99% passing the 150 micron screen.

- Moisture contents were generally high for all soil samples, ranging from 15 to 79 percent (%) moisture with only 7 of 77 samples reported to contain less than 25% moisture.

1.0 INTRODUCTION

Maritime Testing (1985) Limited (MTL) was retained by the Nova Scotia Department of Transportation and Infrastructure Renewal to perform a Modified Phase II Environmental Site Assessment (ESA) of the former gold mine property (PID No. 00315085) in Montague Mines, Nova Scotia. Historically, this property has been the location of extensive gold mining operations since the late-1800s and more recent (mid-1900s) development of the surrounding properties in a residential capacity has occurred. The Modified Phase II ESA was performed under the supervision of Mr. Robert Bekkers, M.Sc., P.Geo., of MTL between January 16, 2008 and June 11, 2008.

This report presents the results of our Modified Phase II ESA program. The purpose of the Modified Phase II ESA was to collect samples of tailing and surface soils in the area of the former gold mines at the Montague site for analysis of arsenic and mercury levels, and drilling of three monitoring wells for the purpose of determining groundwater flow direction.

The information contained in this report has been provided to reflect the 'Terms of Reference' for the project: Request for Proposals to Perform Phase II Environmental Site Assessment Work at the Former Gold Mine Site, Montague Mines, Nova Scotia (dated October 18, 2008).

2.0 REGULATORY GUIDELINES

National guidelines, acceptable for use within the Province of Nova Scotia, for environmental quality were used in the current assessment. These include:

- Canadian Council of Ministers of Environment (CCME) Canadian Environmental Quality Guidelines, 1999 (with 2008 updates).

Given the current access and use of the property by local residents and proximity of residential dwellings to the site, the Modified Phase II ESA soil and groundwater results were compared to more conservative CCME residential guidelines.

3.0 SITE DESCRIPTION

The subject property, referred to herein as 'the Montague Mines site' is located at the former Montague Gold Mines property (property identification number (PID) No. 00315085) south of the intersection of Montague Road and Montague Mines Road in Waverley, Halifax County, Nova Scotia. A site location map (Figure 1) is provided in Appendix A.

The subject site has a cumulative area of 0.81square kilometres (200 acres). It is bounded on the north and northeast by private residential homes and treed/undeveloped lots along Montague Mines and Montague Mines Road, east and west by treed and undeveloped lands, and south by undeveloped low-lying treed property extending to and across to the opposite side of Highway No. 107 (Forest Hills Extension). Approximately 500 metres east of the Montague Mines site is Loon Lake (and associated wetland) and extending westward from Loon Lake (through Barry's Run) across the subject property is a small tributary, locally referred to as Mitchell Brook. No commercial or residential structures are present on the Montague Mines property.

Within the limits of the property are several flat and open areas referred to as 'racetrack areas' given their present usage by local recreational vehicles (all terrain vehicles and dirt bikes). All surface water flow appears to be along site contours towards the low-lying area south of the subject site. No catch basins for storm water were observed on the subject property. Locally in the racetrack areas, the surface water flow appeared to be altered and water was observed to pond within deep grooves or tracks cut into the tailings deposits.

Potable water in the subject areas is supplied by private on-site drilled wells. No potable wells were noted on the Montague Mines site during the fieldwork for this program. Sewage effluent from the private residences surrounding the site is discharged to individual septic tanks on the neighbouring lands. No septic tanks were noted on the subject property.

4.0 SCOPE OF WORK AND METHODOLOGY

4.1 Summary of Observations on Land Use and Human Receptors

During the field work for the Modified Phase II ESA, MTL identified the following potential environmental concerns, specifically:

- Most of the residential properties surrounding the former gold mine site appear to be supplied by on-site potable water systems, many of which appear to be drilled wells.

- Local residents continue to use the central tailings area of the site for recreation despite Human Health Hazard signs posed throughout the property.
- Even though the site conditions during the field portion of the program were either frozen (January) or wet (May/June), small areas of dust generated from the tailings area were noted.
- Three areas with concrete foundations and abundant waste rock piles (reported to have been formerly occupied by Stamp Mills) were observed on the southeast side of the subject property during the site work.
- Large areas of run-off were observed in the low-lying areas west of the tailings deposits.

4.2 Scope of Work for Modified Phase II ESA

Background

Further to recent data obtained by scientists from Natural Resources Canada (NRCan), working in collaboration with the NS Department of Natural Resources (DNR) and others on the geochemistry of historically-deposited gold mine tailings across Nova Scotia, NSTIR issued a RFP in 2007 to consultants to conduct additional site assessment including delineation of elevated arsenic and mercury levels in tailings collected and analyzed from the site. Much of the sensitivity of this site arises out of the fact that there are privately-owned residential properties within a few hundred metres of tailings located to the north east and east along Montague Road and Montague Mines Road. These residential properties may be impacted due to offsite migration of arsenic or mercury contamination sourced from tailings, by wind or other air pathways, or they may also be locally impacted by arsenic derived from mine waste rock and other anthropogenic sources of arsenic located on their property. Large areas of the tailings are unvegetated and are known to generate dust seasonally during high winds and when being used for recreational motor vehicle activities. Based on topography and surface water flows, groundwater flow on or near the tailings appear to be away from residences on Montague Mines Road. This information and data will be used to seek advice on the necessity of human health risk assessment from a consulting toxicologist to indicate whether remediation and/ or risk management measures, to block or mitigate human exposure to the tailings, are necessary.

NSTIR has contracted MTL to conduct additional site sampling work to delineate the full extent of arsenic contamination, both on unsampled tailings (away from the 'racetracks') and adjacent surface soils (on public and potentially on private lands), to establish potential boundaries for remediation or risk management. Data on the vertical distribution of arsenic in any physically undisturbed soils within the study area are also needed, to test whether tailings-related impacts can be distinguished from naturally occurring, localized arsenic 'hotspots' associated with the site's geology. It is also necessary to evaluate whether groundwater migrating through tailings could impact neighbouring wells, and whether the soils adjacent to tailings may contain elevated arsenic and/or mercury due to 100 + years of tailings and/or contaminant migration due to natural processes or if potential tailings-sourced contamination may overprint historical contamination related to ground disturbance from historical mining activities.

<u>Current Program</u>

The Modified Phase II ESA at Montague Mines consisted of the following:

- Intrusive investigation of the surface (upper 5 to 10 cm) via hand sampling and subsurface soils (>10cm) through a drilling program using an all-terrain geo-environmental drill rig;
- investigation of vertical arsenic distribution patterns within any individual soil horizons in the top 5 cm of physically-undisturbed soils on public lands;
- investigation of the groundwater quality and gradient through the installation and sampling of monitoring wells; and
- laboratory analysis of selected soil and groundwater samples for metals analysis (namely Hg and As in designated fractions), TOC and dry weight calculation of the 150 micron fraction.

4.3 Soil Sampling Program

Non-routine soil sampling protocols were required for collection of the required soils with distinct soil horizons at the Montague Mines site. Specific sampling protocols were required for these samples to fulfill requirements of a study that is currently underway (by others). MTL field personnel participated in an information/training session prior to commencement of field work delivered by geochemists from Nova Scotia Natural Resources and Natural Resources Canada on November 16, 2007. It consisted of a combination of a classroom session with presentation(s) in the morning, and time in the field practicing the required soil sampling protocols at the Montague Mines site in the afternoon.

Soil sampling was conducted in two main areas, 1) in areas of tailings (for which no previous data were available) and 2) in surface soils (surrounding tailings). In areas of tailings for which data are already available, samples were collected from the upper 10 cm for confirmation and comparison with pre-existing and generally known information on tailings deposits. In the soils areas, the top 0-5 cm were sampled in undisturbed soils in accordance with the methods described during the soil sampling protocol information sessions. At each sampling point, observations were made on location co-ordinates (NAD 83), ground cover, vegetation, slope, drainage, thickness of organic material removed before sampling, and soil description including Munsell colour, thickness of individual soil horizons within the 0-5 cm interval, presence / absence of rock fragments in the soil, proximity to waste rock or historical mine openings, etc. Field observations and samples taken were recorded on the standardized field observation sheet / sampling form. These are provided in Appendix C. Digital colour photographs (with a scale for reference) were taken at each location and are provided in Appendix B.

Soil sampling at the Montague Mines site was conducted between May 15, 2008 and June 11, 2008. The sample locations were based on 54 proposed locations (and co-ordinates) provided by NSTIR in their RFP dated October 18, 2008. In addition to the original 54 proposed locations, 5 additional locations were sampled (at the request of NSE personnel in November 2007) in two separate areas outside of those identified on the NSTIR supplied map. All soil sampling was conducted using QA/QC procedures that are consistent with the CCME Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites. All soil samples collected were analyzed for mercury, arsenic and total organic carbon on both of the laboratory sieved fractions (2mm and 150 micron) in Bedford, NS. In addition, splits of three tailings samples were sent to Vancouver, BC for *aqua regia* digestion analysis.

4.4 Borehole Drilling Program

On January 16 and 17, 2008, three boreholes were advanced into the subsurface at the locations identified as MW1, MW2 and MW3 on Figure 2 (Appendix A). The boreholes were referenced to site existing features and the elevations noted on the Borehole Logs were referenced to local GPS mapping and topography in the area, which indicate an assigned surface elevation of 100.0 metres at monitoring well MW1. The boreholes were drilled with a track-mounted drill rig supplied by Lantech Drilling Services from Dieppe, New Brunswick.

The field investigation was carried out by qualified technical personnel who positioned and logged the boreholes and sampled the *in situ* soils. All drilling work including soil and groundwater sampling was conducted using procedures that are consistent with the CCME Subsurface Assessment Handbook for Contaminated Sites. Test locations were chosen to provide an indication of subsurface conditions in the central tailings area of the site. An explanation of terms and symbols used in the report and Borehole Logs is provided in Appendix D.

A summary of encountered geologic conditions is provided in the Borehole Logs in Appendix D. It should be noted that the stratigraphic boundaries on the Borehole Logs typically represent a transition of one soil type to another and do not necessarily indicate an exact plane of geologic change. Subsurface conditions may vary between and beyond the borehole locations.

The boreholes were advanced through the overburden using hollow stem augers. Standard Penetration Testing and soil sampling were performed in the overburden using a 50-mm outside diameter (OD) split-spoon sampler. Soil samples were taken at nominal depth intervals of 0.6 metres, often continuously. Soil samples from the boreholes were placed in lab-supplied teflon-lined glass containers and stored in ice-packed coolers. Select soil samples were submitted to Maxxam Analytics Inc. laboratory in Bedford for laboratory analysis of arsenic and mercury.

4.5 Monitor Well Installation and Groundwater Sampling

During the drilling program, three monitor wells were installed for the purpose of providing water quality sampling stations. The monitor wells consisted of 50-mm OD polyvinyl chloride (PVC) threaded Schedule 40 casing and 20 slot screen. The screened intervals were positioned to intersect the groundwater table, and the annular space around the screen was filled with clean No. 2 silica sand. Each installation was sealed with a bentonite plug, minimum 0.6 metre thickness, above the sand pack to prevent migration of the surface flow into the well. The wells were capped with J-plugs and steel above ground protective casings. Monitor well construction details are included on the Logs in Appendix D. All groundwater assessment work was conducted using procedures that are consistent with the CCME Subsurface Assessment Handbook for Contaminated Sites.

On January 18, 2008, MTL personnel measured the static water levels in the monitor wells using a *Solinst* water level indicator. The wells were developed by purging a minimum of three well pore volumes using dedicated hand bailers. Following well recovery, groundwater samples from the monitor wells were collected in lab-supplied teflon-lined plastic and glass jars, immediately placed in an ice-packed cooler and transported to Maxxam Analytics Inc. laboratory in Bedford for analysis of arsenic and mercury. Proper preservation of water samples collected for mercury and arsenic analysis was conducted in accordance with the required laboratory protocol.

On May 20, 2008, a second series of groundwater monitoring was attempted on the three wells drilled previously by MTL in January 2008. Monitoring wells MW1 and MW2 were observed to have been knocked over and no longer accessible. For this reason, no additional water samples could be collected from these wells. Monitoring well MW3 was inspected and it was noted that the area around the well was highly disturbed and the cover on the protective casing was slightly displaced; however, there was no evidence of tampering to the existing J-plug. As in January 2008, the existing well was developed by purging a minimum of three well pore volumes using dedicated hand bailers. Following well recovery, the groundwater sample from MW3 was collected in lab-supplied teflon-lined plastic and glass jars, immediately placed in an ice-packed cooler and transported to Maxxam Analytics Inc. laboratory in Bedford for analysis of arsenic and mercury.

4.6 Decommissioning of Monitoring Wells

Following receipt of the groundwater monitoring results from MW3 in May 2008, the three on-site groundwater wells were sealed and abandoned on June 2, 2008 under the guidance of an MTL site professional via recognized general well abandonment procedures outlined by the NSE. In order to abandon the wells, MTL accessed each of the three monitor wells to determine the static water level and accessibility to the well at the time of the site work. Due to the physical damage to MW1 and MW2, no access was possible and therefore, no static water levels were available for the June monitoring event for the first two wells. The surface area in each destroyed well location was inspected, filled to grade with granular fill material from the property (as required).

Based on the static water information and known well installation details of MW3, the screened portion of the monitor well was filled with bentonite chips to seal it and prevent vertical migration of the water into the well. Once the monitor well was sealed, the upper solid casing portion of the well was removed to a depth of greater than 0.3 metre below ground surface and the remaining void filled to grade with granular fill material from the property. Following the abandonment work, the steel casings, surplus well materials (PVC casing, J-plugs) and groundwater bailers was removed from the site by MTL personnel.

4.7 Laboratory Analysis

In total, 54 soil sampling locations were sampled by MTL between May 15, 2008 and June 11, 2008. Of the original 54 proposed locations, 5 samples (MM-6, MM-37, MM-45, MM-46 and MM-49) could not be collected due to access concerns or lack of soil (i.e. swamp or flooded area). Five additional soil sampling locations were added by NSE to those identified on the NSTIR TOR map (locations MM-60 to MM-64). Five (5) field duplicate soil samples (labelled MM-55 to MM-59) were collected and analyzed during the field program.

Soil samples collected across the site were submitted for analysis of mercury, arsenic and total organic carbon. For every soil sample submitted, the specified soil testing (outlined below) was completed on two laboratory sieved fractions, the 2mm fractions (for Hg, As and TOC) and the 150 micron fraction (for As and TOC) except for the borehole soil samples, which only the mercury and arsenic in the 2mm fraction were analyzed. In total, between the soil, tailings and borehole samples submitted for analysis, 92 'soil' samples were submitted to Maxxam Analytics Inc. for laboratory testing.

Specifically, samples of tailings and soils were analysed using methods that are standard for contaminated sites in Canada. In particular, arsenic extraction and analysis by the Maxxam laboratory were consistent with USEPA Methods 3050B and 6020 and mercury extraction and analysis was consistent with USEPA Method 7471A. Minimum detection limits were reported to be 2 milligrams per kilogram (i.e. ppm) for arsenic and 10 micrograms/kg (i.e. ppb) for mercury. Total organic carbon was determined using a high-temperature combustion method (e.g. LECO, or equivalent), following removal of inorganic carbon (carbonate) using HCl.

Appropriate QA / QC procedures consistent with the CCME Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites were followed. This included submission of 5% duplicate soil samples (5 duplicates in 92 total soil samples submitted for analysis).

In addition, splits of three tailings samples (samples MM-51, MM-52 and MM53) from an area previously sampled (by others) were sent to ACME Analytical Laboratories Ltd in Vancouver, BC and analysed using *aqua regia* digestion. This analysis at ACME was for purposes of comparison of labs and methods used by previous studies by scientists from Natural Resources Canada (NRCan), working in collaboration with the Nova Scotia Department of Natural Resources (DNR) and others. Samples sent to ACME were analyzed first using Group 1F-MS (Ultratrace Aqua Regia Digestion, Basic Suite (37 Elements)). The ACME analytical results reported one tailings sample (MM-52) with arsenic (As) at a concentration greater than the upper limits for 1F-MS. Based on this result, sample MM-52 was then re-submitted for detailed analysis of arsenic using the Group 7AR (Multi-Element Assay).

Groundwater samples were collected and analysed for arsenic and total mercury. In total, four groundwater samples were analyzed, two from MW-3 (January 18, 2008 and May 20, 2008) and one sample each from MW-1 and MW-2 on January 18, 2008. Proper preservation of water samples in accordance with the required laboratory protocol was conducted during the field sampling program.

All soil and water samples were transported under cool storage to the Maxxam Analytics Inc. laboratory in Bedford, Nova Scotia or submitted to the laboratory on the same day as collection. Results of all analyses are presented in Appendix E. Laboratory analyses were conducted in accordance with the prescribed methodology set out in the NSTIR RFP (dated October 18, 2007) including submission and analysis of samples at ACME Analytical Laboratories Ltd. in Vancouver, British Columbia (as a sub-contract to Maxxam Analytics).

5.0 RESULTS

5.1 Geologic Conditions

Surficial geology mapping of the Montague Mines area indicates the native soil type to be Quartzite Till, which are described as a light bluish grey, sandy till with gravel, cobble and boulder sizes. Geological mapping indicates that bedrock underlying the site is Goldenville Formation of the Meguma Group of metasediments, consisting mainly of quartzite and minor black slates interbeds. Goldenville Quartzites are typically fine to medium-grained, grey in colour and massive.

Soil conditions encountered at the site confirmed the geological mapping of the subject site and regional area. The maximum depth of sampling during the surficial sampling program was 0.25 metre and were terminated in either tailings, organic (H) or leachate (A) layer, or extended into the native site Till (B or C). Conditions at the drilled borehole locations in January 2008 consisted of up to 0.25 metre of ice over surface tailings deposits. The tailings were generally 1.5 metres thick underlain by a black to yellow-brown organic soil, peat and quartzite boulder-rich layer directly overlying native glacial Till. Bedrock was not encountered during the site drilling or hand sampling work.

5.1.1 Fill

The main fill deposits on the site were tailings and waste rock piles. The tailings in the central area of the site were generally in the order of 1.5 metres in thickness and underlain by a 1.5 to 1.8 metre thick layer of black to yellow-brown organic soil, peat and quartzite boulder-rich layer. It is assumed the peat and boulder-rich layer was a former low-lying swampy area onto which years of tailings deposits, generated during operation of the gold mine, were deposited. Numerous piles of waste rock were observed across the site. Many of the larger waste rock piles were located near former site infrastructure (i.e. stamp mills) but also were noted near former mine shaft and exploration trenches.

Minor debris, such as wood, concrete, brick, ash or coal was observed in the selected hand shovel pits (MM-34, MM-42). The characteristics of the fill varied from loose to compact, moist to wet and black, grey, red, orange or brown in colour. One automobile was observed in the main tailings area, abandoned between January 2008 and May 2008.

5.1.2 Till

Till was silty to gravely sand, abundant quartzite cobbles and boulders, compact to dense, moist to wet, and grey to brown in colour.

5.1.3 Bedrock

Bedrock was not encountered during this investigation, which included borehole drilling to a maximum depth of 5.2 metres.

5.2 Groundwater Conditions

In January 2008, groundwater was encountered at depths ranging from 0.06 to 0.23 metres below ground surface. Table 1, below, presents the results of the groundwater survey conducted on January 18, 2008 and corrected for height of the stick-up protectors. Based on the groundwater survey, the inferred groundwater flow direction is to the northwest away from the local residences along Montague Mines Road and is presented on Figure 2 (Appendix A).

Table 1: Relative Elevations of Monitoring Wells and Groundwater
Former Gold Mine, Montague Mines, NS, January 18, 2008

Location	Depth to Groundwater (metres)	Ground Surface Elevation (metres)	Groundwater Elevation (metres)
MW1	0.06	100.0	99.94
MW2	0.11	99.93	99.82
MW3	0.23	100.23	100.0

Note: Ground surface elevations referenced to assigned elevation of 100 metres at MW1.

5.3 Analysis of Mercury, Arsenic and Total Organic Carbon

Laboratory analytical results for arsenic, mercury and total organic carbon obtained in soil and/or groundwater during the Modified Phase II ESA portion of this program are provided in Tables E2 to E6 (Appendix E). Analytical results have been tabulated by fraction with the 200 mm fraction soil data found in Table E2, 0.15mm (or 150 micron) soil data in Table E3, dry weight and moisture soil data in Table E4, 1F-MS and Group 7AR (*aqua regia* digestion) in tailings in Table E5, and groundwater results in Table E6. These results have been compared to the applicable (and more conservative) 2006 Canadian Council for Ministers for the Environment (CCME) guidelines for residential receptors and potable drinking water, as required. Note that in this section, 'guideline' refers to the applicable soil or groundwater criterion from the CCME criteria. Laboratory certificates of analysis are provided in Appendix F.

5.3.1 200 mm Soil Fraction

Mercury

Table E2 (Appendix E) presents the results of fifteen (15) soil samples selected from the monitor wells for mercury analysis. In summary, laboratory analysis indicates that all concentrations of mercury identified in the soils are below the CCME environmental quality guideline of 6.6 mg/kg for soil with residential land use. Higher mercury levels were detected in the surficial tailings samples (samples *MW1/1*, *MW1/2*, *MW2/1*, *MW3/1* and *MW3/2*) at concentrations ranging from 0.7 to 4.4 mg/kg; however, these results are below the applicable CCME residential guideline of 6.6 mg/kg.

Mercury results in the 2mm soil sample fraction collected from the 54 sampling locations identified in Figure 3 (Appendix A) are also summarized in Table E2 (Appendix E). Soil results indicate mercury levels in the 2mm fraction of the soil samples analyzed range from 0.02 mg/kg in sample MM-26 (2-5cm) to 25 mg/kg in sample MM-47 (0-5cm). Only nineteen (19) samples of the 77 soil samples analyzed were reported to contain more than 1.0 mg/kg mercury, and only four (4) of the 19 samples (MM-4 (0-5cm), MM-8 (0-5cm), MM-47 (0-5cm) and MM-54 (0-5cm)) containing more than 1.0 mg/kg mercury were reported to exceed the applicable CCME residential guideline of 6.6 mg/kg. From these results, there appears to be significant difference in elevated mercury concentrations (generally >1 mg/kg Hg) reported in the locations of the former Stamp Mill, central tailings and areas downgradient of the pre-identified tailings area versus the wooded and residential areas to the north and northeast (generally <1 mg/kg Hg).

Arsenic

Table E2 (Appendix E) presents the results of fifteen (15) soil samples selected from the monitor wells for arsenic analysis. In summary, laboratory analysis indicates that all concentrations of arsenic in the soil from the monitor wells are in excess of the CCME guideline of 12 mg/kg. Average arsenic concentrations ranged from 4,200 mg/kg arsenic in the tailings, 660 mg/kg arsenic in the peat and 160 mg/kg in the underlying native Till unit.

Arsenic results in 2mm soil sample fraction collected from the 54 sampling locations identified in Figure 4 (Appendix A) are also summarized in Table E2 (Appendix E). Soil results indicate arsenic levels in the 2mm fraction of the soil samples analyzed range from 7 mg/kg in sample MM-1 (3.5-5cm) to 17,000 mg/kg in sample MM-52 (0-10cm). Only twenty-four (24) of the 77 soil samples analyzed were reported to contain more than 400 mg/kg arsenic, and only six (6) of the 77 samples (MM-1 (3.5-5cm), MM-10 (0-1.5cm), MM-11 (0-2cm), MM-12 (0-5cm), MM-13 (0-5cm) and MM-16 (0-5cm)) reported were below (i.e. satisfy) the applicable CCME residential guideline of 12 mg/kg. From these results, there appears to be significant difference in elevated arsenic concentrations reported in the central tailings locations, in several former Stamp Mill / waste rock pile areas (locations MM-41 and MM-42) and the edge of the treed area east (locations MM-28 and MM-33) and southwest (locations MM-4, MM-48 and MM-50) of the pre-identified tailings area.

Total Organic Carbon (TOC)

Table E2 (Appendix E) also presents the results of 77 soil samples (2mm fraction) submitted for analysis of total organic carbon (TOC). TOC results in soil samples collected from the 54 sampling locations are identified in Figure 4 (Appendix A) and summarized in Table E2 (Appendix E). In summary, laboratory analysis indicates that concentrations of TOC range from less than 2 g/kg in the central tailings area (MM-51 to MM-53) to a maximum of 400 g/mg in MM-31. Generally, the organic-rich upper (surficial) soil samples contained higher TOC contents than the underlying native till unit.

5.3.2 0.15mm (or 150 micron) Soil Fraction

Arsenic

Arsenic results in 150 micron soil sample fractions collected from the 54 sampling locations identified in Figure 5 (Appendix A) are summarized in Table E3 (Appendix E). Soil results indicate arsenic levels in the 150 micron fraction of the soil samples analyzed range from 6 mg/kg in sample MM-1 (3.5-5cm) to 35,000 mg/kg in sample MM-52 (0-10cm). Only twenty-three (23) samples of the 77 soil samples analyzed were reported to contain more than 400 mg/kg arsenic, and only six (6) of the 77 samples (MM-1 (0-5cm), MM-1 (3.5-5cm), MM-10 (0-1.5cm), MM-11 (0-2cm), MM-12 (0-5cm) and MM-13 (0-5cm)) reported to satisfy the applicable CCME residential guideline of 12 mg/kg. Generally, the arsenic results for the 150 micron fraction are directly comparable to the 2mm fraction results indicating higher arsenic in the central tailings locations, former Stamp Mill / waste rock pile areas and at the east and southwest treed areas on the edge of the pre-identified tailings area.

TOC

Table E3 (Appendix E) presents the results of 77 soil samples (150 micron fraction) submitted for analysis of total organic carbon (TOC). TOC results in soil samples collected from the 54 sampling locations are identified in Figure 5 (Appendix A) and summarized in Table E3 (Appendix E). In summary, laboratory analysis indicates that concentrations of TOC range from less than 4 g/kg in the central tailings area (MM-51 to MM-53) to a maximum of 400 g/mg in MM-31. Generally, the 150 micron fraction results are comparable to the 2mm fraction results indicating higher TOC values in the organic-rich upper soil samples than the underlying native till unit.

5.3.3 Dry Weight Calculations and Moisture Content for Soil Samples

Table E4 (Appendix E) presents the results of all dry weight calculations for the soil samples submitted for laboratory analysis. Between 61% and 100% of the sample material passed the 2mm screen (all but 6 samples with over 80% passing), while between 9.2% and 57% of the samples analyzed passed through the 150 micron screen. One exception was sample MM-4 (0-5cm), which had 99% passing (or only 1% larger than) the 150 micron screen.

Moisture contents were generally high for all soil samples, ranging from 15 to 79 percent (%) moisture with only 7 of 77 samples reported to contain less than 25% moisture. These results are also presented in Table E4 (Appendix E).

5.3.4 1F-MS and Group 7AR Results

The results of the Group 1F-MS (Ultratrace Aqua Regia Digestion, Basic Suite) for three selected split tailings samples (MM-51, MM-52 and MM-53) completed at the ACME analytical laboratory in Vancouver, BC included analysis of 37 separate elements (including arsenic (As) and mercury (Hg)). The laboratory certificate for all 37 elements is provided in Appendix F; however, for the purpose of this report, only As and Hg will be tabulated (Table E5, Appendix E) and discussed. Results for additional analysis of arsenic in tailings sample MM-52 by ACME using the Group 7AR (Multi-Element Assay) was also conducted based on an elevated concentration greater than the upper limits for 1F-MS. The results are reported in Table E5 (Appendix E).

Mercury

Table E5 (Appendix E) presents the mercury results of three (3) split tailings samples analyzed at ACME labs in Vancouver, BC. In summary, laboratory analysis indicates that mercury concentrations identified in the tailings samples ranged from 0.551 ppm (or mg/kg) in sample MM-53 to 1.45 ppm in sample MM-51.In comparison, these results are lower (25 to 35%) than the Hg results for the 200 mm fraction on the same sample as reported by Maxxam in Table E2 (Appendix E). All of these results are below the applicable CCME residential guideline of 6.6 mg/kg.

Arsenic

Table E5 (Appendix E) also presents the arsenic results of three (3) split tailings samples analyzed at ACME labs. In summary, laboratory analysis indicates that concentrations of arsenic identified in the tailings samples ranged from 2,178 ppm As in sample MM-51 to >10,000 ppm As in sample MM-52. In comparison, these results are slightly (18%) higher than the As results for the 200 mm fraction and approximately 40% lower than the 150 μm results reported by Maxxam for the same tailings sample (Table E2, Appendix E). In summary, the arsenic results from the ACME laboratory indicate that the concentrations reported in all three tailings samples are in excess of the CCME residential guideline of 12 mg/kg.

Based on the arsenic results in tailings sample MM-52 elevated over the upper limits for 1F-MS reported by ACME, additional analysis of this samples using the Group 7AR (Multi-Element Assay) was conducted. A result of 2.1% arsenic was reported by ACME in sample MM-52 (Table E5, Appendix E).

5.3.5 Groundwater Results

Groundwater samples were analysed for only two metals parameters, namely mercury and arsenic. Elevated metals values in the groundwater results in excess of the CCME Drinking Water guidelines were identified in the groundwater samples collected from all three monitor wells (Table E6, Appendix E) in January 2008.

Mercury concentrations varied from 0.02 to 0.15 μg/L in the groundwater samples analyzed. No mercury levels in excess of the applicable guideline of 1 μg/L mercury were identified.

Arsenic concentrations ranged from 250 μg/L in monitoring well *MW2* to 570 μg/L in monitoring well *MW3*. Arsenic concentrations identified in all three monitoring wells exceed the applicable guideline of 10 μg/L.

Since two of the monitoring wells (*MW1* and *MW2*) were destroyed prior to May 2008, only one additional groundwater sample was collected prior to proposed well abandonment work by MTL.

Laboratory results of the May 20, 2008 groundwater sampling event reported 0.57 µg/L mercury and 3,100 µg/L arsenic in *MW3* (Table E6, Appendix E). Similar to the January 2008 results, the reported mercury result for *MW3* satisfied the applicable CCME Drinking Water guidelines, while the arsenic concentration exceeded these same guidelines.

6.0 CONCLUSIONS

In summary, the Modified Phase II ESA has identified elevated levels of arsenic and mercury in the soil and/or groundwater in excess of the CCME residential guidelines. Elevated arsenic levels in soil in the subject area could be partially attributed to slate bedrock and slate-derived glacial till underlying the Halifax area, although no background arsenic concentration have been established for the site. Based on the laboratory data, the following conclusions have been reached:

- Elevated mercury concentrations (generally >1 mg/kg Hg) in the 2mm soil fraction appear to be associated with the locations of the former Stamp Mill, in the central tailings area and in areas downgradient of the pre-identified tailings area. Lower values (generally <1 mg/kg Hg) have been documented in the wooded areas east of the tailings area.

- Elevated arsenic concentrations were reported in the 2mm soil fraction in the central tailings locations, in several former Stamp Mill / waste rock pile areas and the edge of the treed area east and southwest of the pre-identified tailings area. Also, the arsenic results for the 150 micron fraction are generally comparable to the 2mm fraction results.

- Mercury and arsenic results in three (3) split tailings samples analyzed at ACME labs reported lower Hg and As results than the 200 mm fraction, but higher As results than the150 µm sample analyzed by Maxxam. A value of 2.1 % arsenic was reported in sample MM-52.

- Mercury concentrations in all groundwater wells varied from 0.02 to 0.57 µg/L in the groundwater samples analyzed, which satisfy the applicable CCME guideline of 1 µg/L mercury.

- Arsenic concentrations in all groundwater from the January and May 2008 sampling events ranged from 250 µg/L to 3,100 µg/L and exceed the exceed the applicable CCME guideline of 10 µg/L arsenic.

- Laboratory analysis indicates that TOC concentrations range from 2 to 400 g/kg, generally indicating higher TOC in the surface soil than in the underlying native till. The lowest TOC values were reported in the tailings samples. Generally, the 150 micron fraction TOC results are comparable to the 2mm fraction TOC results.

- Between 61% and 100% of the sample material passed the 2mm screen, while between 9.2% and 57% of the samples analyzed passed through the 150 micron screen, except for sample MM-4 (0-5cm), which had 99% passing the 150 micron screen.
- Moisture contents were generally high for all soil samples, ranging from 15 to 79 percent (%) moisture with only 7 of 77 samples reported to contain less than 25% moisture.

7.0 CLOSING

The statements and conclusions presented in this report are professional opinions based upon visual observations made during the digging and sampling of 54 shallow (<10cm) soil/tailing locations, drilling and sampling of three boreholes, sampling groundwater from three monitoring wells and on interpretation of select chemical analyses. The opinions in this report are given using generally accepted scientific judgement, principles, and practices; however, because of the inherent uncertainty in this process no guarantee of conclusion is intended or can be given.

This report was prepared by Maritime Testing (1985) Limited for the exclusive use of Nova Scotia Department of Transportation and Infrastructure Renewal and Nova Scotia Environment. The scope of the services performed may not be appropriate to satisfy the needs of third parties. Any use which a third party makes of this report, or any reliance on or decisions made based on it, is the sole responsibility of the third party. Maritime Testing (1985) Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust this information meets your present requirements. This report has been prepared by Robert Bekkers, M.Sc., P.Geo. with contributions and review by Doreen Chenard, B.Sc. in Agr.

Respectfully Submitted,
Maritime Testing (1985) Limited

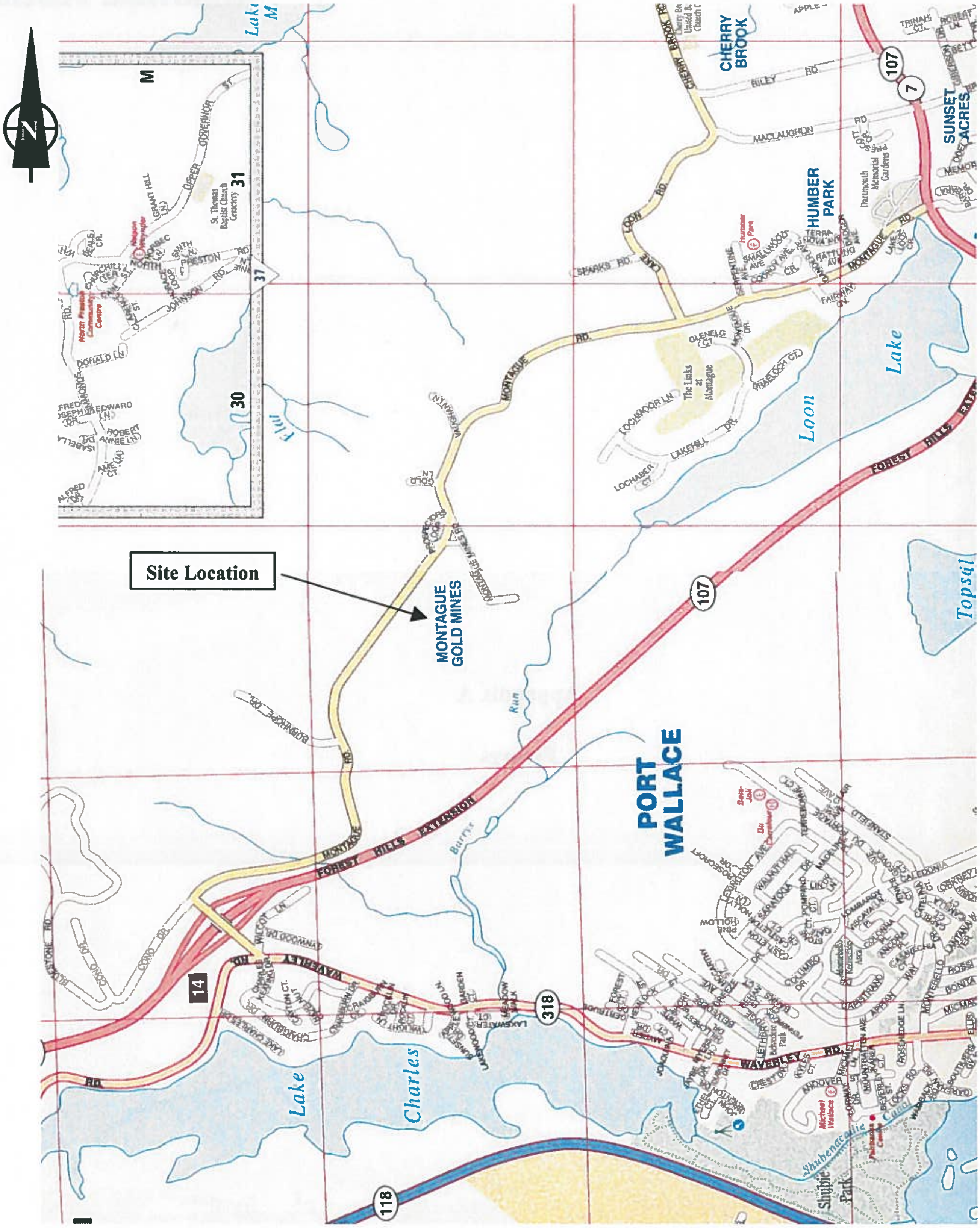
Robert Bekkers Doreen Chenard.

Robert Bekkers, M.Sc., P.Geo.
Project Manager

Doreen Chenard, B.Sc. in Agr.
Manager, Environmental Assessments

Appendix A

Figures

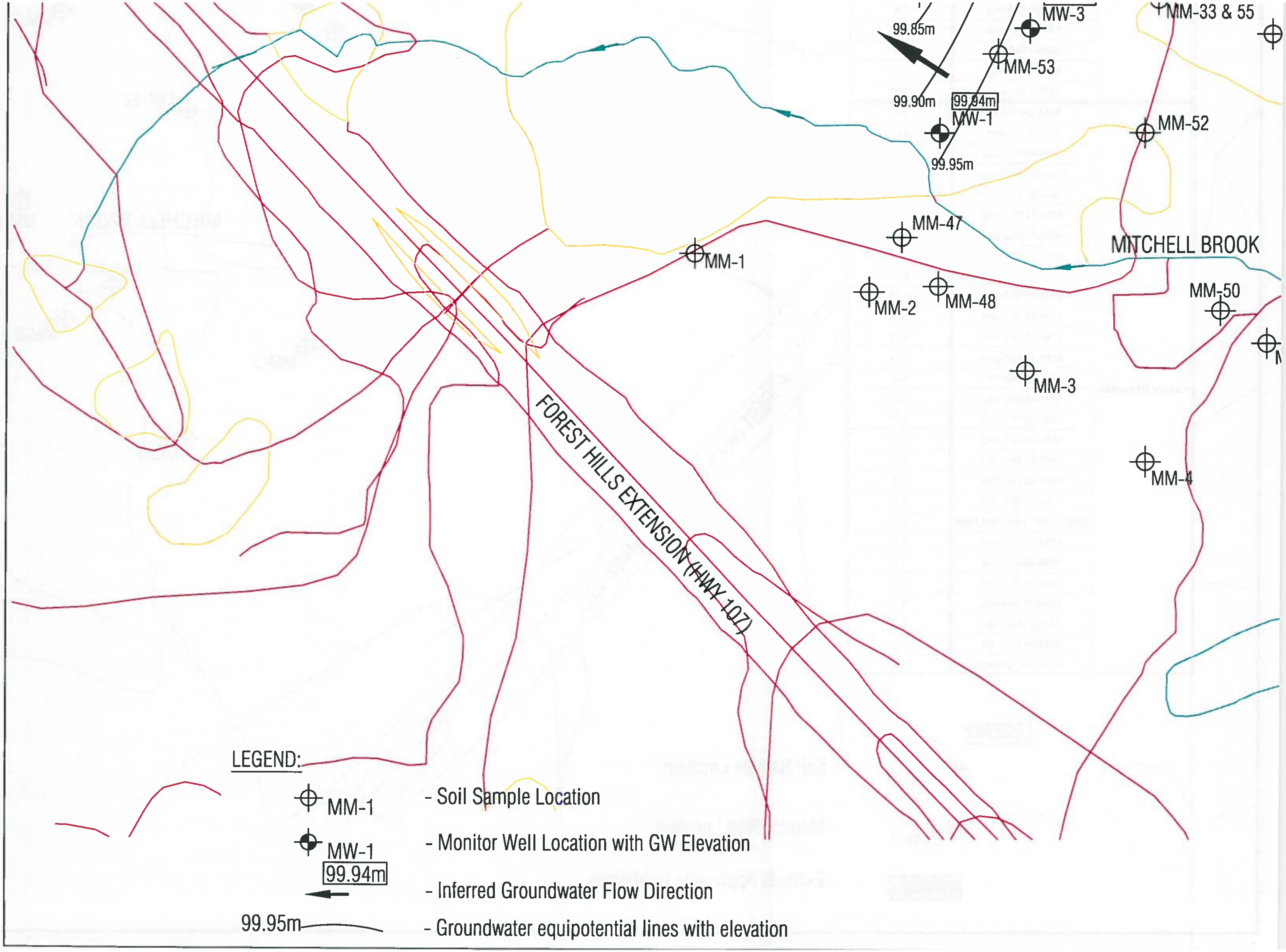


Maritime Testing

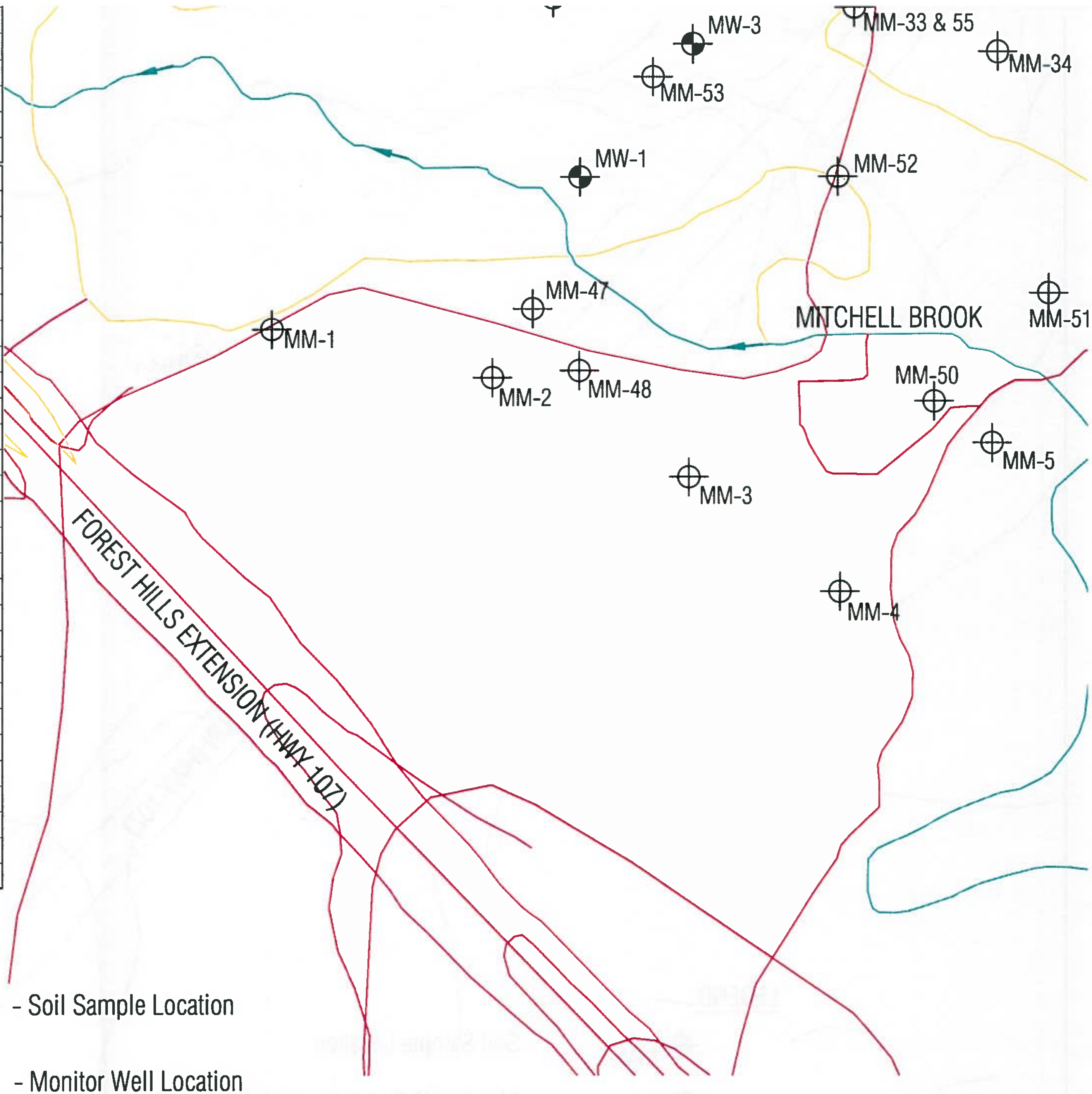
Job No.: 7442
Date: January 2009
Scale: approx 1:30,000

Site Location Map
Phase II Environmental Site Assessment
Former Gold Mine, Montague Mines, NS

Figure 1


MW-3
MM-33 & 55
99.85m
MM-53
99.90m
99.94m
MW-1
99.95m
MM-52
MM-47
MITCHELL BROOK
MM-1
MM-50
MM-2
MM-48
MM-3
FOREST HILLS EXTENSION (HWY 107)
MM-4
LEGEND:
MM-1
- Soil Sample Location
MW-1
99.94m
- Monitor Well Location with GW Elevation
- Inferred Groundwater Flow Direction
99.95m
- Groundwater equipotential lines with elevation

	MM-3 (0-5 cm)	3.6
	MM-4 (0-5 cm)	7.6
	MM-5 (0-5 cm)	1.6
	MM-7 (0-5 cm)	1.9
	MM-7 (0-3 cm)	2.1
	MM-7 (3-5 cm)	0.47
Sample ID (depth)	MM-8 (0-5 cm)	**16**
	MM-9 (0-5 cm)	0.63
	MM-10 (0-5 cm)	0.09
	MM-10 (0-1.5 cm)	0.21
	MM-10 (1.5-5 cm)	0.1
	MM-11 (0-5 cm)	0.16
	MM-11 (0-2 cm)	0.23
	MM-11 (2-5 cm)	0.17
	MM-12 (0-5 cm)	0.26
	MM-13 (0-5 cm)	0.15
	MM-14 (0-5 cm)	0.31
	MM-15 (0-5 cm)	0.38
	MM-16 (0-5 cm)	0.24
	MM-17 (0-5 cm)	0.22
	MM-18 (0-5 cm)	0.22
	MM-19 (0-5 cm)	0.28
	MM-20 (0-5 cm)	0.33
	MM-21 (0-5 cm)	0.25
	MM-22 (0-5 cm)	0.29
	MM-23 (0-5 cm)	0.17
	MM-23 (0-5 cm) LAB DUP	0.15
	MM-23 (0-3 cm)	0.32
	MM-23 (3-5 cm)	0.13
	MM-24 (0-5 cm)	0.16
	MM-25 (0-5 cm)	0.24
	MM-26 (0-5 cm)	0.12
	MM-26 (0-2 cm)	0.2
	MM-26 (2-5 cm)	0.02



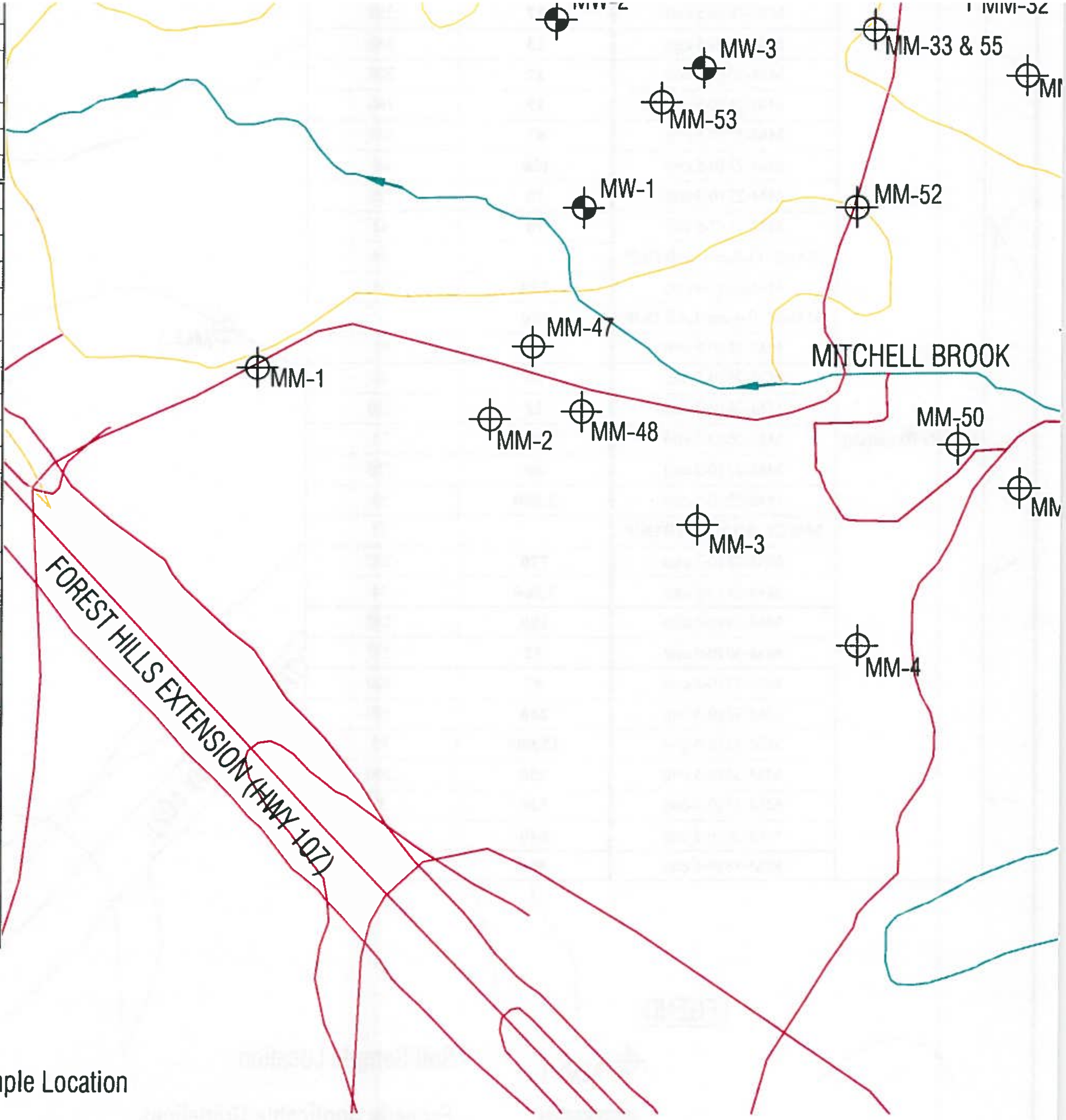
LEGEND:

⌖ MM-1 - Soil Sample Location

● MW-1 - Monitor Well Location

🟩 [Value] - Exceeds Applicable Guidelines

	MM-3 (0-5 cm)	32	180
	MM-4 (0-5 cm)	3,500	3.1
	MM-4 (0-5 cm) LAB DUP	3,500	-
	MM-5 (0-5 cm)	320	61
	MM-7 (0-5 cm)	220	53
	MM-7 (0-3 cm)	290	130
	MM-7 (3-5 cm)	390	33
Sample ID (depth)	MM-8 (0-5 cm)	4,100	18
	MM-9 (0-5 cm)	340	250
	MM-10 (0-5 cm)	45	47
	MM-10 (0-1.5 cm)	11	230
	MM-10 (1.5-5 cm)	67	26
	MM-11 (0-5 cm)	130	70
	MM-11 (0-2 cm)	10	230
	MM-11 (2-5 cm)	150	46
	MM-12 (0-5 cm)	12	350
	MM-12 (0-5 cm) LAB DUP	-	340
	MM-13 (0-5 cm)	9	320
	MM-14 (0-5 cm)	25	290
	MM-15 (0-5 cm)	55	310
	MM-16 (0-5 cm)	12	240
	MM-17 (0-5 cm)	14	310
	MM-18 (0-5 cm)	18	320
	MM-19 (0-5 cm)	26	310
	MM-20 (0-5 cm)	23	330
	MM-21 (0-5 cm)	20	200
	MM-22 (0-5 cm)	43	330
	MM-23 (0-5 cm)	98	68
	MM-23 (0-3 cm)	110	250
	MM-23 (3-5 cm)	64	43
	MM-23 (3-5 cm) LAB DUP	67	-
	MM-24 (0-5 cm)	98	73
	MM-25 (0-5 cm)	160	110
	MM-26 (0-5 cm)	17	76
	MM-26 (0-2 cm)	22	210
	MM-26 (2-5 cm)	16	11



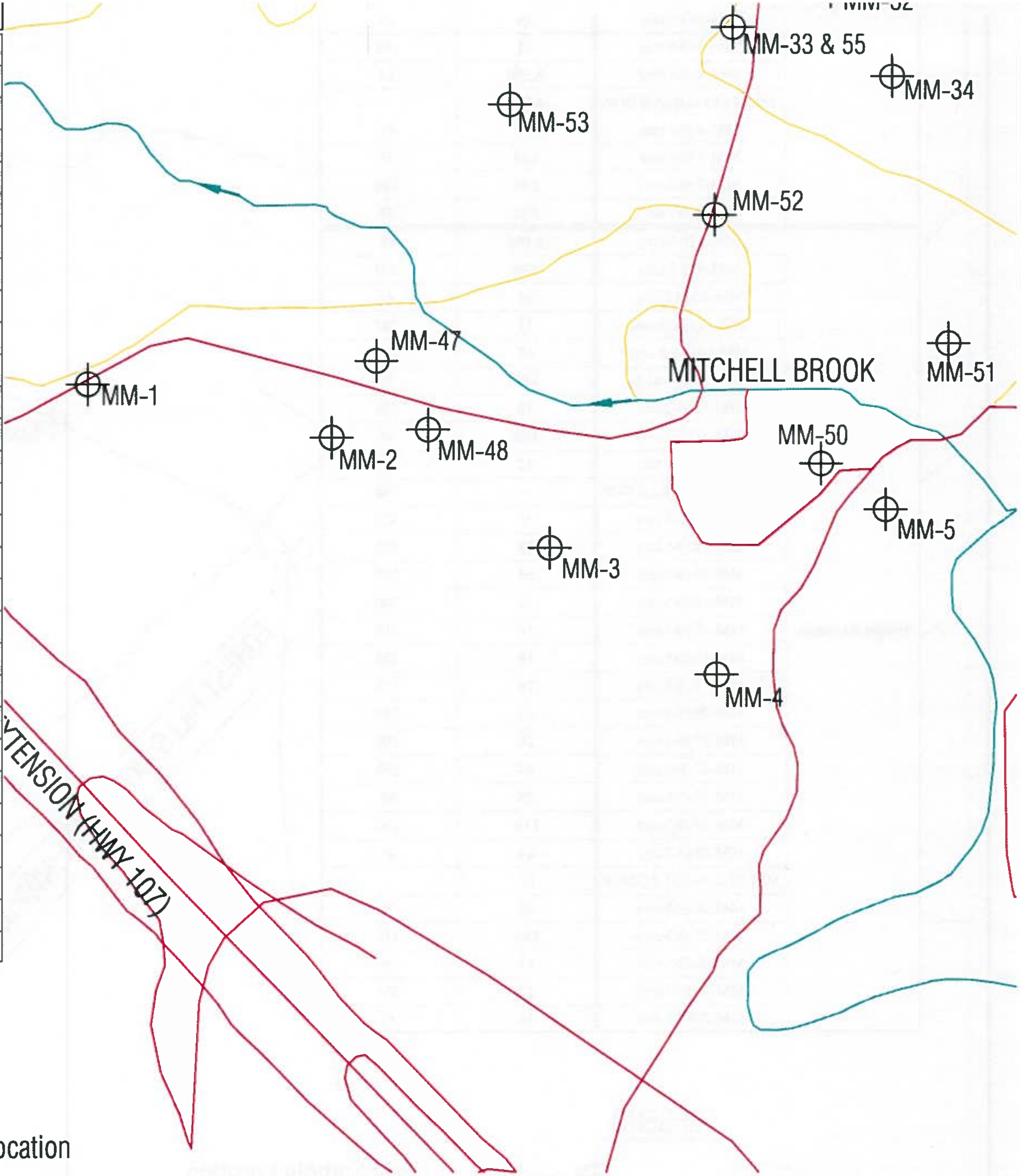
LEGEND:

⊕ MM-1 - Soil Sample Location

● MW-1 - Monitor Well Location

🟩 [Value] - Exceeds Applicable Guidelines

	MM-17 (0-5 cm)	17	320
Sample ID (depth)	MM-18 (0-5 cm)	27	350
	MM-19 (0-5 cm)	23	360
	MM-20 (0-5 cm)	17	320
	MM-21 (0-5 cm)	19	160
	MM-22 (0-5 cm)	62	240
	MM-23 (0-5 cm)	120	68
	MM-23 (0-3 cm)	70	220
	MM-23 (3-5 cm)	70	42
	MM-23 (3-5 cm) LAB DUP	-	39
	MM-24 (0-5 cm)	110	55
	MM-24 (0-5 cm) LAB DUP	120	-
	MM-25 (0-5 cm)	190	91
	MM-26 (0-5 cm)	20	91
	MM-26 (0-2 cm)	22	210
	MM-26 (2-5 cm)	19	7.1
	MM-27 (0-5 cm)	40	210
	MM-28 (0-5 cm)	2,600	53
	MM-28 (0-5 cm) LAB DUP	-	57
	MM-28 (0-3 cm)	770	230
	MM-28 (3-5 cm)	2,500	54
	MM-29 (0-5 cm)	100	350
	MM-30 (0-5 cm)	32	230
	MM-31 (0-5 cm)	47	400
	MM-32 (0-5 cm)	240	190
	MM-33 (0-5 cm)	12,000	95
	MM-34 (0-5 cm)	250	290
	MM-35 (0-5 cm)	520	29
	MM-36 (0-5 cm)	640	220
	MM-38 (0-5 cm)	980	57



LEGEND:

⌖ MM-1	- Soil Sample Location
[Value]	- Exceeds Applicable Guidelines

Appendix B

Site Photos

(See Electronic Files)

NOTE RE LOCATIONS FOR PHOTOGRAPHS:

Photographs are labelled with their original sequential numerical file name. At each sample pit location the first photo shows the location as written on a sample jar top. The following 2 photos of the setting are mostly taken to the north and then to the south. In some cases photographs were taken in different directions and these are indicated in the field notes.

Appendix C

Table of Individual Soil Sample Data and Original Field Observation Sheets

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-1	MM-1	MM-1	MM-2	MM-2	MM-2	MM-3
Site Description	Treed area	Treed area	Treed area	Downgradient of Tailings	Downgradient of Tailings	Downgradient of Tailings	Downgradient of Tailings
Northing (20T, NAD 83)	4951352.63	4951352.63	4951352.63	4951327.80	4951327.80	4951327.80	4951276.79
Easting (20T, NAD 83)	458409.36	458409.36	458409.36	458521.96	458521.96	458521.96	458622.31
Date	20-May-08	20-May-08	20-May-08	15-May-08	15-May-08	15-May-08	15-May-08
Depth or Horizon sample	Composite	H	Ae	Composite	H	Ae	H
Subsample ID	MM-1 (0-5 cm)	MM-1 (0-3.5 cm)	MM-1 (3.5-5 cm)	MM-2 (0-5 cm)	MM-2 (0-3 cm)	MM-2 (3-5 cm)	MM-3 (0-5 cm)
Top Sample Interval (cm)	0	0	3.5	0	0	3	0
Bottom Sample Interval (cm)	5	3.5	5	5	3	5	5
Sample Wet weight (g)	4.7	2.86	4.62	3.28	3.16	3.91	5.85
Sample Dry weight (g)	2.63	1	3.5	1.94	1.26	2.95	1.87
Water content (moisture (%))	44	65	24	41	60	25	68
Original sediment weight (g)	9.5	5.19	17.37	9.22	5.98	11.02	5.61
<150 µm (g)	2.78	1.22	5.26	2.74	2.36	3.98	1.53
<150 µm (%)	29	24	30	30	40	36	27
<2 mm (%)	88	94	81	88	91	86	96
Soil description	Composite	Organics/Silt	Sandy Silt	Composite	Sand	Sandy Silt	Organic Silt
Hg (mg/kg) in <2 mm fraction	0.14	0.19	0.04	0.08	0.25	0.04	3.6
Total Org. Carbon (% dry wt.) in <150 µm fraction	46	150	22	70	250	13	190
Total Org. Carbon (% dry wt.) in <2 mm fraction	70	280	27	33	170	15	180
As (mg/kg) in <150 µm fraction	10	30	6	76	40	13	28
As (mg/kg) in <2 mm fraction	16	18	7	66	34	24	32

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-4	MM-5	MM-6	MM-7	MM-7	MM-7	MM-8
Site Description	Tailings	Treed area		Treed area	Treed area	Treed area	Treed/Tailings
Northing (20T, NAD 83)	4951218.00	4951294.68	No Sample	4951292.99	4951292.99	4951292.99	4951354.54
Easting (20T, NAD 83)	458699.33	458777.34		458892.17	458892.17	458892.17	458855.08
Date	15-May-08	15-May-08		15-May-08	15-May-08	15-May-08	15-May-08
Depth or Horizon sample	Tailings	H		Composite	H	Ae	Tailings
Subsample ID	MM-4 (0-5 cm)	MM-5 (0-5 cm)		MM-7 (0-5 cm)	MM-7 (0-3 cm)	MM-7 (3-5 cm)	MM-8 (0-5 cm)
Top Sample Interval (cm)	0	0		0	0	3	0
Bottom Sample Interval (cm)	5	5		5	3	5	5
Sample Wet weight (g)	3.73	2.52		4.03	4.13	4.96	5.74
Sample Dry weight (g)	2.61	1.62		2.39	1.79	3.52	3.73
Water content (moisture (%))	30	36		41	57	29	35
Original sediment weight (g)	30	6.23		7.91	5.22	11.47	8.3
<150 µm (g)	16.9	2.81		2.95	2.39	5.95	3.51
<150 µm (%)	99	45		37	46	52	42
<2 mm (%)	100	83		80	97	91	96
Soil description	Silty	Organic/Silt		Composite	Organic/Silt	Silty	Silt
Hg (mg/kg) in <2 mm fraction	7.6	1.6		1.9	2.1	0.47	16
Total Org. Carbon (% dry wt.) in <150 µm fraction	2.8	49		53	120	32	30
Total Org. Carbon (% dry wt.) in <2 mm fraction	3.1	61		53	130	33	18
As (mg/kg) in <150 µm fraction	3,600	520		460	210	440	3,900
As (mg/kg) in <2 mm fraction	3,500	320		220	290	390	4,100

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-9	MM-10	MM-10	MM-10	MM-11	MM-11	MM-11
Site Description	Treed area	Treed area	Treed area	Treed area	Treed area	Treed area	Treed area
Northing (20T, NAD 83)	4951628.21	4951669.48	4951669.48	4951669.48	4951687.81	4951687.81	4951687.81
Easting (20T, NAD 83)	458568.06	458599.38	458599.38	458599.38	458643.43	458643.43	458643.43
Date	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08
Depth or Horizon sample	H	Composite	Composite	Composite	Composite	H	B
Subsample ID	MM-9 (0-5 cm)	MM-10 (0-5 cm)	MM-10 (0-1.5 cm)	MM-10 (1.5-5 cm)	MM-11 (0-5 cm)	MM-11 (0-2 cm)	MM-11 (2-5 cm)
Top Sample Interval (cm)	0	0	0	1.5	0	0	2
Bottom Sample Interval (cm)	5	5	1.5	5	5	2	5
Sample Wet weight (g)	3.29	4.68	5.59	4.58	3.83	3.64	4.27
Sample Dry weight (g)	0.86	2.96	1.9	3.27	3.83	1.32	2.8
Water content (moisture (%))	74	37	66	29	34	64	34
Original sediment weight (g)	5.52	15.42	4.19	10.3	10.35	7.9	16.46
<150 µm (g)	0.65	2.66	2.06	4.24	2.41	1.71	2.98
<150 µm (%)	12	17	49	41	23	22	18
<2 mm (%)	64	84	99	98	73	99	68
Soil description	Organic/Silt	Composite	Organic/Silt	Sandy Silt	Composite	Organic/Silt	Silty
Hg (mg/kg) in <2 mm fraction	0.63	0.09	0.21	0.1	0.16	0.23	0.17
Total Org. Carbon (% dry wt.) in <150 µm fraction	260	30	230	31	45	160	36
Total Org. Carbon (% dry wt.) in <2 mm fraction	250	47	230	26	70	230	46
As (mg/kg) in <150 µm fraction	230	29	11	86	130	8	170
As (mg/kg) in <2 mm fraction	340	45	11	67	130	10	150

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-12	MM-13	MM-14	MM-15	MM-16	MM-17	MM-18
Site Description	Treed area	Treed area	Treed area	Wet, Treed area	Treed area	Treed area	Treed area
Northing (20T, NAD 83)	4951716.83	4951743.75	4951615.60	4951571.58	4951639.71	4951669.13	4951683.84
Easting (20T, NAD 83)	458699.10	458757.45	458595.57	458599.83	458626.99	458674.44	458728.81
Date	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08
Depth or Horizon sample	H	H	H	H	H	H	H
Subsample ID	MM-12 (0-5 cm)	MM-13 (0-5 cm)	MM-14 (0-5 cm)	MM-15 (0-5 cm)	MM-16 (0-5 cm)	MM-17 (0-5 cm)	MM-18 (0-5 cm)
Top Sample Interval (cm)	0	0	0	0	0	0	0
Bottom Sample Interval (cm)	5	5	5	5	5	5	5
Sample Wet weight (g)	2.45	3.56	4.37	4.49	4.14	4.39	506
Sample Dry weight (g)	0.8	0.9	1.25	1.22	0.88	1.09	1.37
Water content (moisture (%))	67	75	71	73	79	75	73
Original sediment weight (g)	3.15	3.59	4.23	3.23	2.48	5.28	5.89
<150 µm (g)	0.97	0.9	0.96	0.97	0.49	96	1.65
<150 µm (%)	31	25	23	30	20	36	28
<2 mm (%)	100	97	95	99	90	96	96
Soil description	Organic/Silt	Organic/Silt	Organic/Silt	Organic/Silt	Organic/Silt	Organic/Silt	Organic/Silt
Hg (mg/kg) in <2 num fraction	0.26	0.15	0.31	0.38	0.24	0.22	0.22
Total Org. Carbon (% dry wt.) in <150 µm fraction	300	240	300	240	430	320	350
Total Org. Carbon (% dry wt.) in <2 mm fraction	350	320	290	310	240	310	320
As (mg/kg) in <150 µm fraction	10	10	31	54	23	17	27
As (mg/kg) in <2 mm fraction	12	9	25	55	12	14	18

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-19	MM-20	MM-21	MM-22	MM-23	MM-23	MM-23
Site Description	Treed area	Treed area	Treed area	Treed area	Treed area	Treed area	Treed area
Northing (20T, NAD 83)	4951704.56	4951731.79	4951672.62	4951690.00	4951699.05	4951699.05	4951699.05
Easting (20T, NAD 83)	458774.27	458829.86	458779.35	458818.73	458865.60	458865.60	458865.60
Date	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08
Depth or Horizon sample	H	H	H	H	Composite	H	B
Subsample ID	MM-19 (0-5 cm)	MM-20 (0-5 cm)	MM-21 (0-5 cm)	MM-22 (0-5 cm)	MM-23 (0-5 cm)	MM-23 (0-3 cm)	MM-23 (3-5 cm)
Top Sample Interval (cm)	0	0	0	0	0	0	3
Bottom Sample Interval (cm)	5	5	5	5	5	3	5
Sample Wet weight (g)	3.36	3.83	4.16	4.78	4.03	3.56	4.27
Sample Dry weight (g)	0.86	1	0.93	1.56	2.54	1.29	2.76
Water content (moisture (%))	74	74	78	67	37	64	35
Original sediment weight (g)	3.96	4.77	7.72	5.48	9.55	5.42	16.33
<150 µm (g)	1.13	1.1	2.06	1.1	3.99	2.15	5.64
<150 µm (%)	29	23	27	20	42	40	35
<2 mm (%)	95	91	81	93	92	95	93
Soil description	Organic/Silt	Organic	Organic/Silt	Organic/Silt	Composite	Organic/Silt	Silty
Hg (mg/kg) in <2 mm fraction	0.28	0.33	0.25	0.29	0.17	0.32	0.13
Total Org. Carbon (% dry wt.) in <150 µm fraction	360	320	160	240	68	220	42
Total Org. Carbon (% dry wt.) in <2 mm fraction	310	330	200	330	68	250	43
As (mg/kg) in <150 µm fraction	23	17	19	62	120	70	70
As (mg/kg) in <2 mm fraction	26	23	20	43	98	110	64

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-24	MM-25	MM-26	MM-26	MM-26	MM-27	MM-28
Site Description	Treed area	Treed area	Treed area	Treed area	Treed area	Treed area	Treed area
Northing (20T, NAD 83)	4951682.94	4951639.45	4951614.95	4951614.95	4951614.95	4951584.07	4951568.58
Easting (20T, NAD 83)	458910.82	458771.98	458703.67	458703.67	458703.67	458652.48	458742.09
Date	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08
Depth or Horizon sample	B (Topsoil) ?	H	Composite	H	Ae	H	Composite
Subsample ID	MM-24 (0-5 cm)	MM-25 (0-5 cm)	MM-26 (0-5 cm)	MM-26 (0-2 cm)	MM-26 (2-5 cm)	MM-27 (0-5 cm)	MM-28 (0-5 cm)
Top Sample Interval (cm)	0	0	0	0	2	0	0
Bottom Sample Interval (cm)	5	5	5	2	5	5	5
Sample Wet weight (g)	5.52	3.97	5.53	4.86	4.93	4.04	4.12
Sample Dry weight (g)	3.27	1.99	3.57	2.12	4	1.03	2.3
Water content (moisture (%))	41	50	35	56	19	74	44
Original sediment weight (g)	13.91	14.34	14.47	6.93	15.7	5.06	8.89
<150 µm (g)	5.72	5.68	4.98	2.6	5.26	1.3	2.26
<150 µm (%)	41	40	34	38	34	26	25
<2 mm (%)	85	99	95	98	94	96	90
Soil description	Silty	Organic/Silt	Composite	Organic/Silt	Silty	Organic/Silt	Composite
Hg (mg/kg) in <2 mm fraction	0.16	0.24	0.12	0.2	0.02	0.21	0.15
Total Org. Carbon (% dry wt.) in <150 µm fraction	55	91	91	210	7.1	210	53
Total Org. Carbon (% dry wt.) in <2 mm fraction	73	110	76	210	11	340	64
As (mg/kg) in <150 µm fraction	110	190	20	22	19	40	2,600
As (mg/kg) in <2 mm fraction	98	160	17	22	16	50	2,100

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-28	MM-28	MM-29	MM-30	MM-31	MM-32	MM-33
Site Description	Treed area	Treed area	Treed area	Treed area	Treed area	Treed area	Near Tailings
Northing (20T, NAD 83)	4951568.58	4951568.58	4951588.98	4951571.21	4951553.9	4951537.05	4951518.09
Easting (20T, NAD 83)	458742.09	458742.09	458778.12	458842.01	458792.11	458751.86	458706.74
Date	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	2-Jun-08	20-May-08
Depth or Horizon sample	H	B	H	H	H	H	H
Subsample ID	MM-28 (0-3 cm)	MM-28 (3-5 cm)	MM-29 (0-5 cm)	MM-30 (0-5 cm)	MM-31 (0-5 cm)	MM-32 (0-5 cm)	MM-33 (0-5 cm)
Top Sample Interval (cm)	0	3	0	0	0	0	0
Bottom Sample Interval (cm)	3	5	5	5	5	5	5
Sample Wet weight (g)	2.97	3.78	3.9	5.73	3.59	4.81	4.64
Sample Dry weight (g)	0.8	2	0.84	1.78	0.81	1.94	1.97
Water content (moisture (%))	73	47	78	69	77	60	58
Original sediment weight (g)	3.66	9.12	2.73	3.52	2.56	4.29	6.57
<150 µm (g)	1.62	2.32	0.69	1.71	0.93	1.94	2.2
<150 µm (%)	44	25	25	49	36	45	34
<2 mm (%)	96	74	85	96	100	96	94
Soil description	Organic/Silt	Silty	Organic/Silt	Organic/Silt	Organic/Silt	Organic/Silt	Organic/Silt
Hg (mg/kg) in <2 mm fraction	0.44	0.19	0.32	0.31	0.13	0.46	1.1
Total Org. Carbon (% dry wt.) in <150 µm fraction	230	54	350	230	400	190	95
Total Org. Carbon (% dry wt.) in <2 mm fraction	210	79	390	210	400	190	140
As (mg/kg) in <150 µm fraction	770	2,500	100	32	47	240	12,000
As (mg/kg) in <2 mm fraction	1,100	2,200	77	31	40	270	11,000

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-34	MM-35	MM-36	MM-37	MM-38	MM-39	MM-40
Site Description	Treed Area	Treed Area	Treed Area	No Sample	Treed Area	Tailings	Treed area
Northing (20T, NAD 83)	4951495.83	4951524.26	4951547.75		4951326.84	4951385.09	4951464.85
Easting (20T, NAD 83)	458780.37	458848.36	458877.47		458922.39	458909.89	458949.33
Date	20-May-08	2-Jun-08	2-Jun-08		15-May-08	15-May-08	15-May-08
Depth or Horizon sample	H	Tailings?	H		H	Tailings	Fill (Topsoil ?)
Subsample ID	MM-34 (0-5 cm)	MM-35 (0-5 cm)	MM-36 (0-5 cm)		MM-38 (0-5 cm)	MM-39 (0-5 cm)	MM-40 (0-5 cm)
Top Sample Interval (cm)	0	0	0		0	0	0
Bottom Sample Interval (cm)	5	5	5		5	5	5
Sample Wet weight (g)	2.64	4.82	3.61		3.15	3.18	2.11
Sample Dry weight (g)	0.81	3.44	1.68		1.95	3.14	1.21
Water content (moisture (%))	69	29	53		38	18	43
Original sediment weight (g)	4	18.56	8.76		6.95	8.77	7.72
<150 µm (g)	1.25	10.51	2.78		3.47	2.38	3.08
<150 µm (%)	31	57	32		50	27	40
<2 mm (%)	89	94	61		97	81	100
Soil description	Organics/Coal	Sandy Silt	Organics with Silt		Organics/Silt	Sandy Silt	Silty Silt
Hg (mg/kg) in <2 mm fraction	0.48	0.2	0.7		2.4	3.2	0.56
Total Org. Carbon (% dry wt.) in <150 µm fraction	290	29	220		57	19	75
Total Org. Carbon (% dry wt.) in <2 mm fraction	350	22	250		67	21	73
As (mg/kg) in <150 µm fraction	250	520	640		980	1,600	290
As (mg/kg) in <2 mm fraction	220	610	580		780	1,200	330

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-41	MM-42	MM-43	MM-44	MM-45	MM-46	MM-47
Site Description	Tailings	Treed area	Treed area	Treed area	No Sample	No Sample	Treed area
Northing (20T, NAD 83)	4951436.73	4951375.62	4951337.68	4951390.00			4951363.26
Easting (20T, NAD 83)	458981.38	458994.26	458998.61	459070.62			458542.55
Date	15-May-08	15-May-08	15-May-08	15-May-08			20-May-08
Depth or Horizon sample	Tailings	H	H	H			Ae
Subsample ID	MM-41 (0-5 cm)	MM-42 (0-5 cm)	MM-43 (0-5 cm)	MM-44 (0-5 cm)			MM-47 (0-5 cm)
Top Sample Interval (cm)	0	0	0	0			0
Bottom Sample Interval (cm)	5	5	5	5			5
Sample Wet weight (g)	4.72	3.26	5.13	2.45			3.53
Sample Dry weight (g)	3.74	1.93	3.01	1.42			2.07
Water content (moisture (%))	21	41	41	42			41
Original sediment weight (g)	12.42	7.25	11.36	5.5			15.17
<150 µm (g)	4.91	1.95	3.05	2.28			1.4
<150 µm (%)	40	27	27	42			9.2
<2 mm (%)	93	84	96	99			100
Soil description	sand	Silty Sand	Organics/Silty Sand	Organics/Silt			Silty Clay
Hg (mg/kg) in <2 mm fraction	1.2	2.1	0.67	0.9			25
Total Org. Carbon (% dry wt.) in <150 µm fraction	32	110	52	94			18
Total Org. Carbon (% dry wt.) in <2 mm fraction	9	110	94	110			24
As (mg/kg) in <150 µm fraction	3,000	1,000	350	630			54
As (mg/kg) in <2 mm fraction	2,400	890	250	640			63

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-48	MM-49	MM-50	MM-51	MM-52	MM-53	MM-54
Site Description	Wet, Dngrd. of Tailings		Tailings	Tailings	Tailings	Tailings	Tailings
Northing (20T, NAD 83)	4951331.42	No Sample	4951315.91	4951371.79	4951431.32	4951482.35	4951555.39
Easting (20T, NAD 83)	458566.32		458747.48	458806.42	458698.33	458604.12	458511.07
Date	15-May-08		15-May-08	20-May-08	20-May-08	20-May-08	20-May-08
Depth or Horizon sample	H		Tailings	Tailings	Tailings	Tailings	Tailings
Subsample ID	MM-48 (0-5 cm)		MM-50 (0-5 cm)	MM-51 (0-10 cm)	MM-52 (0-10 cm)	MM-53 (0-10 cm)	MM-54 (0-10 cm)
Top Sample Interval (cm)	0		0	0	0	0	0
Bottom Sample Interval (cm)	5		5	10	10	10	10
Sample Wet weight (g)	3.38		5.91	5.44	5.28	5.3	4.3
Sample Dry weight (g)	1.86		3.41	4.63	4.44	4.43	1.14
Water content (moisture (%))	45		42	15	16	16	73
Original sediment weight (g)	8.37		10.67	18.48	16.78	15.8	6.77
<150 µm (g)	2.76		4	3.06	3.52	3.73	3.18
<150 µm (%)	33		38	17	21	24	47
<2 mm (%)	100		100	100	100	100	100
Soil description	Organics/Silt		Silty Sand	Sandy	Sandy	Sandy	Silt
Hg (mg/kg) in <2 mm fraction	2.8		4.4	0.94	0.58	0.3	8.1
Total Org. Carbon (% dry wt.) in <150 µm fraction	66		18	3.8	2.6	0.4	54
Total Org. Carbon (% dry wt.) in <2 mm fraction	70		27	1.4	1.1	0.3	70
As (mg/kg) in <150 µm fraction	860		2,700	3,500	35,000	5,700	5,700
As (mg/kg) in <2 mm fraction	1,000		2,500	1,800	17,000	2,600	2,600

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-55	MM-56	MM-57	MM-58	MM-59	MM-60	MM-61
Site Description	DUP of MM-33 (0-5 cm)	DUP of MM-26 (0-5 cm)	DUP of MM-23 (0-5 cm)	DUP of MM-60 (0-5 cm)	DUP of MM-64 (2-5 cm)	Treed area	Treed area
Northing (20T, NAD 83)	4951518.09	4951614.95	4951699.05	4951573.46	4951801.03	4951573.46	4951511.18
Easting (20T, NAD 83)	458706.74	458703.67	458865.60	459063.05	459174.54	459063.05	459130.61
Date	20-May-08	2-Jun-08	2-Jun-08	11-Jun-08	11-Jun-08	11-Jun-08	11-Jun-08
Depth or Horizon sample	H	Composite	Composite	H	B	H	H
Subsample ID	MM-55 (0-5 cm)	MM-56 (0-5 cm)	MM-57 (0-5 cm)	MM-58 (0-5 cm)	MM-59 (2-5 cm)	MM-60 (0-5 cm)	MM-61 (0-5 cm)
Top Sample Interval (cm)	0	0	0	0	2	0	0
Bottom Sample Interval (cm)	5	5	5	5	5	5	5
Sample Wet weight (g)	3.92	3.99	3.24	2.22	2.89	2.3	3.05
Sample Dry weight (g)	1.75	2.41	1.95	0.95	1.95	0.77	0.93
Water content (moisture (%))	55	40	40	57	32	66	69
Original sediment weight (g)	7.72	11.66	11.72	5.94	12.63	4.88	4.13
<150 µm (g)	3.22	4.54	5.19	0.94	5.54	0.7	1.94
<150 µm (%)	42	39	44	16	44	14	47
<2 mm (%)	95	64	92	69	82	92	97
Soil description	Organics/Silt	Composite	Composite	Organics/Silt	Silty	Organic/Silt	Organic/Silt
Hg (mg/kg) in <2 mm fraction	1.1	0.16	0.15	0.38	0.17	0.37	0.4
Total Org. Carbon (% dry wt.) in <150 µm fraction	120	110	57	230	45	270	290
Total Org. Carbon (% dry wt.) in <2 mm fraction	170	120	71	280	39	250	310
As (mg/kg) in <150 µm fraction	12,000	15	110	73	130	41	51
As (mg/kg) in <2 mm fraction	12,000	16	140	51	110	48	37

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MM-62	MM-63	MM-64	MM-64	MM-64	MW-1	MW-1
Site Description	Treed area	Treed area	Treed area	Treed area	Treed area	Tailings area	Tailings area
Northing (20T, NAD 83)	4951758.04	4951833.43	4951801.03	4951801.03	4951801.03	4951452.21	4951452.21
Easting (20T, NAD 83)	459162.60	459143.36	459174.54	459174.54	459174.54	458566.93	458566.93
Date	11-Jun-08	11-Jun-08	11-Jun-08	11-Jun-08	11-Jun-08	16-Jan-08	16-Jan-08
Depth or Horizon sample	H	H	Composite	H	B		
Subsample ID	MM-62 (0-5 cm)	MM-63 (0-5 cm)	MM-64 (0-5 cm)	MM-64 (0-2 cm)	MM-64 (2-5 cm)	MW1/S1 (0.3-1.5 m)	MW1/S2 (1.5-2.1 m)
Top Sample Interval (cm)	0	0	0	0	2	0.3 m	1.5 m
Bottom Sample Interval (cm)	5	5	5	2	5	1.5 m	2.1 m
Sample Wet weight (g)	3.73	3.36	4.78	4.01	3.57		
Sample Dry weight (g)	1.18	1.05	2.67	1.56	2.31		
Water content (moisture (%))	68	69	44	61	35		
Original sediment weight (g)	3.95	3.14	6.59	2.19	12.09		
<150 µm (g)	1.07	0.76	2.52	1.25	4.5		
<150 µm (%)	27	24	38	57	37		
<2 mm (%)	95	98	91	99	80		
Soil description	Organic/Silt	Organic/Silt	Composite	Organic/Silt	Silty	Tailings	Tailings/Peat
Hg (mg/kg) in <2 mm fraction	0.33	0.28	0.22	0.27	0.16	0.7	4.4
Total Org. Carbon (% dry wt.) in <150 µm fraction	340	300	110	300	60		
Total Org. Carbon (% dry wt.) in <2 mm fraction	310	360	110	330	52		
As (mg/kg) in <150 µm fraction	31	21	120	39	130		
As (mg/kg) in <2 mm fraction	25	17	110	32	120	5,300	1,700

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines						
Sample Site	MW-1	MW-1	MW-1	MW-1	MW-2	MW-2	MW-2
Site Description	Tailings area	Tailings area	Tailings area	Tailings area	Tailings area	Tailings area	Tailings area
Northing (20T, NAD 83)	4951452.21	4951452.21	4951452.21	4951452.21	4951522.55	4951522.55	4951522.55
Easting (20T, NAD 83)	458566.93	458566.93	458566.93	458566.93	458553.24	458553.24	458553.24
Date	16-Jan-08	16-Jan-08	16-Jan-08	16-Jan-08	17-Jan-08	17-Jan-08	17-Jan-08
Depth or Horizon sample							
Subsample ID	MW1/S3 (2.1-2.7 m)	MW1/S4 (3.0-3.7 m)	MW1/S5 (3.7-4.3 m)	MW1/S6 (4.7-5.2 m)	MW2/S1 (0.3-0.9 m)	MW2/S2 (0.9-1.5 m)	MW2/S3 (1.5-2.1 m)
Top Sample Interval (cm)	2.1 m	3.0 m	3.7 m	4.7 m	0.3 m	0.9 m	1.5 m
Bottom Sample Interval (cm)	2.7 m	3.7 m	4.3 m	5.2 m	0.9 m	1.5 m	2.1 m
Sample Wet weight (g)							
Sample Dry weight (g)							
Water content (moisture (%))							
Original sediment weight (g)							
<150 µm (g)							
<150 µm (%)							
<2 mm (%)							
Soil description	Peat	Peat/Sand	Quartzite Till	Quartzite Till	Tailings	Peat	Peat/Sand
Hg (mg/kg) in <2 mm fraction	0.41	0.04	0.22	0.03	3.3	0.07	0.09
Total Org. Carbon (% dry wt.) in <150 µm fraction							
Total Org. Carbon (% dry wt.) in <2 mm fraction							
As (mg/kg) in <150 µm fraction							
As (mg/kg) in <2 mm fraction	900	190	510	25	8,900	30	290

TABLE C1: Soil / Tailings Data (for GIS use)
Client: NSTIR
Site: Fm. Gold Mine, Montague Mines, NS
Sampled: Jan. 16/17, May 15/20, Jun. 2/11, 08
MTL Project No. 7442

Gold District	Montague Mines					
Sample Site	MW-2	MW-2	MW-3	MW-3	MW-3	MW-3
Site Description	Tailings area	Tailings area	Tailings area	Tailings area	Tailings area	Tailings area
Northing (20T, NAD 83)	4951522.55	4951522.55	4951499.17	4951499.17	4951499.17	4951499.17
Easting (20T, NAD 83)	458553.24	458553.24	458624.47	458624.47	458624.47	458624.47
Date	17-Jan-08	17-Jan-08	17-Jan-08	17-Jan-08	17-Jan-08	17-Jan-08
Depth or Horizon sample						
Subsample ID	MW2/S4 (2.1-2.7 m)	MW2/S5 (2.7-3.4 m)	MW3/S1 (0.3-0.9 m)	MW3/S2 (0.9-1.5 m)	MW3/S3 (1.5-2.1 m)	MW3/S4 (4.0-4.3 m)
Top Sample Interval (cm)	2.1 m	2.7 m	0.3 m	0.9 m	1.5 m	4.0 m
Bottom Sample Interval (cm)	2.7 m	3.4 m	0.9 m	1.5 m	2.1 m	4.3 m
Sample Wet weight (g)						
Sample Dry weight (g)						
Water content (moisture (%))						
Original sediment weight (g)						
<150 µm (g)						
<150 µm (%)						
<2 mm (%)						
Soil description	Quartzite Till	Quartzite Till	Tailings	Tailings	Peat/Sand	Quartzite Till
Hg (mg/kg) in <2 mm fraction	0.05	0.05	0.96	1.9	0.69	0.03
Total Org. Carbon (% dry wt.) in <150 µm fraction						
Total Org. Carbon (% dry wt.) in <2 mm fraction						
As (mg/kg) in <150 µm fraction						
As (mg/kg) in <2 mm fraction	120	76	2,400	2,800	1,900	78

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 20 May 08

Time 14:30 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-1

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bekker
Ryan Tillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐
Other: H, Ae ☑

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 14 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Abundant tree-fall
- 10 m S of marsh.
- 2 m higher (elev=) then the marsh.
- Abundant moss cover.

M M - 1

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

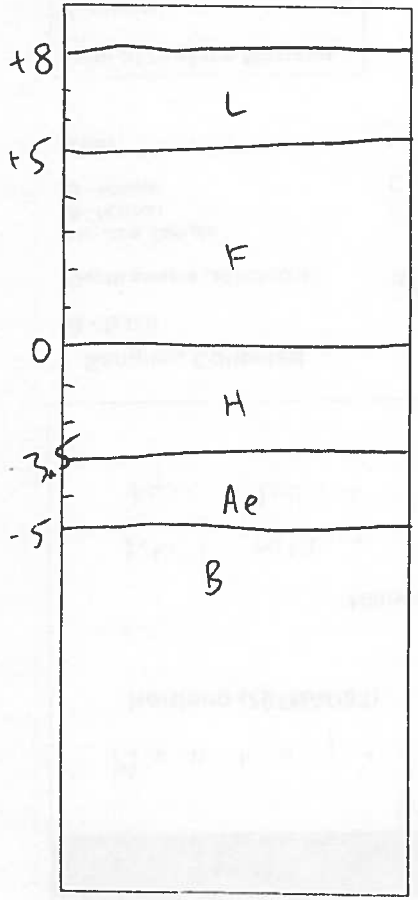
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+8	+5	W			0	org.
2		F			+5	0	W			0	org.
3		H			0	-3.5	W	10YR 2/1		0	sand
4		Ae			-3.5	-5	B	10YR 5/1		20	sandy silt
5		B			-5		B	10YR 5/6		20	silty sand
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
15:55 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-2

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bekkers
Ryan Fellown

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
13°C

Comments:

(E.g. Presence of waste rock, berms, pits, trenches or other mining activity)

- Abundant tree fall
- Waste rock in area (boulders)
- 15 m S of trench and brock
- Dense tree cover

MM - 2

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

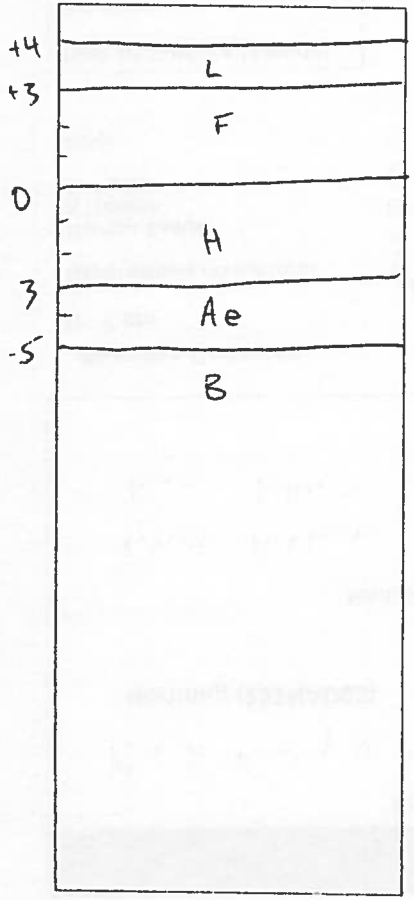
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0	-3	W	2.5Y3/2		0	silt.
4		Ae			-3	-5	I	10YR 6/2		20	silty sand
5		B			-5					30	silt.
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
16:20 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-3

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bekkers
Ryan Fellows

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination

- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
    - Farming ☐
    - Housing ☐
    - Industry ☐
    - Logging ☐
    - Mining ☐
    - Road ☐
    - Garbage ☐
    - Other ☐

Weather

Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
13°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Abundant tree fall
- Wet area (puddles < 3m away)
- Abundant boulders.
- Very moist.
- Med. tree cover.

MM - 3

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

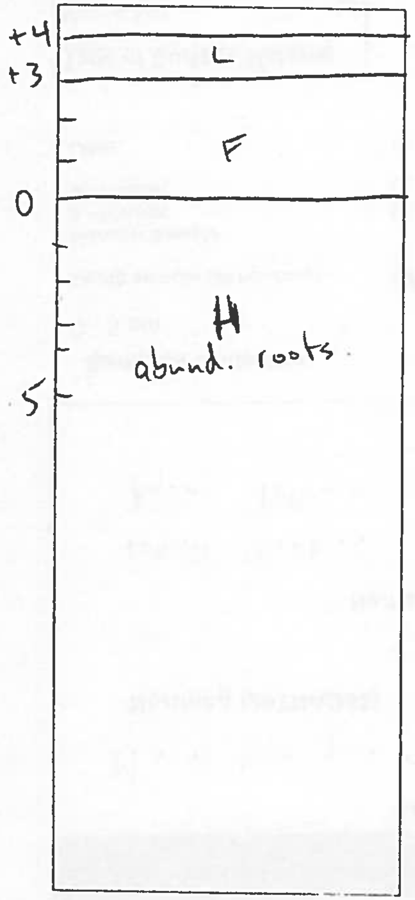
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0		W			0	org. /silt. wet.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 15 May 08

Time 11:00 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-4

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☑
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
10 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Waste rock in area.
- tailings area.

MM-4

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

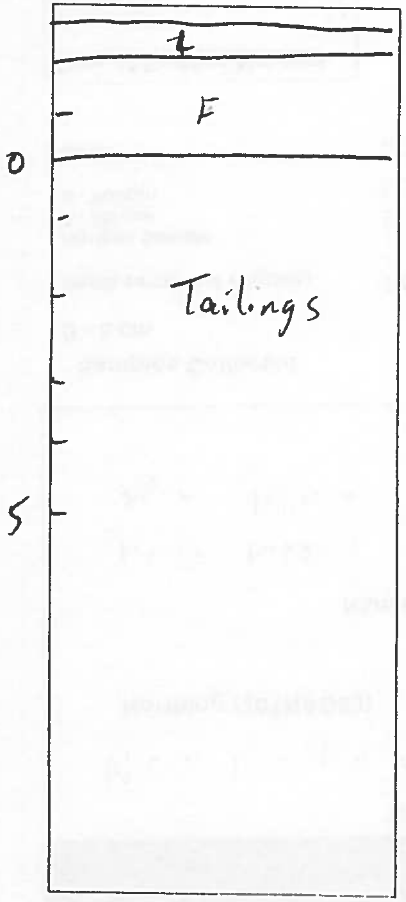
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+2	S			0	org.
2		F			+2	0	W			0	org.
3					0			10YR 5/2		0	silty.
4								↳ some grey variability in tailings.			
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
Nov 30/07

Time
09:40 | :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-5

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☑
  - Other

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
+2°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m W of path
- 15m S of road and tailings area (approx.)
- 5m from garbage (cans).
- Steep slope (down) 5m to north.

M M -

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

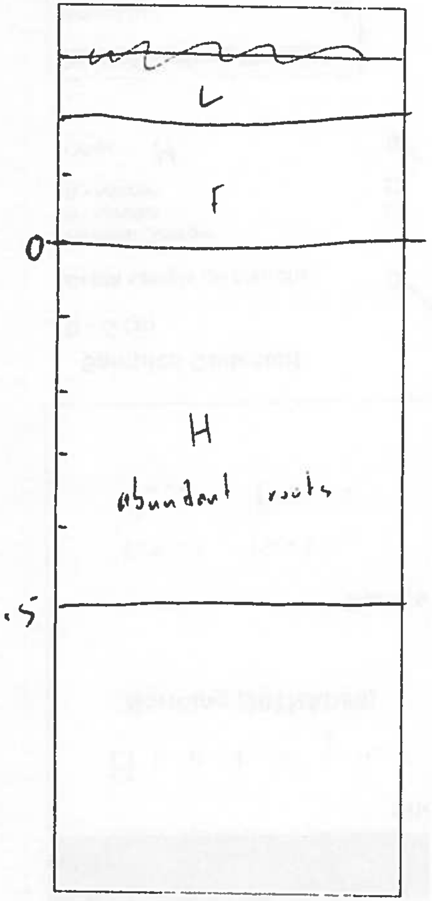
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☐
Looking South ☒
Looking West ☐
Others Sw ☑

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+3	+2	W			0	org.
2		F			+2	0	W			0	org.
3		H			0	-5	W	10YR 2/1		0	org
4		A			-5	-6	~~S~~W	10 YR 4/4		5	sandy silt.
5		B			-6			10YR 5/6		40	sand some silt.
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 15 May 08

Time 10 : 55 ___ : ___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-5

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Rickers
Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site
No Yes ➔

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☑
  - Other

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 10°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m W of path
- 15m S of road and tailings area.
- 5m from garbage (cans)
- steep slope (down) 5m to N.

M M -

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

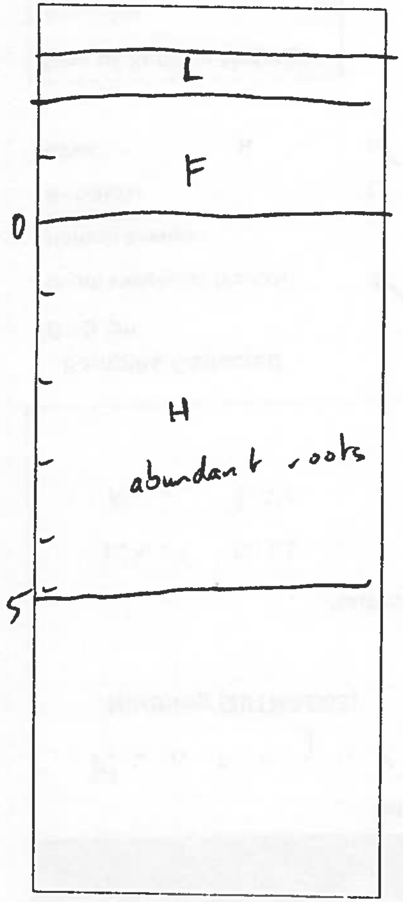
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
- Pit with Samples ☑
- Looking North ☑
- Looking East ☐
- Looking South ☑
- Looking West ☐
- Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+3	+2	W			0	org.
2		F			+2	0	W			0	org
3		H			0	-5	W	10YR 2/1		0	org.
4		A			-5	-6	W	10YR 4/4		5	sandy silt
5		B			-6			10YR 5/6		40	sand, some silt
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: Montague Mines

Date: 15 May 08

Time: 12:45 :

Northing (20TNAD83):

Easting (20TNAD83):

Site ID: MM-7

Sample Type - Horizon: No Yes

Names of Samplers:
Robert Rikkers
Ryan [illegible]

RepStat:

Sampling Depth: 0 - 5 cm

Resampled Site: No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other. H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 30m S of road.
- Dense forest.
- 2 m from tree fall.
- 10 m E of wet area (swamp).

MM-7

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

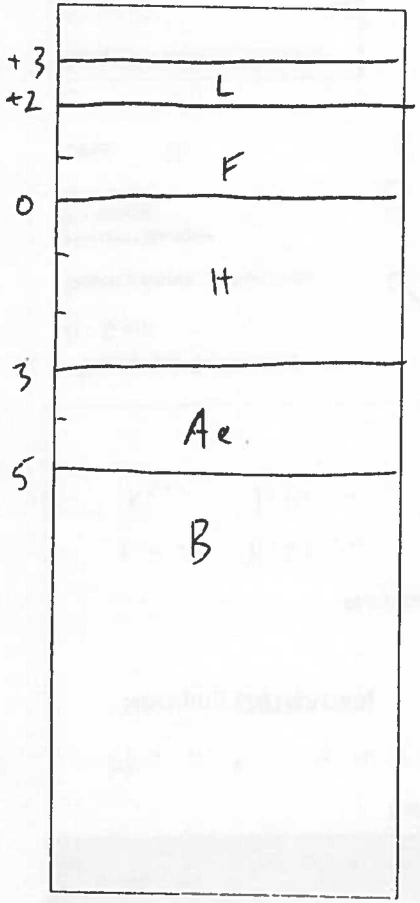
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+3	+2	W			0	org.
2		F			+2	0	W			0	org.
3		H			0	-3	W	10YR 3/2		0	silty.
4		Ae			-3	-5	I	10YR 7/2		20	silty.
5		B			-5						
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
Nov 30/07

Time
10:45 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-8

Sample Type - Horizon
No ✓ Yes

Names of Samplers
Robert Rickers
Ryan Pelleran

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. H ☑

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☑
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
0 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10m N of road
- 3m from pit (poss small shaft)
- Down slope to N.
- Dense tree cover

M M - 8

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☑
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram

Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+3	+2	W			0	org.
2		F			+2	0	W			0	org
3		H			0	-5	S			5	org
4		Tailings			-5	-19	W	10 YR m3/2			sand
5		B			-19		W				
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
17 : 30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM - 8

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☑

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☑
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
11 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10m N of road.
- 20m S of tailings.
- Downslope to north.
- Dense tree cover.

M M -

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

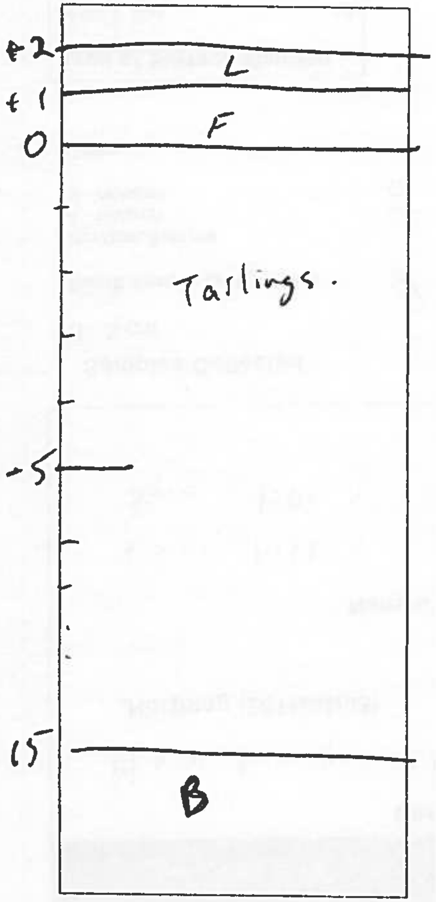
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		Tailings			0			10YR 3/3		0	sl/t.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
12:55 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-9

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes →

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Boulders, tree fall in area.
- Open area
- 30m E of clearing (tailings).

MM - 9

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

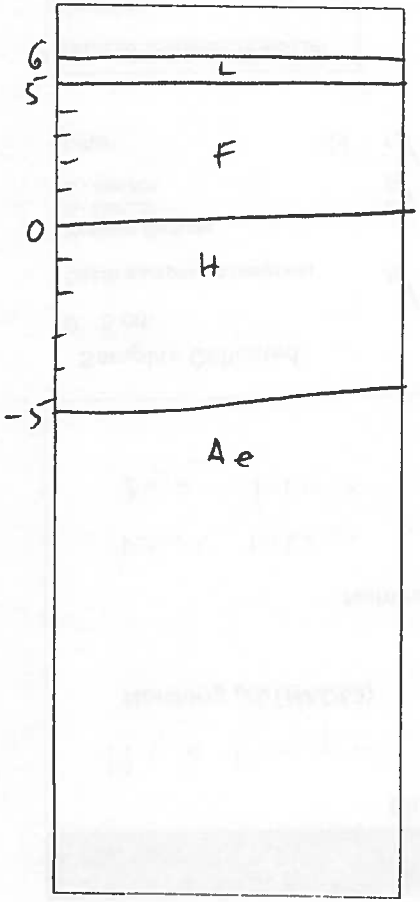
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+6	+5	W			0	org-
2		F			+5	0	W			0	org.
3		H			0	-5	W	10 YR 2/1		0	silty/org.
4		Ae			-5		B				silt/sand.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
13:10 ____:____

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-10

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bikkers
Ryan Pelleran

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☑

Other H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10m E of clearing (tailings).
- 15m N of trench (shafts)
- Tree fall, boulders abundant.
- Med. tree cover.

M M -

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

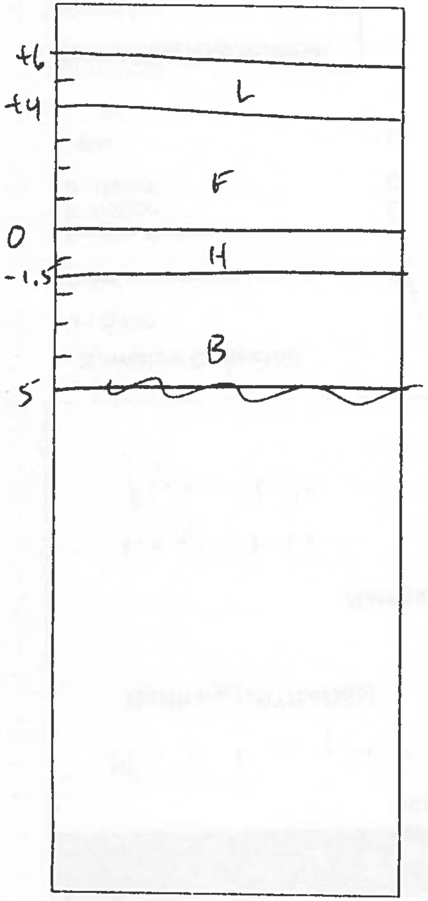
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+6	+4	W			0	org
2		F			+4	0	W			0	org.
3		H			0	-1.5	W	10 YR 2/1		0	org / silty
4		B			-1.5	[illegible]	W	10 YR 3/3		0	sand/silt.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 2 Jun 08

Time 14:00 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-11

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Bikkers
Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 16 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Heavy tree fall in area.
- On a slight slope.
- Medium tree cover.

MM - 1.1

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

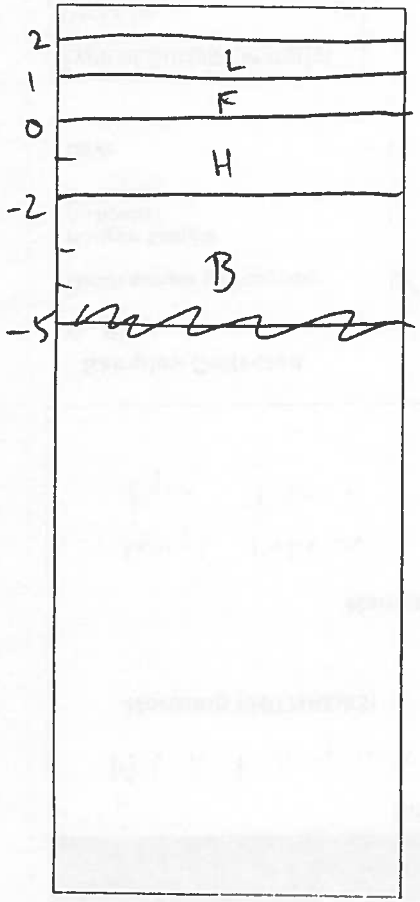
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0	-2	W	10YR 2/1		0	silty/org.
4		B			-2	m	B			5	silty.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
14:10 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-12

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➜

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☑
  - Garbage ☐
  - Other

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m W of shaft.
- 3m E of trail.
- 2m from tree fall.
- Med. tree cover.
-

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Air Temp.
16°C

MM-12

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

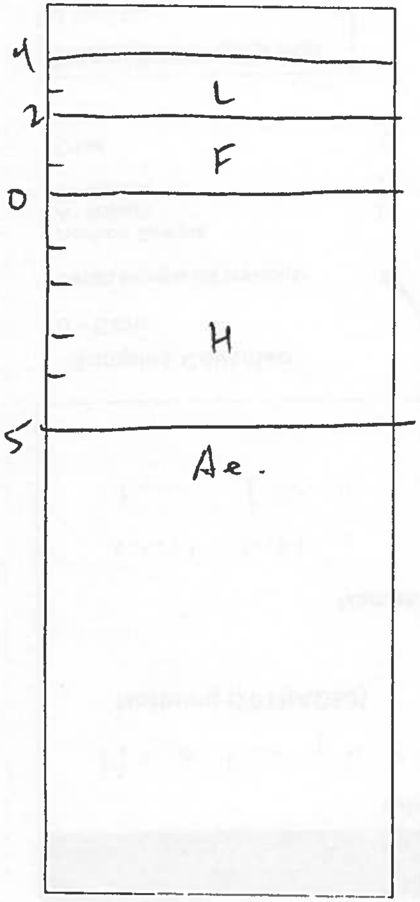
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+2	W			0	org.
2		F			+2	0	W			0	org.
3		H			0	-5	W	10YR 2/1		0	silty/org
4		Ae			-5		B				
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: Montague Mines

Date: 2 Jun 08

Time: 14:25 :

Northing (20TNAD83):

Easting (20TNAD83):

Site ID: MM-13

Sample Type - Horizon: No [✓ Yes]

Names of Samplers:
Robert Bekkers
Ryan Pelleran

RepStat:

Sampling Depth: 0 - 5 cm

Resampled Site: No Yes →

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☑
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 16 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10m N of trench/shaft.
- Large boulders to N (5m).
- Dense tree cover.
- moderate up slope to E (10m).

MM-13

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

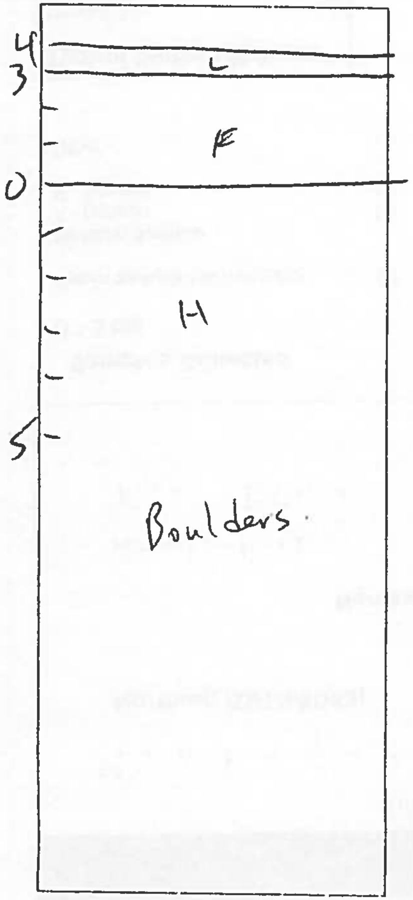
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0		W	10YR 2/1		0	silty/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague mines

Date
2 Jun 08

Time
12:40 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-14

Sample Type - Horizon
No Yes [✓]

Names of Samplers
Robert Fickles
Ryan Fellows

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☐

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☐
Ridged ☑
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Dense tree fall
- On top of mound.
- 10m W of trench.
- Minimal tree cover

MM-14

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

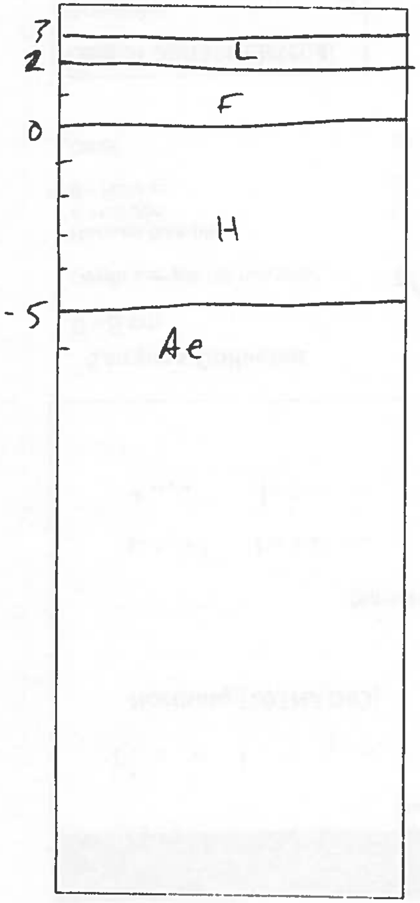
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+3	+2	W			0	org
2		F			+2	0	W			0	org.
3		H			0	-5	W	10YR 2/1		0	silty /org
4		Ae			-5		B			50	boulders
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 12:00 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-15

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other. ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☑
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☑
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 15 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Wet, swampy areas nearby.
- Med. forest cover.
- 10 m N of tailings.
- Tree fall in area.
- Abundant boulders.

MM-15

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

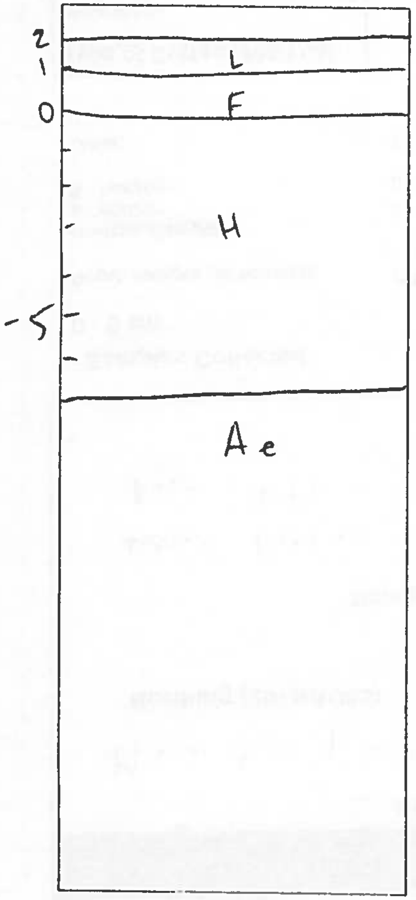
Field Texture
Clay, Sandy Clay, Sandy Clay Loam, Silt, Silty Sand, Silt Loam, Silty Clay Loam, Loam, Sandy Loam, Loamy Sand, Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0	-7	W	10YR 2/1		0	silty/org.
4		Ae			-7		B			10	sandy.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
12:25 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-16

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Bikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
16°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

-Tree fall, boulders in area.

-

M M - 1 6

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

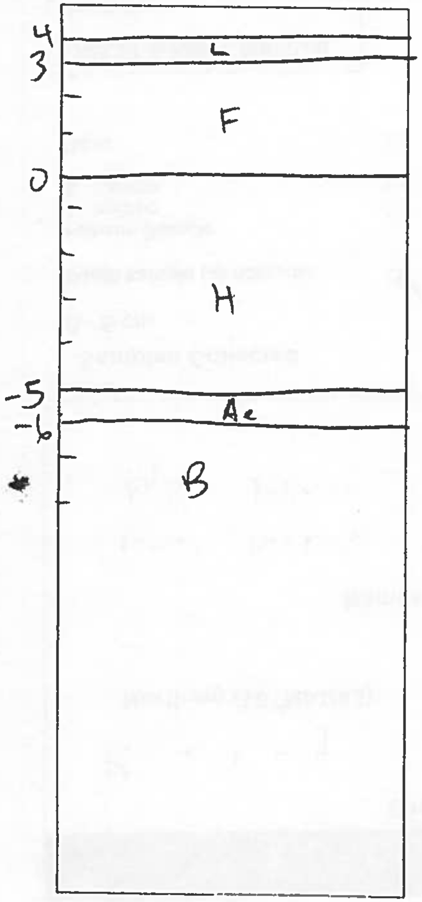
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0	-5	W	10 YR 2/1		0	silty/org.
4		Ae			-5	-6	W				
5		B			-6		B				
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site

Montague Mines

Date

2 Jun 08

Time

15:30 | :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID

MM-17

Sample Type - Horizon

No [✓ **Yes**]

Names of Samplers

Robert Ricketts

Ryan Feltman

RepStat

Sampling Depth

0 - 5 cm

Resampled Site

No **Yes** ➡

Samples Collected

0 - 5 cm

- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.

18°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Heavy tree fall
- No tree cover.
- Boulders in area.

MM-17

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

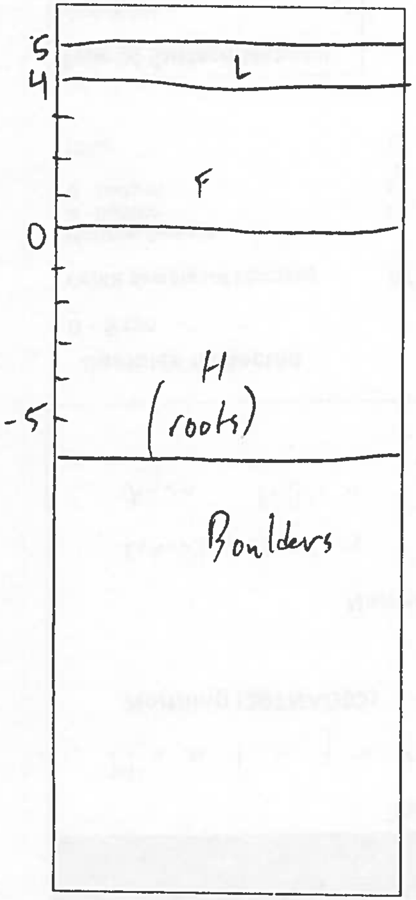
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+5	+4	W			0	org.
2		F			+4	0	W			0	org.
3		H			0	-6	W	10YR 2/1		0	silty/org.
4		Boulders			-6		B			100	
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 15:15 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-18

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bakkers
Ryan Fellman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Contamination

- None ☐
- Possible ☐
- Probable ☑
- Definite ☒
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 3m S of path.
- 7m S of trench.
- Open area.
- Tree fall in area.

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Air Temp.
18°C

MM- 18

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

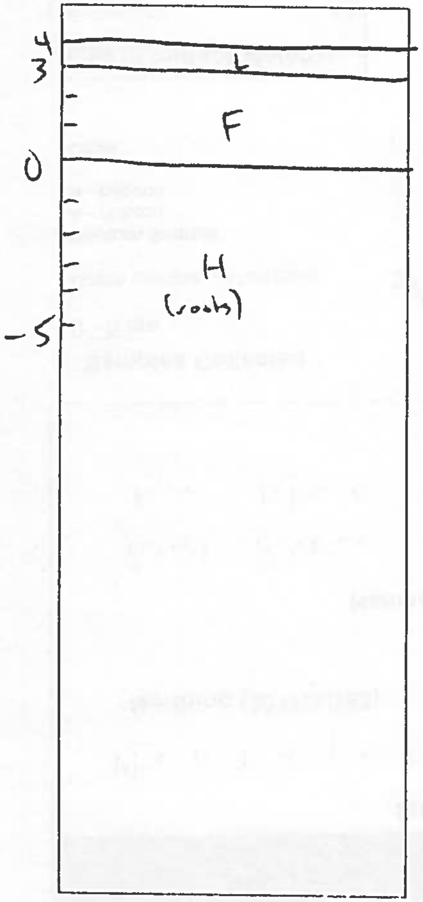
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+3	W			0	Org.
2		F			+3	0	W			0	Org.
3		H			0		W	10YR2/1		0	Silty/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 14:45 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-19

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Rikkers
Ryan Fellman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☑
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 17°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Moderate slope.
- Large tree fall to N (5m).
- Med. tree cover.
- Boulders in area.

MM - 19

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

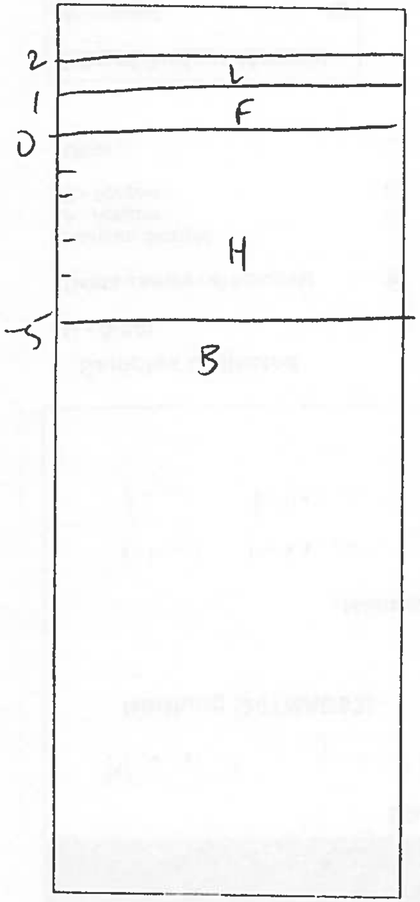
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF %	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low					
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0	-5	W	10 YR 2/1		0	silty/org.
4		B			-5		B			20	silty.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 16:40 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-210

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Mikkers
Ryan Fellman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
16 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Dense forest cover.
- Tree fall near by.

MM- 20

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

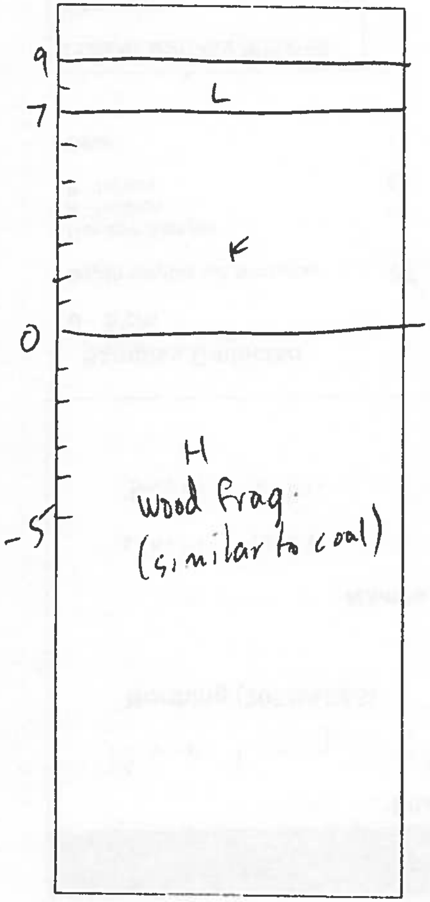
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+9	+7	W			0	org.
2		F			+7	0	W			0	org.
3		H			0		W	10YR 2/1		0	silty/org w/wood frag.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montaguel Mines

Date 2 Jun 08

Time 14:55 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-21

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Nikkers
Ryan Pilleran

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm

- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☑
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 17°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10m W of stream and path.
- 40m W of house.
- On up slope.
- Boulders, tree fell in area.

MM- 21

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

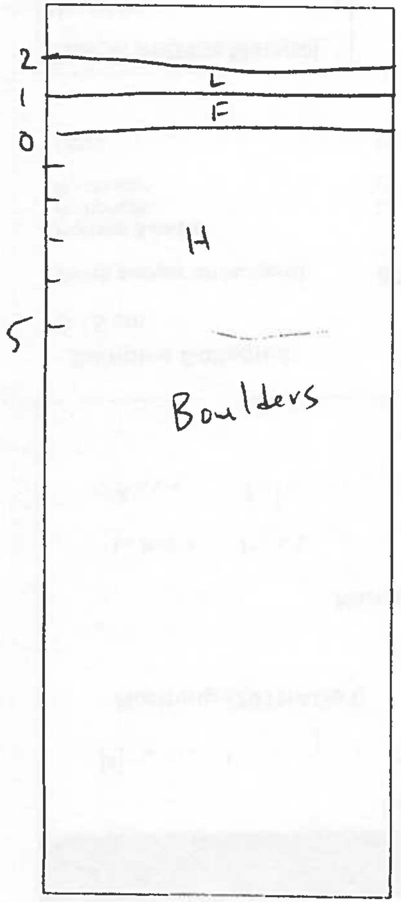
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0	-5	W	10YR 2/1		0	silty/org.
4		Boulders			-5		B			100	
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 16:55 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-22

Sample Type - Horizon
No [✓ **Yes**]

Names of Samplers
Robert Bekkers
Ryan Fellows

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No **Yes** ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☑
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☑
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 16 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10 m W of stream.
- Dense tree cover.
- At toe of up slope.
- 5 m S of tree fall.

MM-22

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

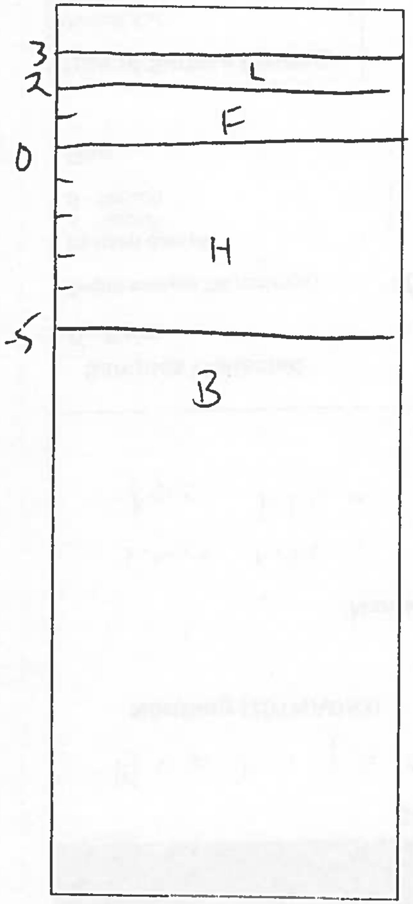
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+2	W	--		0	org.
2		F			+2	0	W			0	org.
3		H			0	-5	W	10YR 2/1		0	silty/org.
4		B			-5		B			10	silty
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
16 : 30   :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-23

Sample Type - Horizon
No   Yes [✓]

Names of Samplers
Robert Bakkers
Ryan Pellerin

RepStat ✓ "57"

Sampling Depth
0 - 5 cm

Resampled Site
No   Yes →

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☑
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
17°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m W of stream
- At toe of up slope
- Dense tree cover.
- 20m W of houses

MM-23

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

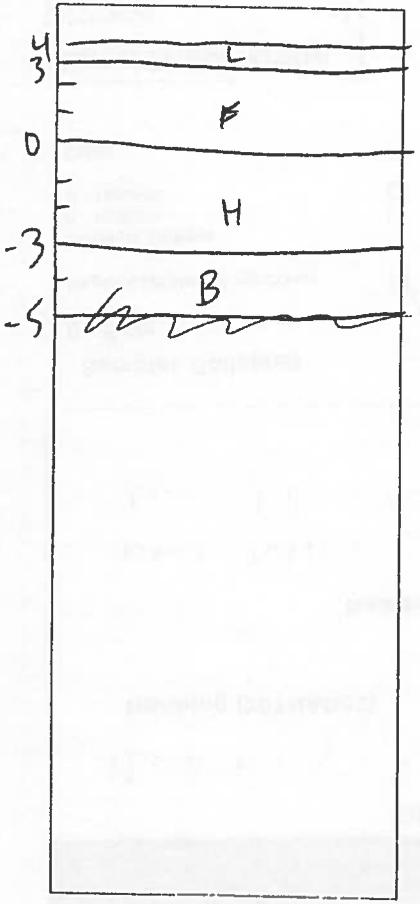
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0	-3	W	10YR 2/1		0	silty/org
4		B			-3		B			10	silty
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 2 Jun 08

Time 16:20 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-24

Sample Type - Horizon No [✓ Yes]

Names of Samplers
Robert Nikkels
Ryan Tillman

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☑
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 17°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 3m E of swamp.
- 5m W of resid. prop.
- 10m W of aband. cars.
- 2m E of trail
- Dense tree cover.

MM-24

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

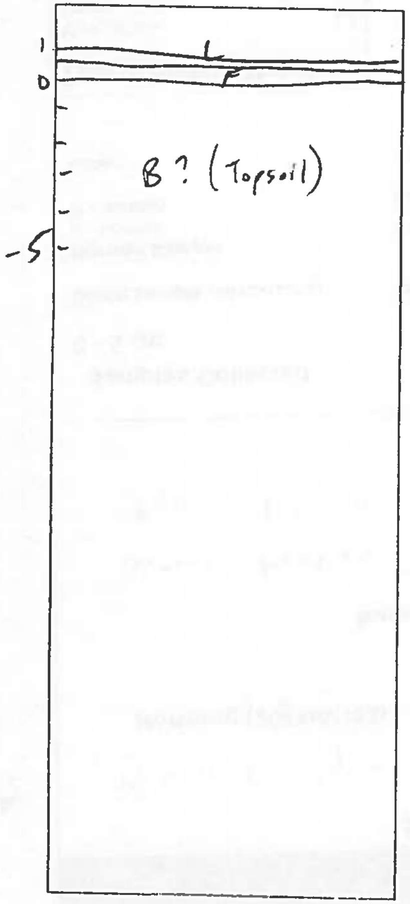
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5				0	org.
2		F			+0.5	0				0	org.
3		B? (Topsoil)			0			10 YR 3/3		10	silty.
4											
5											
6											
7											
8											
9											
10											

MM-24

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

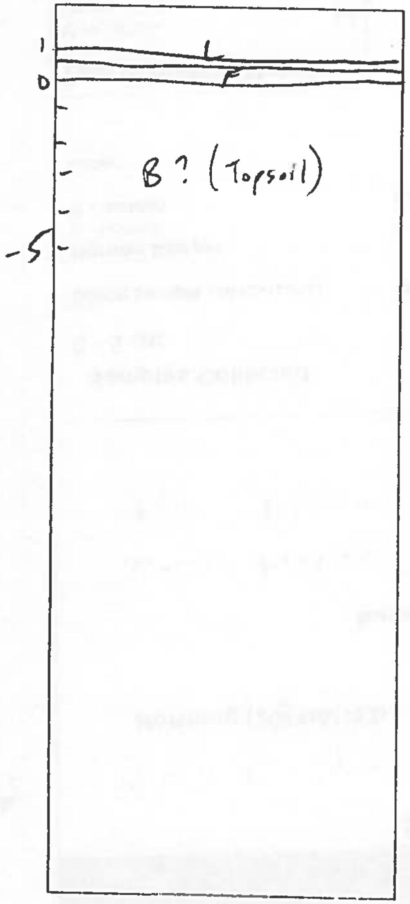
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5				0	org.
2		F			+0.5	0				0	org.
3		B? (Topsoil)			0			10 YR 3/3		10	silty.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
10 : 20 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM - 25

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
[illegible]
[illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☑
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
17°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 2m S of swampy area.
- Tree fall in area.
- Boulders in area.
- 3m E of small stream.
- 30m W of house.

M M -

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

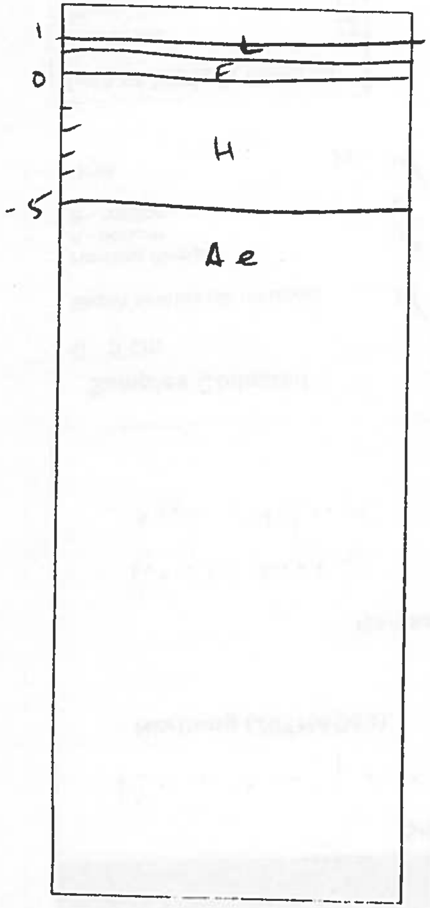
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-5	W	10YR 2/1		0	silty/org.
4		Ae			-5		B			20	silty sand.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 16:30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-23

Sample Type - Horizon No [✓ Yes]

Names of Samplers
Robert Mikkers
Ryan Pellerin

RepStat ✓ "57"

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression
Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☑
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☑
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 17°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m W of stream
- At toe of up slope
- Dense tree cover.
- 20m W of houses

MM - 23

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

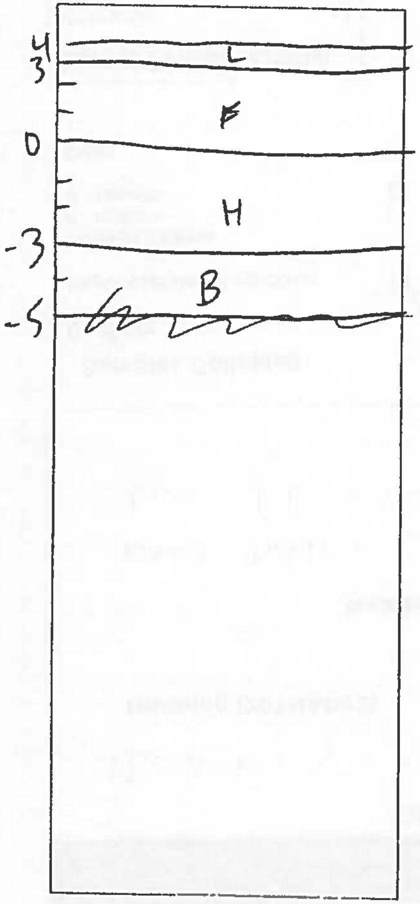
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0	-3	W	10YR 2/1		0	silty/org
4		B			-3		B			10	silty
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
16:20 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-24

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Nikkels
Ryan Tilleman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☑
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other

Weather

Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
17°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 3m E of swamp.
- 5m W of resid. prop.
- 10m W of aband. cars.
- ~~#~~ - 2m E of trail
- Dense tree cover.

MM-24

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

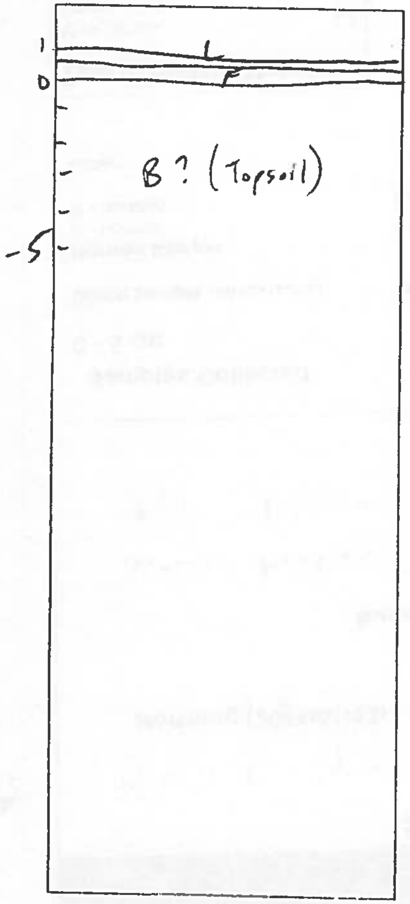
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5				0	org.
2		F			+0.5	0				0	org.
3		B? (Topsoil)			0			10 YR 3/3		10	silty.
4											
5											
6											
7											
8											
9											
10											

MM-24

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

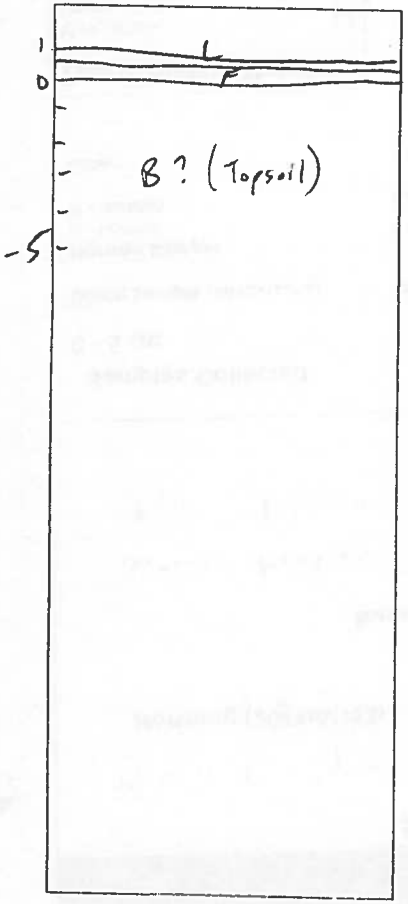
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5				0	org.
2		F			+0.5	0				0	org.
3		B? (Topsoil)			0			10 YR 3/3		10	silty.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
10 : 20 | __ : __

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-25

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Nickless
Ryan [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 2m S of swampy area.
- Tree fall in area.
- Boulders in area.
- 3m E of small stream.
- 30m W of house.

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☑
- Poorly drained ☐
- Very poorly drained ☐

Air Temp.
17°C

M M -

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

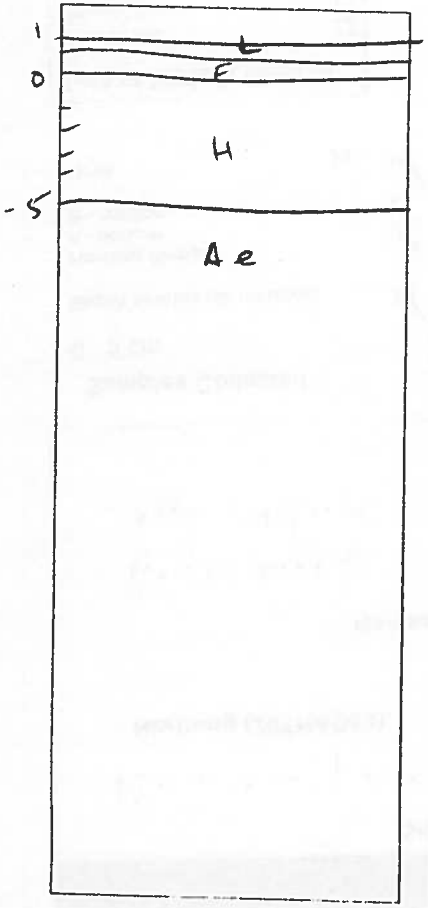
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-5	W	10YR 2/1		0	silty/org.
4		Ae			-5		B			20	silty sand.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
10 : 20 __ : __

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM - 25

Sample Type - Horizon
No Yes ✓

Names of Samplers
[illegible] [illegible]
[illegible] [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☑
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
17°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 2m S of swampy area.
- Tree fall in area.
- Boulders in area.
- 3m E of small stream.
- 30m W of house.

M M -

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

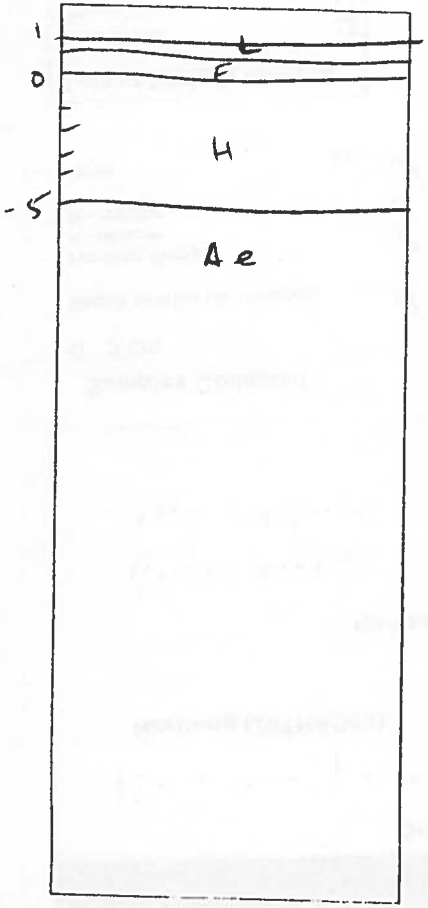
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-5	W	10YR 2/1		0	silty/org.
4		Ae			-5		B			20	silty sand.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines.

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Nichols
Ryan [illegible]

Date
2 Jul 08

Time
10 : 37 :

Site ID
MM - 26

Sample Type - Horizon
No [✓ Yes]

RepStat ✓ ("56")

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☑
B - horizon ☐

Other. H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
17 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Abund. tree fall.
- Down slope 3m to S.
- Open area.
- Boulders

M M - 26

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

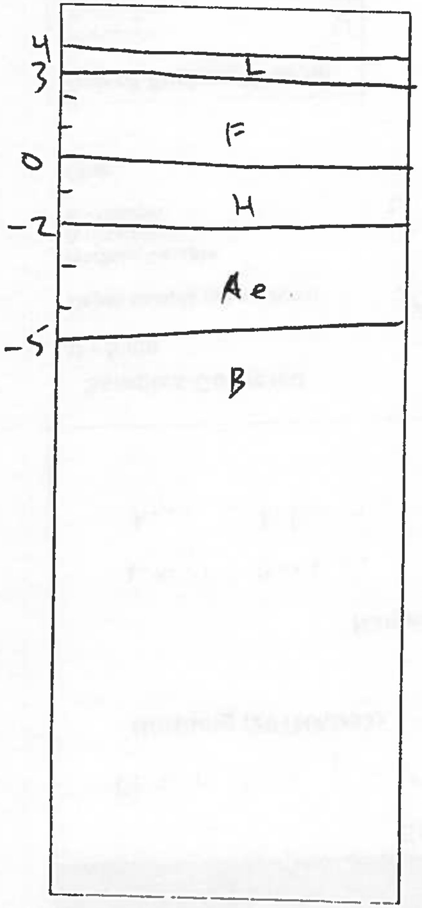
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
- Pit with Samples ☑
- Looking North ☑
- Looking East ☐
- Looking South ☑
- Looking West ☐
- Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0	-2	W	10YR 2/1		0	silty/org.
4		Ae			-2	-5	B	10YR 6/2		50	silty w̄ boulders.
5		B			-5		B			30	sandy.
6											
7											
8											
9											
10											

M M - 26

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

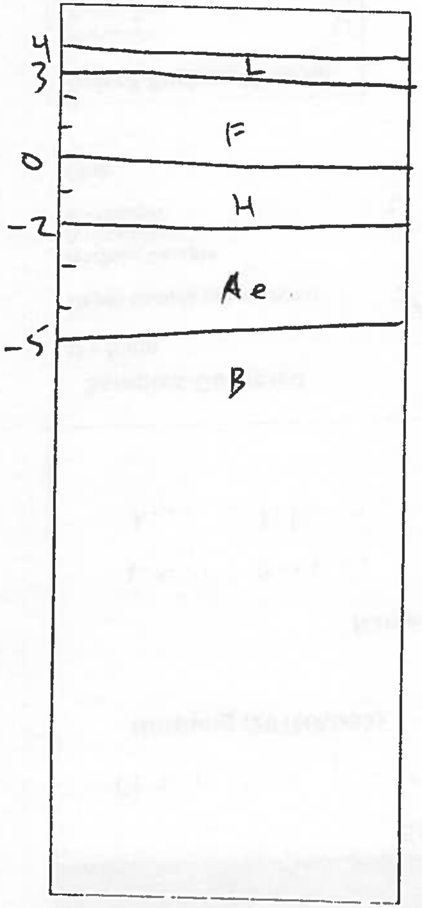
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0	-2	W	10YR 2/1		0	silty/org.
4		Ae			-2	-5	B	10YR 6/2		50	silty w̄ boulders.
5		B			-5		B			30	sandy.
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site

Montague Mines

Date

2 Jun 08

Time

11 : 00 | __ : __

Northing (20TNAD83)

Easting (20TNAD83)

Site ID

MM - 27

Sample Type - Horizon

No   Yes ✓

Names of Samplers

Robert Nikkins

Ryan Tillman

RepStat

Sampling Depth

0 - 5 cm

Resampled Site

No | Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample

A - horizon ☐

B - horizon ☐

Other. ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Contamination

- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10 m south of large tree-fall area.
- minor forest cover.
- boulders.

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☑
- Poorly drained ☐
- Very poorly drained ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.

15 °C

M M - 27

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

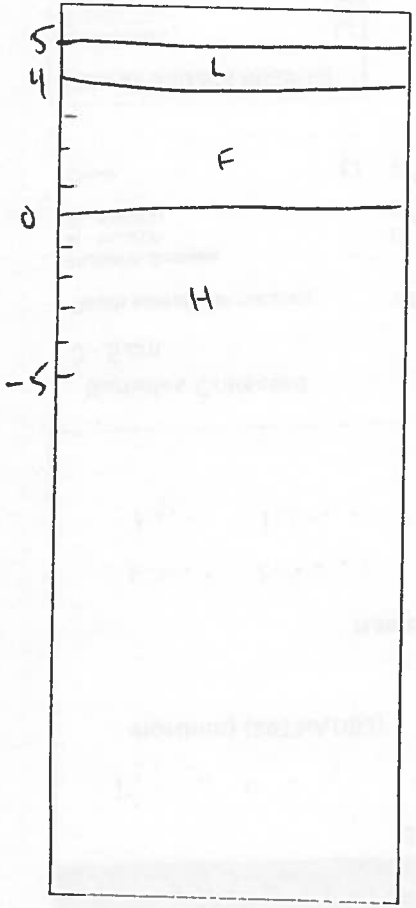
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+5	+4	W			0	org.
2		F			+4	0	W			0	org.
3		H			0	[illegible]	W	10 YR 2/1		0	org/silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines.

Date 2 Jun 08

Time 09:47 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM - 28

Sample Type - Horizon No Yes [✓]

Names of Samplers

Robert Nikkels
Ryan Nelson

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☑

Other. H ☑

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☑
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 1 7°C

Comments:

(E.g. Presence of waste rock, berms, pits, trenches or other mining activity)

- 20m E of Tailings area
- Boulders in area.
- N of upward slope.
- 15m N of trail.

M M - 28

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

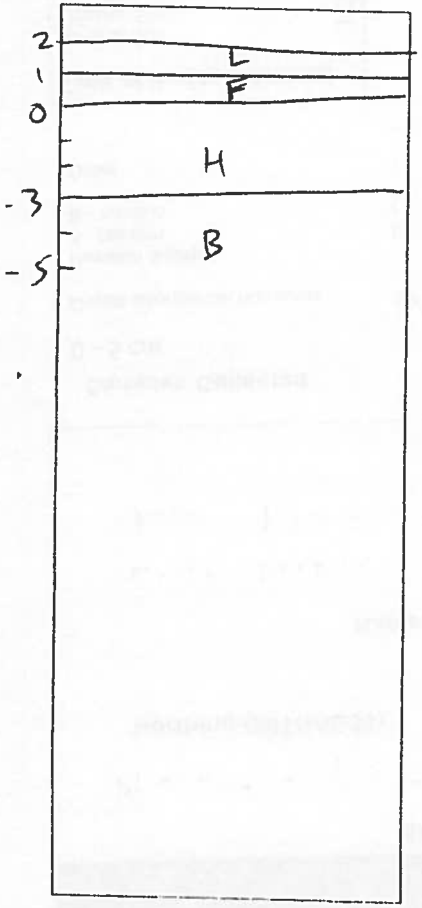
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org
3		H			0	-3	S	10YR 2/1		0	silty/org.
4		B			-3		W	10 YR 5/6		20	silty.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
10:00 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-29

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert [illegible]
[illegible] [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression
Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
18°C

Comments:
(E.g. Presence of waste rock, berms, pits, trenches or other mining activity)

- Abund. boulders, tree fall
- Dense cover.
- 30 m SW of house

M M - 29

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

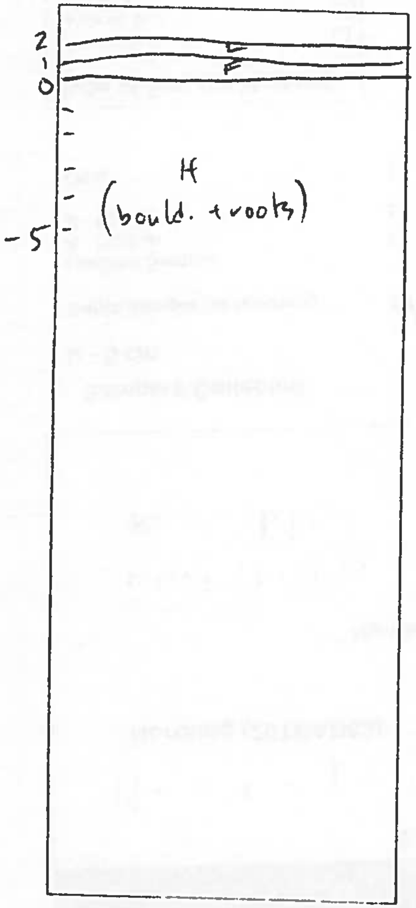
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0		W	10YR 2/1		0	silty
4											
5											
6											
7											
8											
9											
10											

M M - 29

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

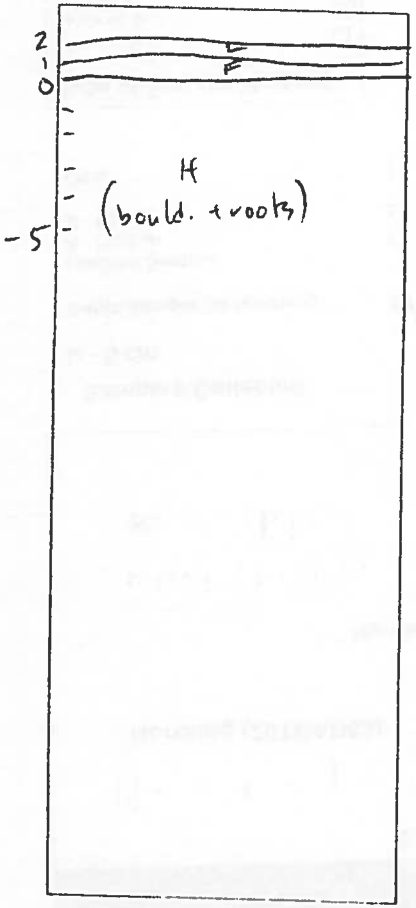
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	w			0	org.
2		F			+1	0	w			0	org.
3		H			0		w	10YR 2/1		0	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers

Robert Rakkers

Ryan Fellman

Date 2 Jul 08

Time 09:10 :

Site ID MM-30

Sample Type - Horizon No Yes ✓

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other

Weather

- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 3m N of tree fall.
- 10 m N of shafts.
- minor tree cover
- 20 m SE of house.
- Boulders in area.
- Leafy ground vegetation.

M M - 30

Codes for Horizon Description

Horizons
~~**D** Lithological discontinuity~~
Ma. Master horizons (Humus, A, B, C)
Suffix Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S Smooth
W Wavy
I Irregular
B Broken

Colour
Munsell colour or descriptive colour using table 1

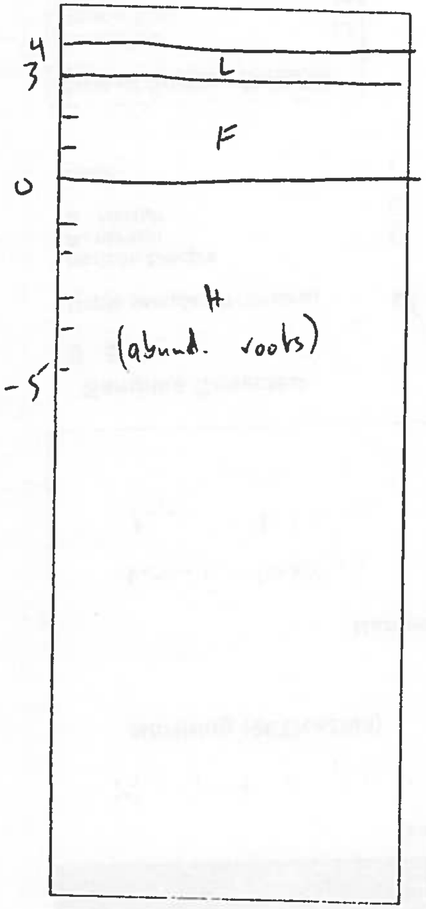
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0		W	10YR 2/1		0	silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08
Time 09:20 :

Northing (20TNAD83)
Easting (20TNAD83)

Site ID MM-31

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Bikkers
Ryan Nelson

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➔

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
16°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 40 m south of house
- tree fall
- minor tree cover
- leafy vegetation
- 10 m south of shaft
- Native soil (B ~~A~~) present on underside of tree fall.
- 5 m E of trail

M M - 31

Codes for Horizon Description

Horizons
D ~~Lithological discontinuity~~
Ma Master horizons (Humus, A, B, C)
Suffix Suffixes
M Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y Visible
N Not visible

Coarse Fragments (CF)
Estimated value in %

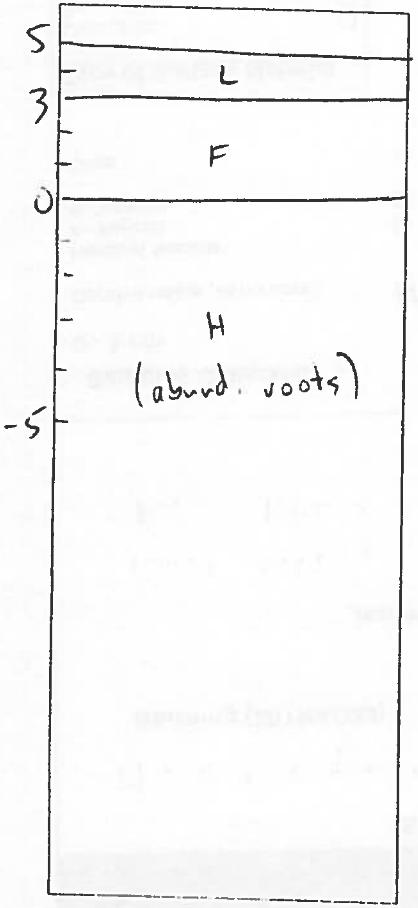
Field Texture
Clay, Sandy Clay, Sandy Cla, Loam Silt, Silty Sand, Silt Loam, Silty Clay Loam Loam, Sandy Loam Loamy Sand Sand Very Fine Sand Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S Smooth
W Wavy
I Irregular
B Broken

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+5	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0		W	10 YR 2/1		0	silty/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
09:30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-32

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert [illegible]
Ryan [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☑
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
16 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of trail.
- tree cover.
- leafy vegetation.
- Boulders, tree fall in area.

M M - 32

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma. Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

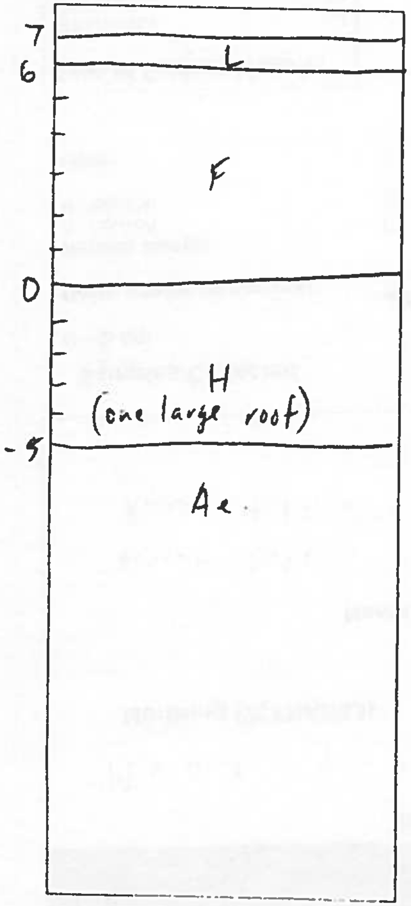
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+7	+6	W			0	org
2		F			+6	0	W			0	org
3		H			0	-5	W	10YR 2/1		0	silty/org
4		Ae			-5		B	10YR 7/2		30	
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 20 May 08

Time 16:05 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-33

Sample Type - Horizon No Yes ✓

Names of Samplers

Robert Bekkers

Kyran Pillean

RepStat +Duplicate (MM-55)

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample

A - horizon ☐

B - horizon ☐

Other. ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☑
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Moderate slope down to W.
- 10m E of tailings
- Tree-fall.
- Forest cover.

M M - 3 3

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

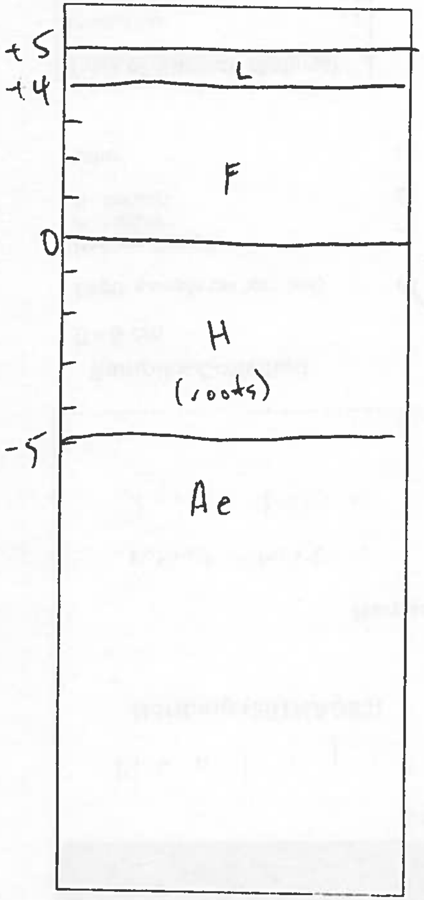
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
- Pit with Samples ☑
- Looking North ☑
- Looking East ☐
- Looking South ☑
- Looking West ☐
- Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+5	+4	W	–		0	org.
2		F			+4	0	W	–		0	org.
3		H			0	-5	S	10YR 2/2		0	silt/org.
4		Ae			-5		S	10YR 6/1		5	silty clay.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
20 May 08

Time
15 : 55 ___ : ___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM - 34

Sample Type - Horizon
No **Yes** ✓

Names of Samplers
Robert Nikkers
Ryan Fillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No **Yes** ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other Coal frag.

Weather

- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of trench and waste rock pile
- Abundant boulders, waste rock, tree fall.
- Coal fragments in H-layer

MM-34

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

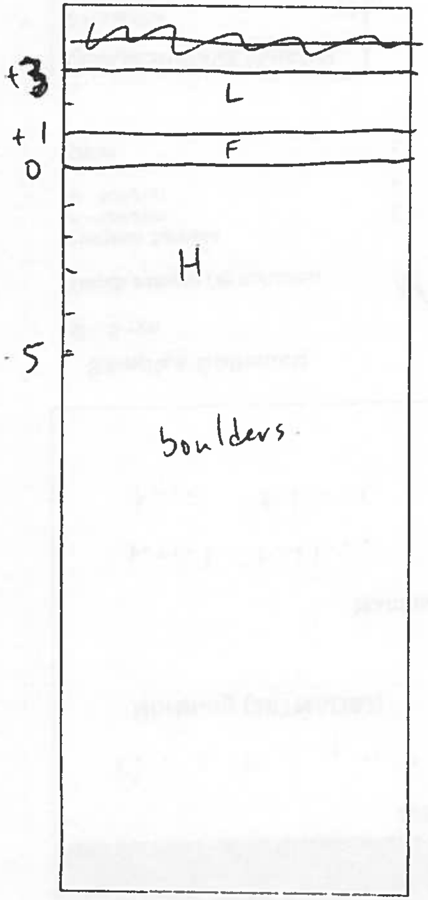
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+3	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0		W	10YR 2/1		30	sand/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 08:55 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-35

Sample Type - Horizon
No **Yes** ✓

Names of Samplers
Robert Mikkers
Ryan [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No **Yes** ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Location is among abundant tree fall
- 10 m E of shafts.
- open (no standing trees)
- waste rock piles 5m to W.

M M - 35

Codes for Horizon Description

Horizons
~~**D** Lithological discontinuity~~
Ma Master horizons (Humus, A, B, C)
Suffix Suffixes
M Modifier (B1, B2, B3)

Horizon Boundary (HB)
S Smooth
W Wavy
I Irregular
B Broken

Colour
Munsell colour or descriptive colour using table 1

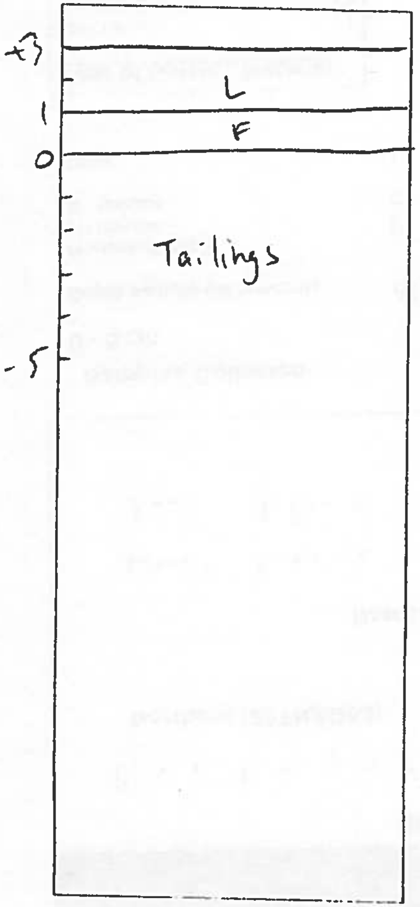
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+1				0	org.
2		F			+1	0				0	org.
3		Tailings			0			10YR 3/2		0	sandy silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
02 Jun 08

Time
08:45 __:__

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-36

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Mikkers
Ryan Tilleman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➜

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of waste rock and trench (fenced off).
- 1m W of tree fall (cut).
- abundant vegetation (shrub)
- open (no standing trees).

Gold Mine District Soil Sampling Field Data Sheet

Site: Montague Mines

Date: 02 Jun 08

Time: 08:45 | :

Northing (20TNAD83):

Easting (20TNAD83):

Site ID: MM-36

Sample Type - Horizon: No Yes ✓

Names of Samplers:
Robert Mikkers
Ryan Hillman

RepStat:

Sampling Depth: 0 - 5 cm

Resampled Site: No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of waste rock and trench (fenced off).
- 1m W of tree fall (cut).
- abundant vegetation (shrub)
- open (no standing trees).

M M -

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

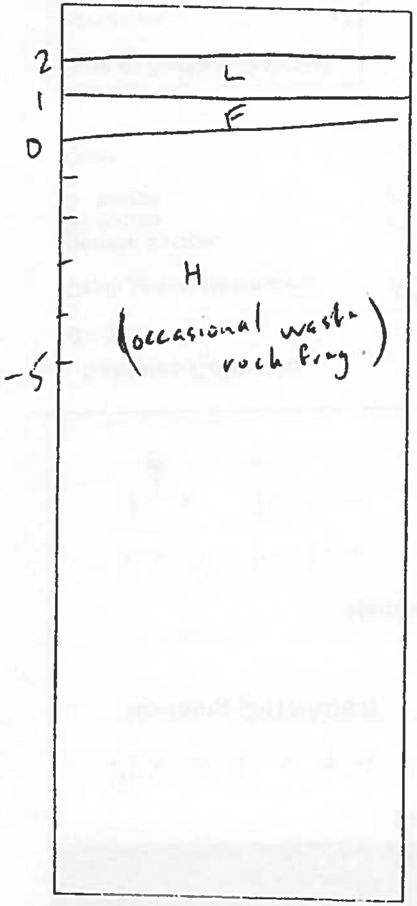
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☑
Looking South ☐
Looking West ☑
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	Org.
2		F			+1	0	W			0	Org.
3		H			0		W	10YR 2/1		10	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
13 : 25 ___ : ___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM - 38

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Fekkers
Ryan Fillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
- Depth sample (all horizons) ☑
- Horizon Sample
  - A - horizon ☐
  - B - horizon ☐
- Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Large boulders to E (5m)
- Tree-fall surrounding
- Waste rock 5m in all directions
- Road 20m NE.

M M -

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

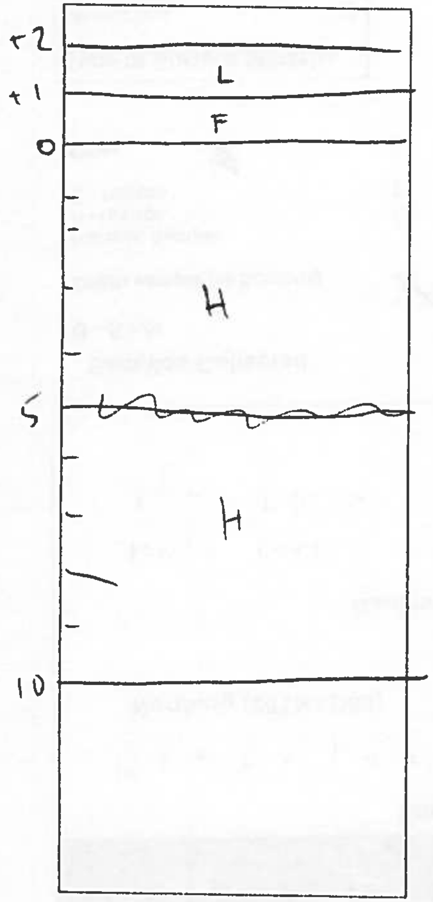
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silt
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 15 May 08

Time 14:56 __ : __

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-39

Sample Type - Horizon No Yes ✓

Names of Samplers

Robert Bakkers
Ryan Pelleran

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 7m E of waste rock pile
- 10m E of road.
- 10m S of waterway.
- In tailings / waste rock fill area.
- Dense tree cover.

MM - 39

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

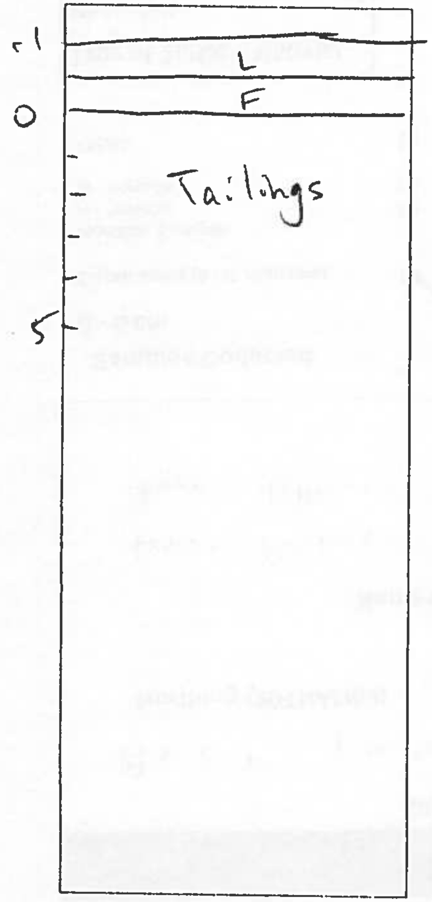
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Horizons Ma	Horizons Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org
3		Tailings			0		W	10YR 4/2		25	sandy silt with gravel
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
11:00 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-27

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Mikkers
Ryan Tillson

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☑
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10 m south of large tree-fall area.
- minor forest cover.
- boulders.

MM-27

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

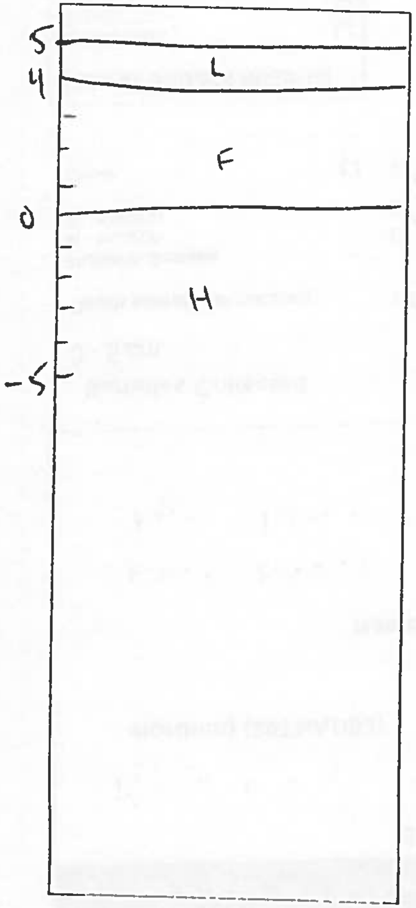
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+5	+4	W			0	org.
2		F			+4	0	W			0	org.
3		H			0	[illegible]	W	10 YR 2/1		0	org/silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines.

Date
2 Jun 08

Time
09:47 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-28

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Nikkels
Ryan Nelson

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☑

Other H ☑

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
17°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 20m E of Tailings area
- Boulders in area.
- N of upward slope.
- 15m N of trail.

M M - 28

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

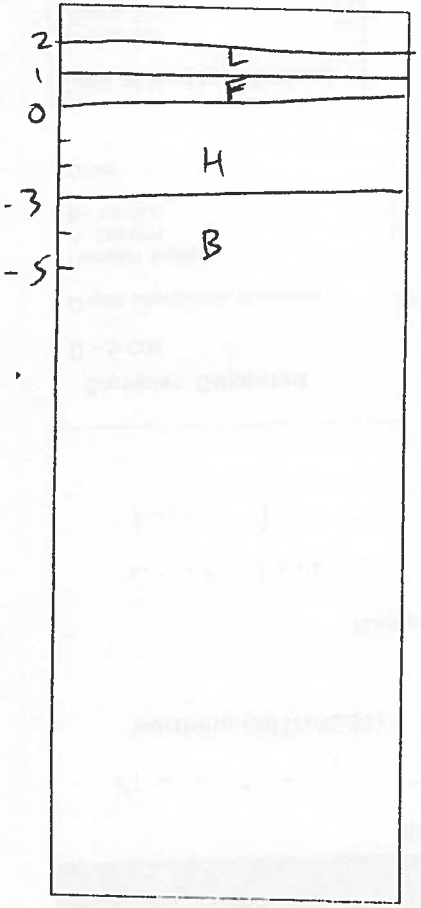
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org
3		H			0	-3	S	10YR 2/1		0	silty/org.
4		B			-3		W	10 YR 5/6		20	silty.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
10:00 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-29

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Makkins
Ryan Tilleson

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➔

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Contamination

None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Comments:

(E.g. Presence of waste rock, berms, pits, trenches or other mining activity)

- Abund. boulders, treefall
- Dense cover.
- 30 m SW of house

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Weather

Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Air Temp.
18°C

M M - 29

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

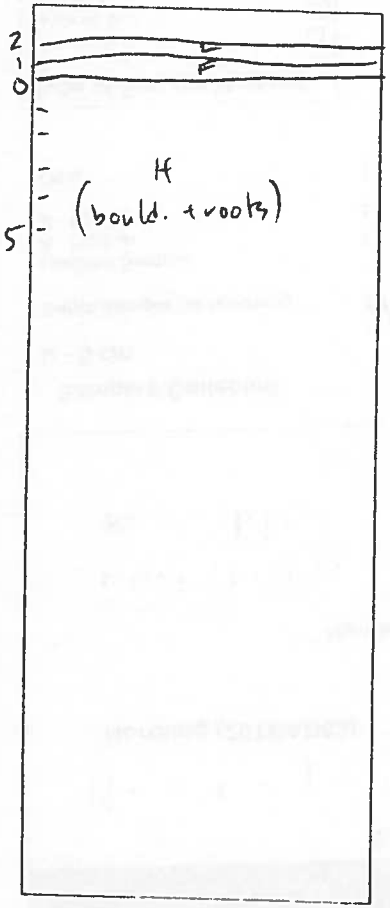
Coarse Fragments (CF)
Estimated value in %

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0		W	10YR 2/1		0	silty
4											
5											
6											
7											
8											
9											
10											

M M - 29

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

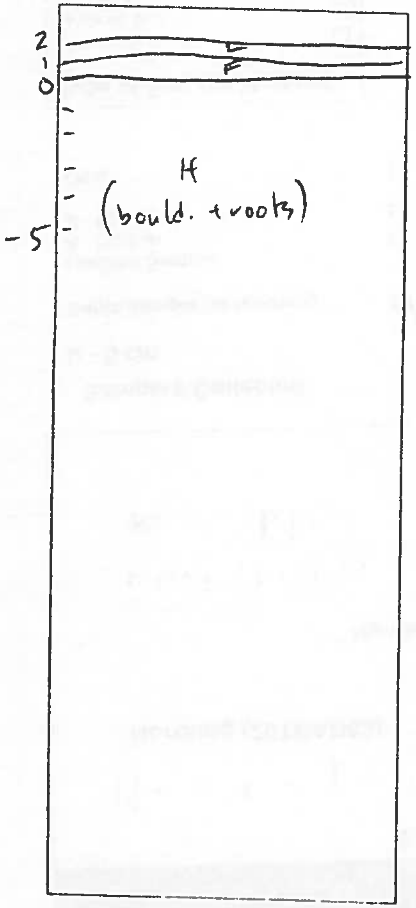
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0		W	10YR 2/1		0	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
09:10 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-30

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Nikkers
Kyan Pelleran

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other

Comments:
(E g. Presence of waste rock, berms, pits, trenches or other mining activity)

- 3m N of tree fall.
- 10 m N of shafts.
- minor tree Cover
- 20 m SE of house.
- Boulders in area
- Leafy ground vegetation.

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15 °C

MM-30

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

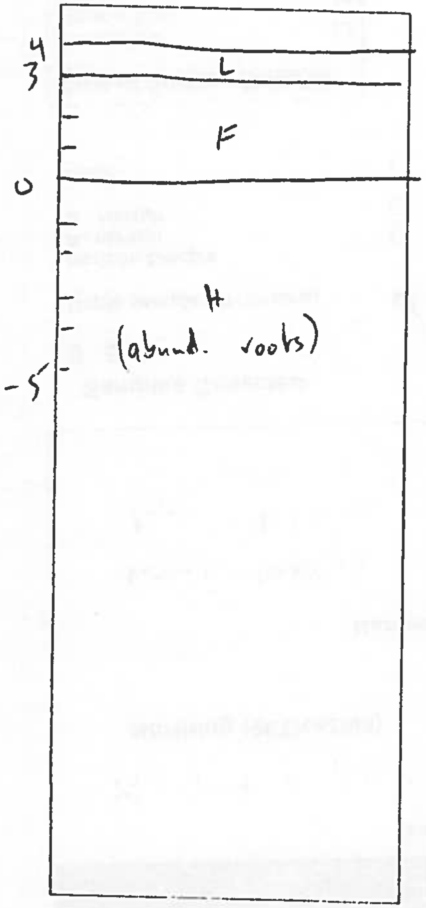
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0		W	10YR 2/1		0	silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Mikkers
Ryan Nelson

Date
2 Jun 08

Time
09:20 | :

Site ID
MM-31

Sample Type - Horizon
No [✓ Yes]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No | Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
16°C

Comments:

(E g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 40 m south of house
- tree fall
- minor tree cover
- leafy vegetation
- 10 m south of shaft
- Native soil (B ~~[illegible]~~.) present on underside of tree fall.
- 5 m E of trail

M M - 31

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

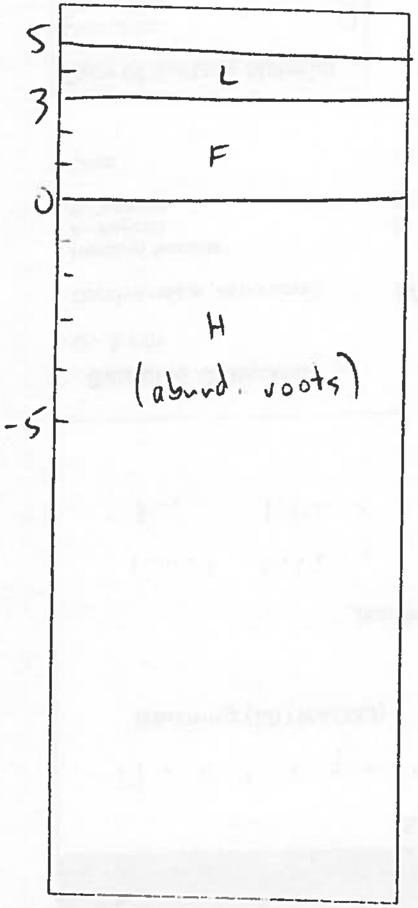
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Cla, Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+5	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0		W	10 YR 2/1		0	silty/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 09:30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-32

Sample Type - Horizon No [✓ Yes]

Names of Samplers
Robert Adkins
Ryan Hilton

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☑
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 16 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of trail.
- tree cover.
- leafy vegetation.
- Boulders, tree fall in area.

M M - 32

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

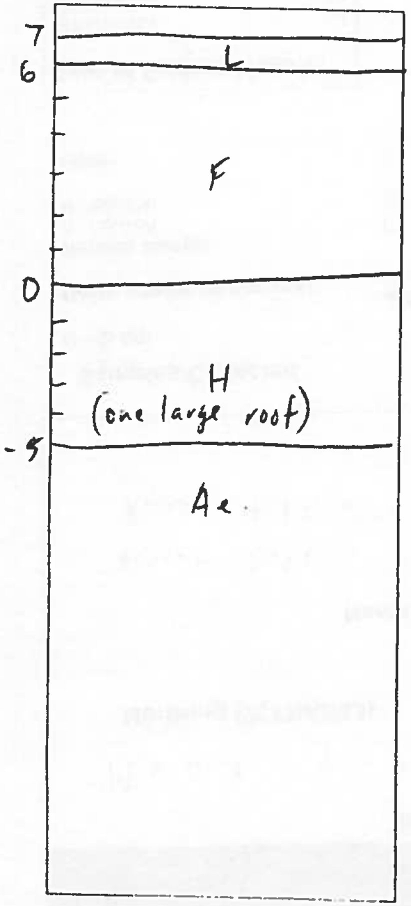
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF %	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low					
1		L			+7	+6	W			0	org
2		F			+6	0	W			0	org
3		H			0	-5	W	10YR 2/1		0	silty /org
4		Ae			-5		B	10YR 7/2		30	
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 20 May 08

Time 16 : 05 ___ : ___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-33

Sample Type - Horizon No [✓ Yes]

Names of Samplers
Robert Bekkers
Ryan Tilleman

RepStat + Duplicate (MM-55)

Sampling Depth 0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☐
Ridged ☐
Steep ☑
Terrace ☐
Undulating ☑
Veneer ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Moderate slope down to W.
- 10m E of tailings
- Tree-fall.
- Forest cover.

MM-33

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

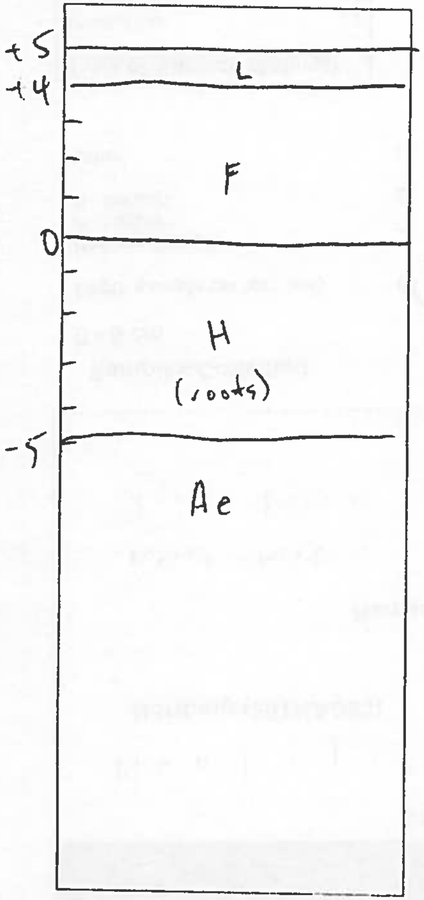
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+5	+4	W	—		0	o.g.
2		F			+4	0	W	—		0	o.g.
3		H			0	-5	S	10YR 2/2		0	silt/org.
4		Ae			-5		S	10YR 6/1		5	silty clay.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: Montague Mines

Date: 20 May 08

Time: 15:55 :

Northing (20TNAD83):

Easting (20TNAD83):

Site ID: MM-34

Sample Type - Horizon: No Yes ✓

Names of Samplers:
Robert Nikkers
Ryan Pilbean

RepStat:

Sampling Depth: 0 - 5 cm

Resampled Site: No Yes ➔

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other Coal frag. ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of trench and waste rock pile
- Abundant boulders, waste rock, tree fall.
- Coal fragments in H-layer

MM-34

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

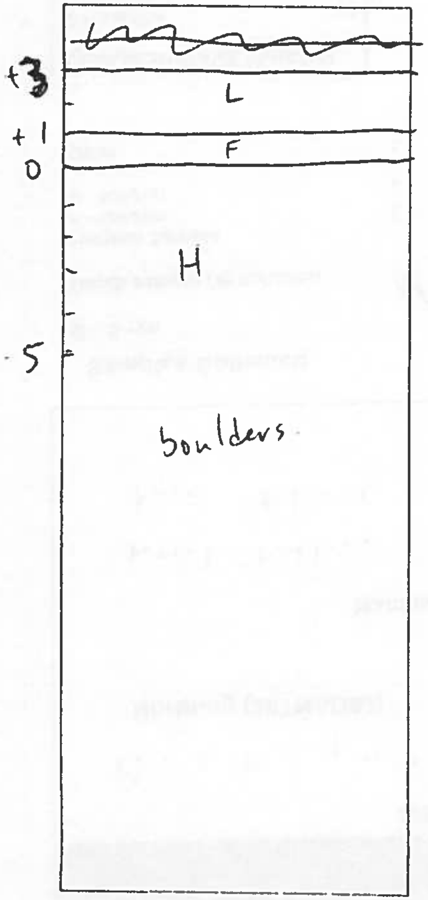
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0		W	10YR 2/1		30	sand/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
08:55 | :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-35

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Mikkers
Ryan [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No | Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Location is among abundant tree fall
- 10 m E of shafts.
- open (no standing trees)
- waste rock piles 5m to W.

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Air Temp.
15 °C

MM-35

Codes for Horizon Description

Horizons
D ~~Lithological discontinuity~~
Ma Master horizons (Humus, A, B, C)
Suffix Suffixes
M Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

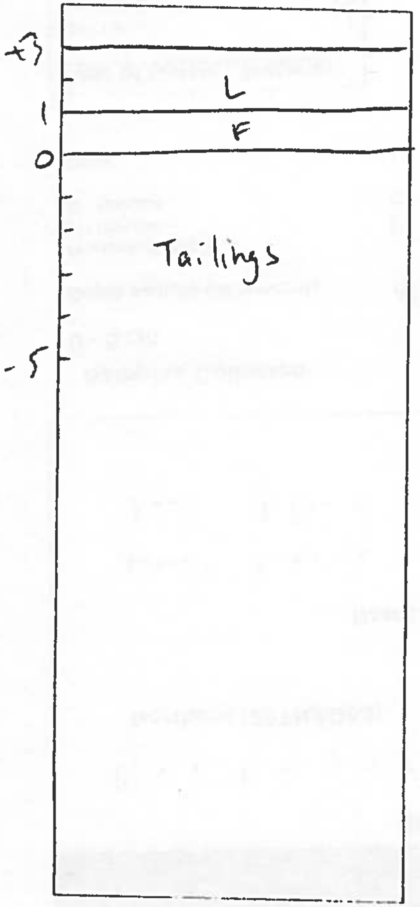
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S Smooth
W Wavy
I Irregular
B Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+1				0	org.
2		F			+1	0				0	org.
3		Tailings			0			10YR 3/2		0	sandy silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 02 Jun 08

Time 08:45 ___ : ___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-36

Sample Type - Horizon No [✓ Yes]

Names of Samplers
Robert Mikkers
Ryan Tillman

RepStat

Sampling Depth 0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of waste rock and trench (fenced off).
- 1m W of tree fall (cut).
- abundant vegetation (shrub)
- open (no standing trees).

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 02 Jun 08
Time 08:45 ___:___

Northing (20TNAD83)
Easting (20TNAD83)

Site ID MM-36

Sample Type - Horizon
No **Yes** ✓

Names of Samplers
Robert Mikkers
Ryan Hillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No **Yes** ➡

Samples Collected
0 - 5 cm

- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of waste rock and trench (fenced off).
- 1m W of tree fall (cut).
- abundant vegetation (shrub)
- open (no standing trees).

M M -

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

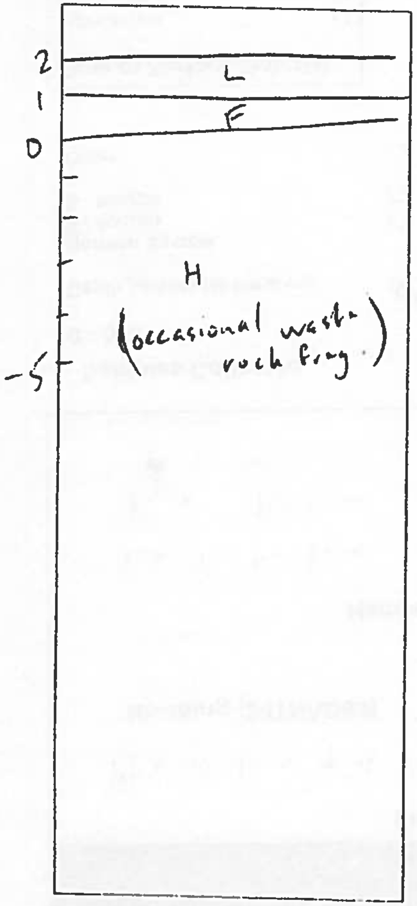
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☑
Looking South ☐
Looking West ☑
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	Org.
2		F			+1	0	W			0	Org.
3		H			0		W	10YR 2/1		10	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
13:25 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-38

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Fikkers
Ryan Tillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Large boulders to E (5 m)
- Tree-fall surrounding
- Waste rock 5 m in all directions
- Road 20 m NE.

M M -

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

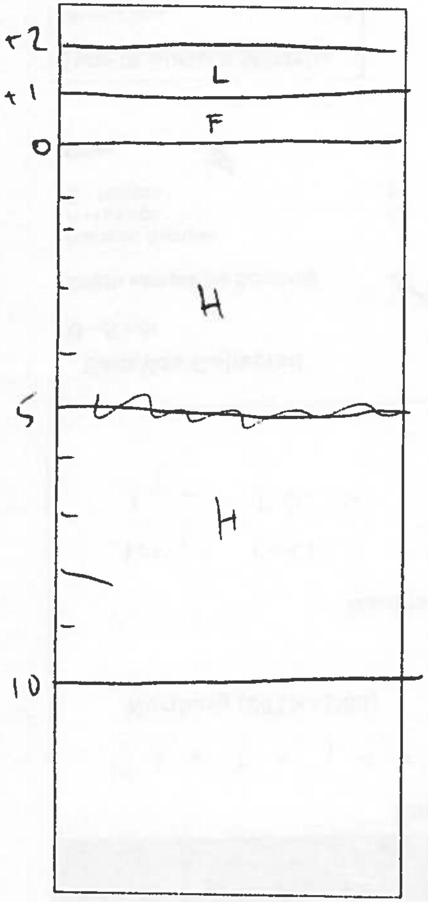
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silt
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montaguel Mines

Date
15 May 08

Time
14:56 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-39

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bakkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 7m E of waste rock pile
- 10m E of road.
- 10m S of waterway.
- In tailings / waste rock fill area.
- Dense tree cover.

MM - 39

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

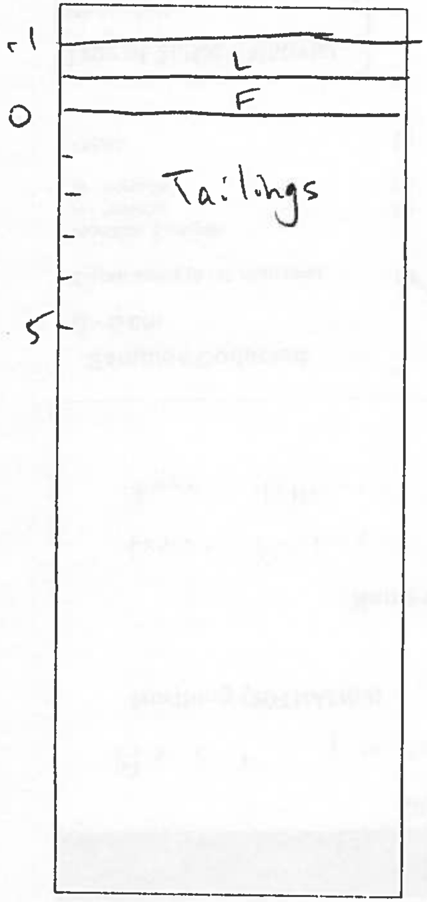
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org
3		Tailings			0		W	10YR 4/2		25	sandy silt with gravel
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines.

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rankins
Ryan Pelletan

Date
2 Jun 08

Time
09:10 :

Site ID
MM-30

Sample Type - Horizon
No Yes ✓

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☑
- Other

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15 °C

Comments:

(E g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 3m N of tree fall.
- 10 m N of shafts.
- minor tree Cover
- 20 m SE of house.
- Boulders in area.
- Leafy ground vegetation.

M M - 30

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

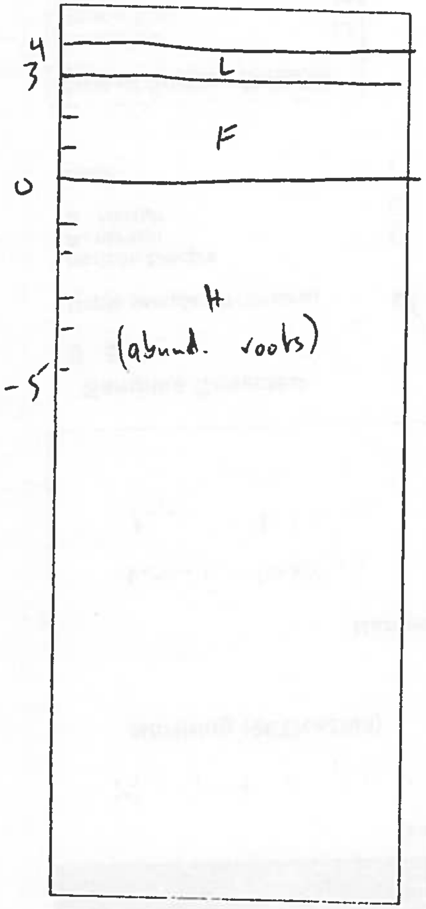
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam, Silt, Silty Sand, Silt Loam, Silty Clay Loam, Loam, Sandy Loam, Loamy Sand, Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0		W	10YR 2/1		0	silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
09:20 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-31

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Nickless
Ryan Nelson

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
16°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 40 m south of house
- tree fall
- minor tree cover
- leafy vegetation
- 10 m south of shaft
- Native soil (B ~~[illegible]~~.) present on underside of tree fall.
- 5 m E of trail

M M - 31

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

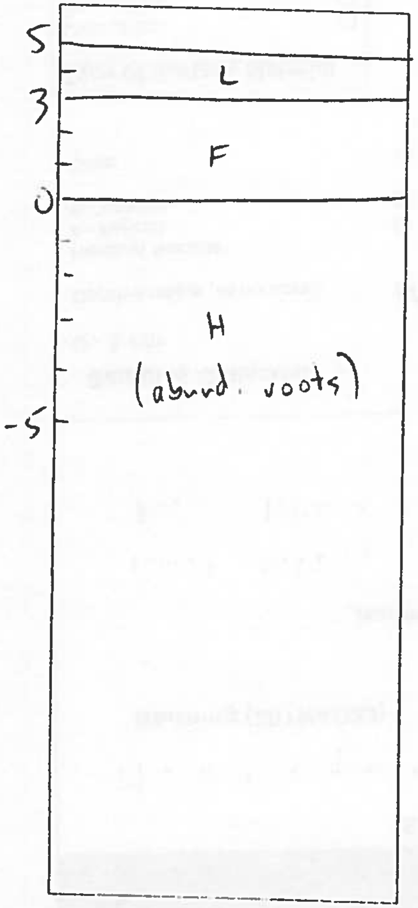
Field Texture
Clay, Sandy Clay, Sandy Cla, Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+5	+3	W			0	org.
2		F			+3	0	W			0	org.
3		H			0		W	10 YR 2/1		0	silty / org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Hobbins
Ryan Hilton

Date
2 Jun 08

Time
09:30 :

Site ID
MM-32

Sample Type - Horizon
No [✓ Yes]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

- **Depth sample** (all horizons) ☑

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other. ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
16 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of trail.
- tree cover.
- leafy vegetation.
- Boulders, tree fall in area.

M M - 32

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma. Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

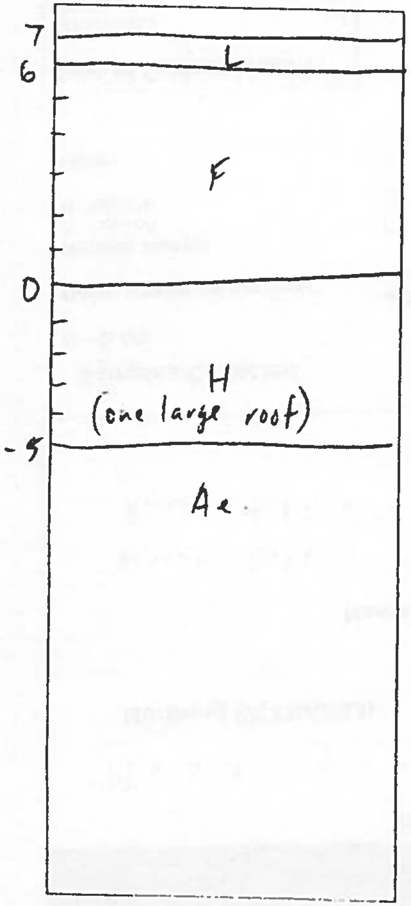
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam, Silt, Silty Sand, Silt Loam, Silty Clay Loam, Loam, Sandy Loam, Loamy Sand, Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+7	+6	W			0	org
2		F			+6	0	W			0	org
3		H			0	-5	W	10YR 2/1		0	silty/org
4		Ae			-5		B	10YR 7/2		30	
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 20 May 08

Time 16 : 05 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-33

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Bekkers
Kyran Pillman

RepStat + Duplicate (MM-55)

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☐
- Ridged ☐
- Steep ☑
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Moderate slope down to W.
- 10m E of tailings
- Tree-fall.
- Forest cover.

MM-33

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

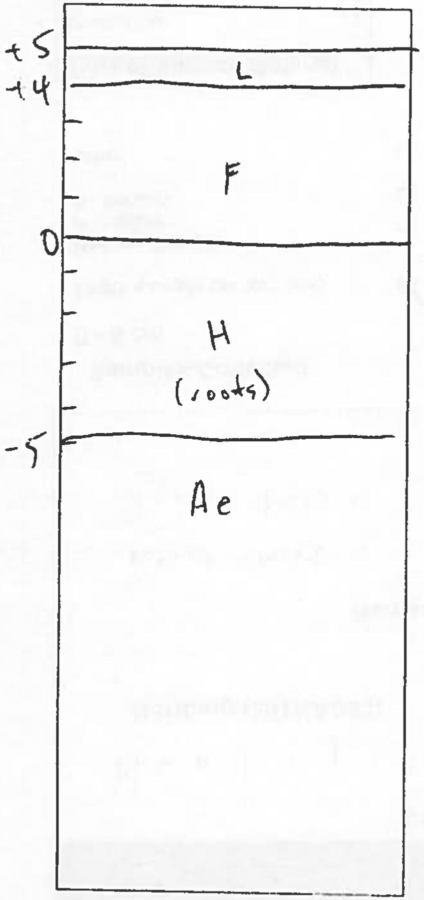
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+5	+4	W	–		0	org.
2		F			+4	0	W	–		0	org.
3		H			0	-5	S	10YR 2/2		0	silt/org.
4		Ae			-5		S	10YR 6/1		5	silty clay.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
20 May 08

Time
15:55 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-34

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Nikkers
Ryan Pellman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other Coal frag.

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of trench and waste rock pile
- Abundant boulders, waste rock, tree fall.
- Coal fragments in H-layer

MM-34

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

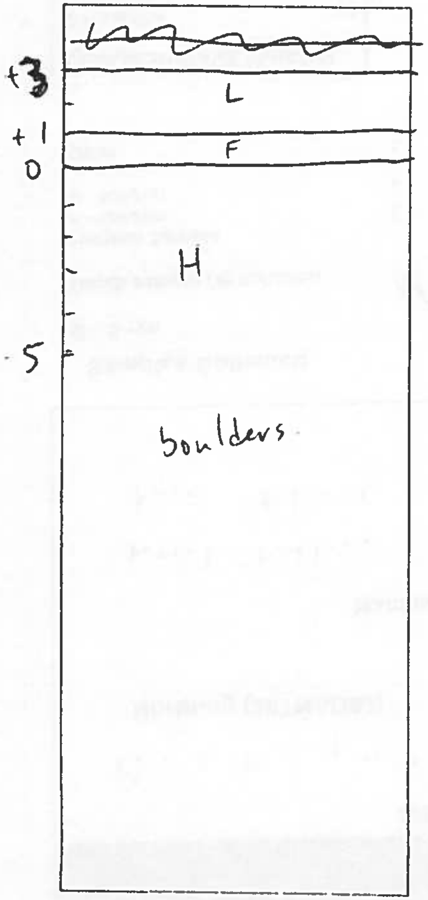
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0		W	10YR 2/1		30	sand/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 2 Jun 08

Time 08:55 | __ : __

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-35

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Mikkers
Ryan [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No | Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
15°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Location is among abundant tree fall
- 10 m E of shafts.
- open (no standing trees)
- waste rock piles 5m to W.

MM-35

Codes for Horizon Description

Horizons
~~**D** Lithological discontinuity~~
Ma. Master horizons (Humus, A, B, C)
Suffix Suffixes
M Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

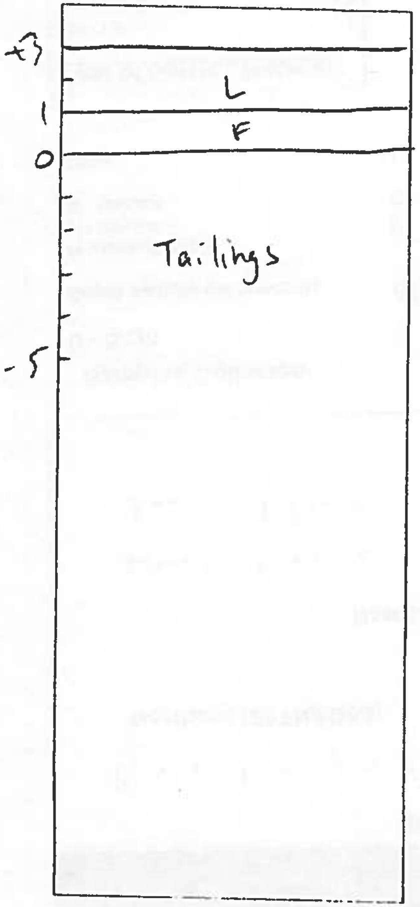
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S Smooth
W Wavy
I Irregular
B Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+1				0	org.
2		F			+1	0				0	org.
3		Tailings			0			10YR 3/2		0	sandy silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 02 Jun 08

Time 08:45 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-36

Sample Type - Horizon
No [✓ **Yes**]

Names of Samplers
Robert Mikkers
Ryan Tellian

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No **Yes** ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of waste rock and trench (fenced off).
- 1m W of tree fall (cut).
- abundant vegetation (shrub)
- open (no standing trees).

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 02 Jun 08

Time 08:45 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-36

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Nikkers
Ryan Tilleman

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 15°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of waste rock and trench (fenced off).
- 1m W of tree fall (cut).
- abundant vegetation (shrub)
- open (no standing trees).

M M -

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

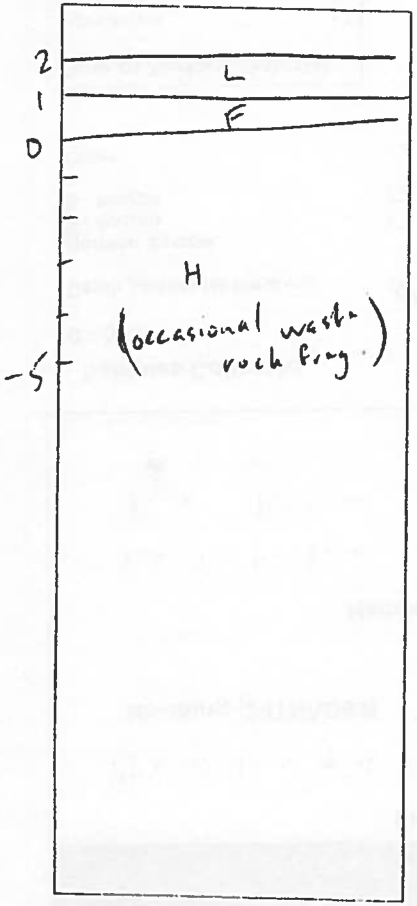
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☑
Looking South ☐
Looking West ☑
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	Org.
2		F			+1	0	W			0	Org.
3		H			0		W	10YR 2/1		10	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
13 : 25   :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-38

Sample Type - Horizon
No [✓ **Yes**]

Names of Samplers
Robert Fekkers
Ryan Pilleman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No **Yes** ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Large boulders to E (5m)
- Tree-fall surrounding
- Waste rock 5m in all directions
- Road 20m NE.

M M -

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

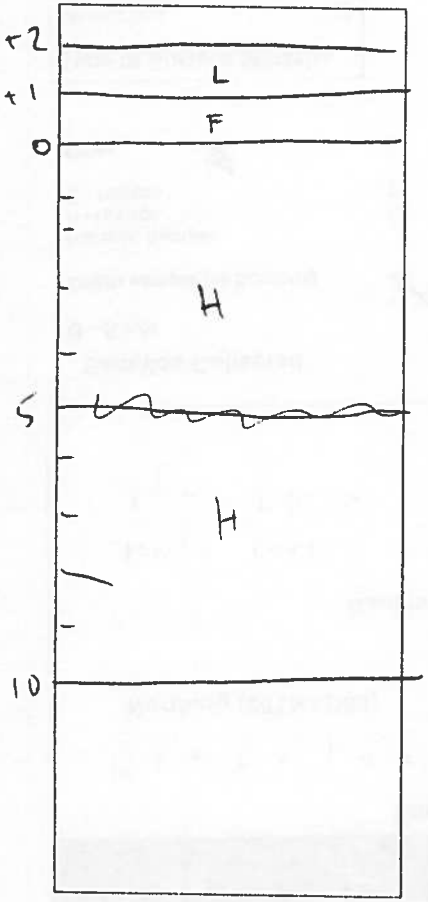
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	o/g
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silt
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
14:56

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-39

Sample Type - Horizon
No Yes [✓]

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes →

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 7m E of waste rock pile
- 10m E of road.
- 10 m S of waterway.
- In tailings / waste rock fill area.
- Dense tree cover.

MM - 39

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

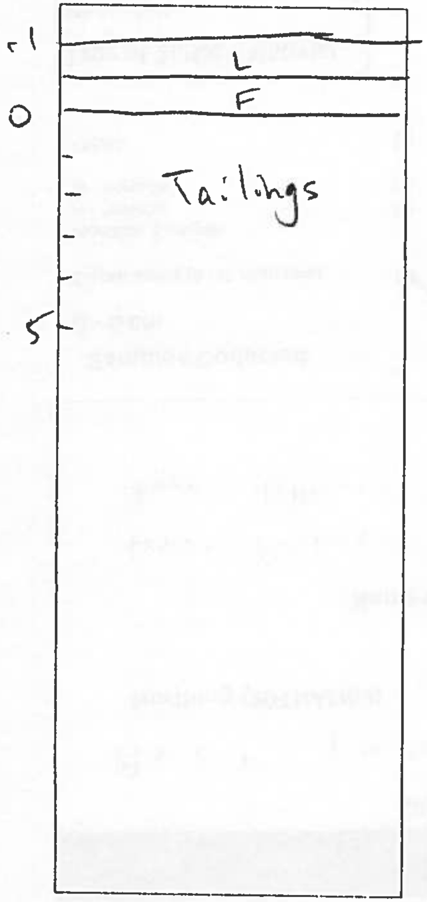
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org
3		Tailings			0		W	10YR 4/2		25	sandy silt with gravel
4											
5											
6											
7											
8											
9											
10											

MM-34

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

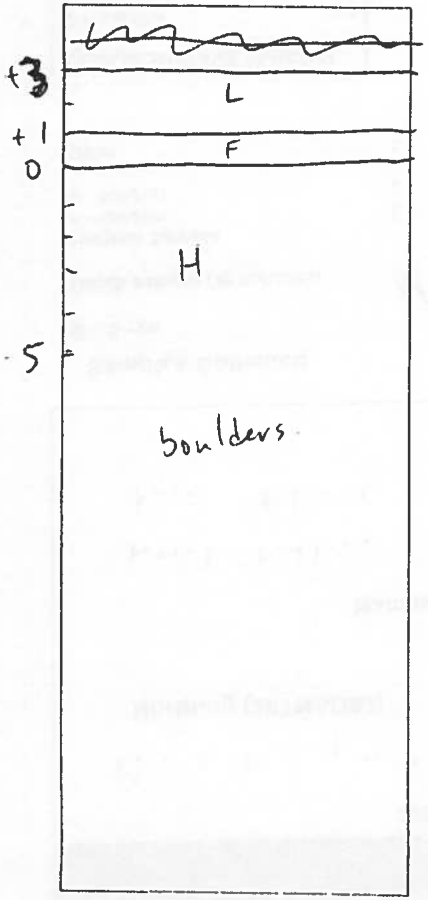
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0		W	10YR 2/1		30	sand/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
2 Jun 08

Time
08 : 55
:

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM - 35

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Mikkers
Ryan Feltman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No | Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Location is among abundant tree fall
- 10 m E of shafts.
- open (no standing trees)
- waste rock piles 5m to W.

MM-35

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

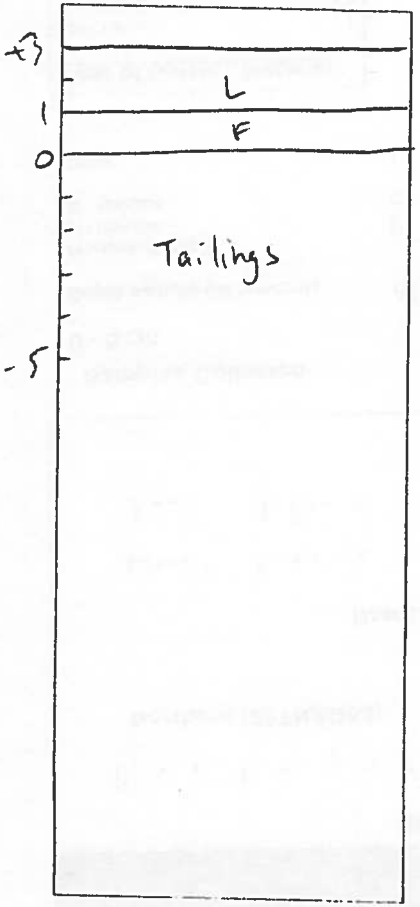
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam, Silt, Silty Sand, Silt Loam, Silty Clay Loam, Loam, Sandy Loam, Loamy Sand, Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+3	+1				0	org.
2		F			+1	0				0	org.
3		Tailings			0			10YR 3/2		0	sandy silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
02 Jun 08

Time
08:45 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-36

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Mikkers
Ryan Fillion

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other. ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☑
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
15°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of waste rock and trench (fenced off).
- 1m W of tree fall (cut).
- abundant vegetation (shrub)
- open (no standing trees).

Gold Mine District Soil Sampling Field Data Sheet

Site
Montaguel Mines

Date
02 Jun 08

Time
08:45 __:__

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-36

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Mikkers
Ryan Fillion

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☑
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
15°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m E of waste rock and trench (fenced off).
- 1m W of tree fall (cut).
- abundant vegetation (shrub)
- open (no standing trees).

M M -

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

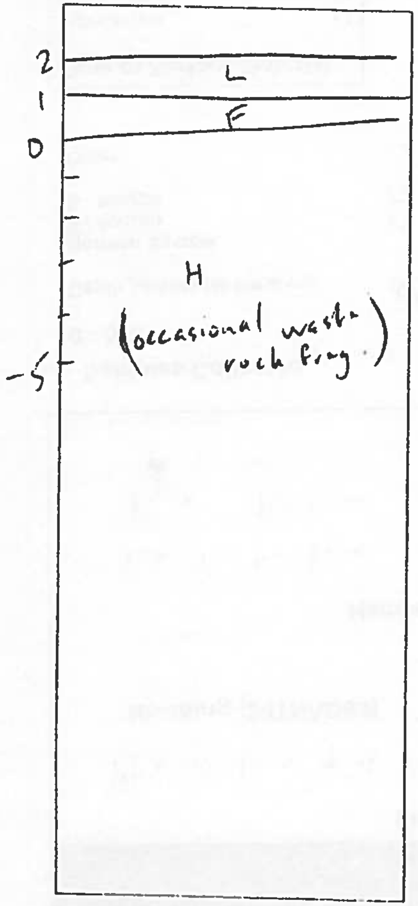
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☑
Looking South ☐
Looking West ☑
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	Org.
2		F			+1	0	W			0	Org.
3		H			0		W	10YR 2/1		10	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
13:25 ___ : ___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-38

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Fekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Large boulders to E (5m)
- Tree-fall surrounding
- Waste rock 5m in all directions
- Road 20m NE.

M M -

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

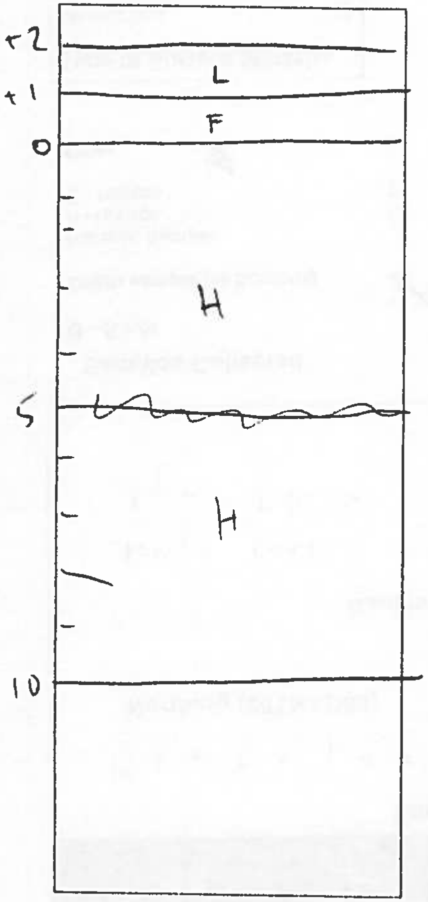
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silt
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 15 May 08

Time 14:56 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-39

Sample Type - Horizon No Yes ✓

Names of Samplers

Robert Bekkers

Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site

No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample

A - horizon ☐

B - horizon ☐

Other: ☐

Type of Surface Material

Mineral Soil ☐

Organic Soil ☐

Non-Soil ☑

Urban ☐

Local Surface Expression

Mineral Surface Form

Blanket ☐

Dissected ☐

Fan ☐

Hummocky ☐

Inclined ☐

Pitted ☐

Level ☐

Rolling ☑

Ridged ☐

Steep ☐

Terrace ☐

Undulating ☑

Veneer ☐

Vegetation Cover

Agricultural Crops ☐

Coniferous Forest ☑

Deciduous Forest ☑

Mixed Forest ☐

Meadow, Wet ☐

Field ☐

Parkland ☐

Shrubland ☐

Unvegetated Surface ☐

Drainage

Very rapidly drained ☐

Rapidly drained ☐

Well drained ☑

Moderately well drained ☐

Imperfectly drained ☐

Poorly drained ☐

Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

Sunny/Clear ☐

Partly cloudy ☐

Overcast ☑

Rain ☐

Sleet ☐

Snow ☐

Air Temp. 12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 7m E of waste rock pile
- 10m E of road.
- 10m S of waterway.
- In tailings / waste rock fill area.
- Dense tree cover.

MM - 39

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

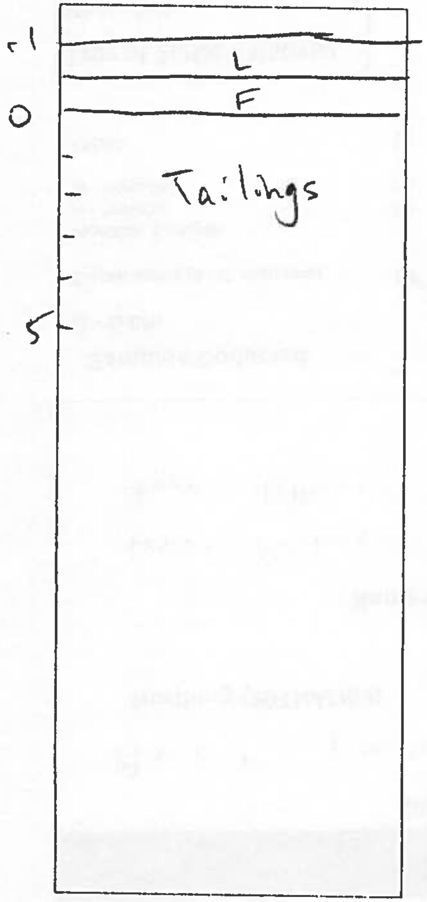
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org
3		Tailings			0		W	10YR 4/2		25	sandy silt with gravel
4											
5											
6											
7											
8											
9											
10											

M M -

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

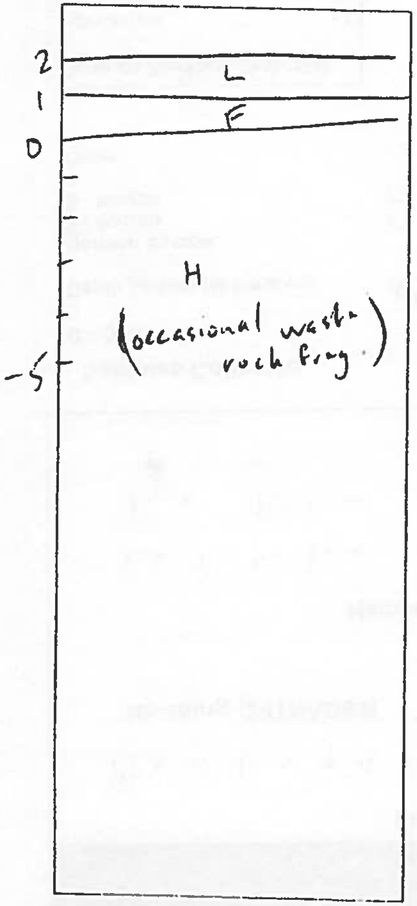
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☐
Looking East ☑
Looking South ☐
Looking West ☑
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	Org.
2		F			+1	0	W			0	Org.
3		H			0		W	10YR 2/1		10	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 15 May 08

Time 13:25 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-38

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Bakkers
Ryan Pelleran

RepStat

Sampling Depth 0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Large boulders to E (5m)
- Tree-fall surrounding
- Waste rock 5m in all directions
- Road 20m NE.

M M -

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

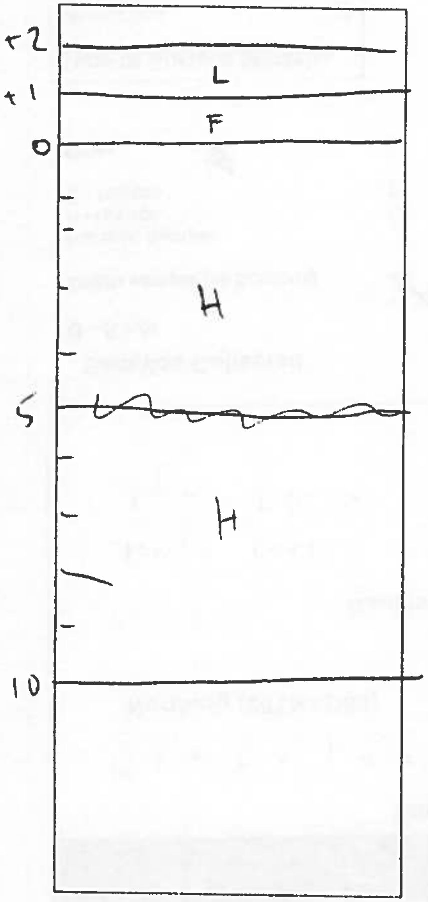
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silt
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
14:56 __:__

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-39

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 7m E of waste rock pile
- 10m E of road.
- 10 m S of waterway.
- In tailings / waste rock fill area.
- Dense tree cover.

MM - 39

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

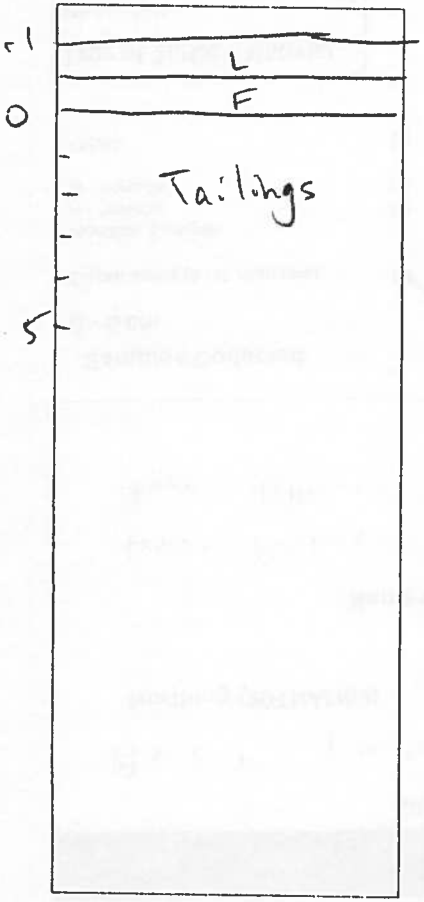
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org
3		Tailings			0		W	10YR 4/2		25	sandy silt with gravel
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
13 : 25   :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-38

Sample Type - Horizon
No   Yes ✓

Names of Samplers
Robert Bekkers
Ryan Pelman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No   Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)
- Large boulders to E (5m)
- Tree-fall surrounding
- Waste rock 5m in all directions
- Road 20m NE.

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12°C

M M -

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

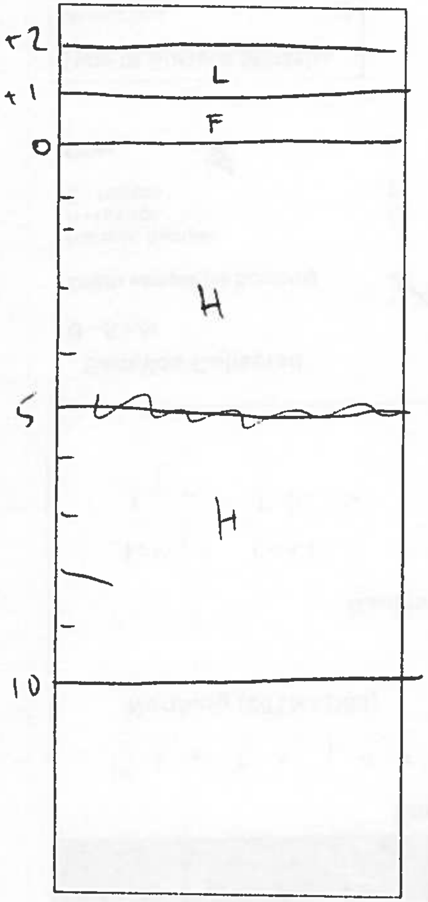
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silt
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
14:56 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-39

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 7m E of waste rock pile
- 10m E of road.
- 10 m S of waterway.
- In tailings / waste rock fill area.
- Dense tree cover.

MM-39

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

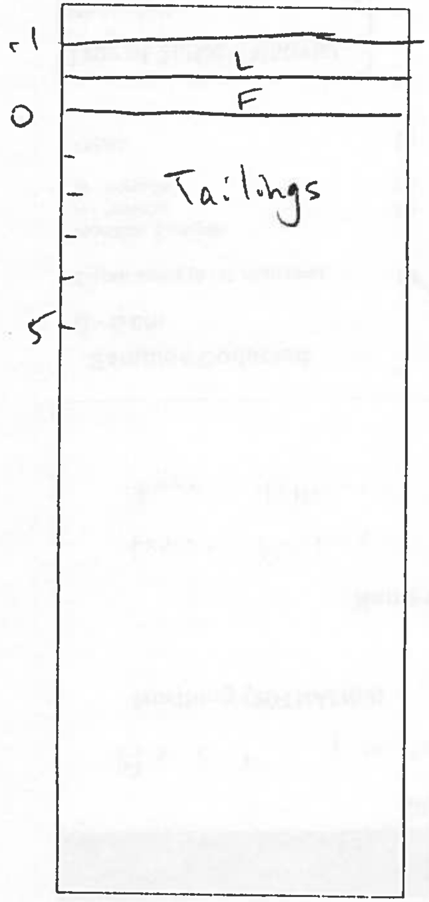
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples	☑
Looking North	☑
Looking East	☐
Looking South	☑
Looking West	☐
Others	

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org
3		Tailings			0		W	10YR 4/2		25	sandy silt with gravel
4											
5											
6											
7											
8											
9											
10											

MM - 39

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

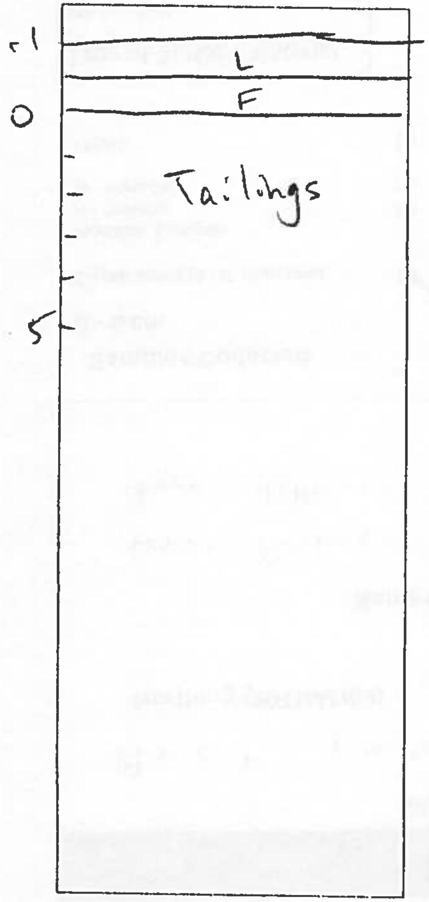
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
- Pit with Samples ☑
- Looking North ☑
- Looking East ☐
- Looking South ☑
- Looking West ☐
- Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org
3		Tailings			0		W	10YR 4/2		25	sandy silt with gravel
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
14:40 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-40

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Rikkers
Ryan [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons)	☑
Horizon Sample	
A - horizon	☐
B - horizon	☐
Other	☐

Type of Surface Material

Mineral Soil	☐
Organic Soil	☐
Non-Soil	☑
Urban	☐

Local Surface Expression

Mineral Surface Form

Blanket	☐
Dissected	☐
Fan	☐
Hummocky	☐
Inclined	☐
Pitted	☐
Level	☐
Rolling	☑
Ridged	☐
Steep	☐
Terrace	☐
Undulating	☑
Veneer	☐

Vegetation Cover

Agricultural Crops	☐
Coniferous Forest	☑
Deciduous Forest	☑
Mixed Forest	☐
Meadow, Wet	☐
Field	☐
Parkland	☐
Shrubland	☐
Unvegetated Surface	☐

Drainage

Very rapidly drained	☐
Rapidly drained	☐
Well drained	☑
Moderately well drained	☐
Imperfectly drained	☐
Poorly drained	☐
Very poorly drained	☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☑
  - Other Fill ☐

Weather

Sunny/Clear	☐
Partly cloudy	☐
Overcast	☑
Rain	☐
Sleet	☐
Snow	☐

Air Temp.
12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 3m from rock wall
- 30m S of 2 houses.
- Parking lot 10m NW.
- Steep rock slope 5m S.
- Large trees

MM - 40

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

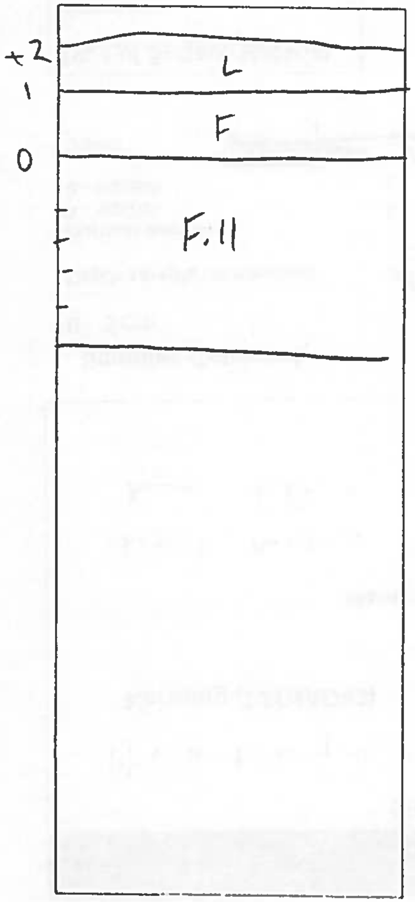
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	S			0	org
2		F			+1	0	S			0	org
3		Fill			0			7.5 YR 3/3		10	silty sand
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
14:30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-41

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected.
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12°C

Comments:

(E.g. Presence of waste rock, berms, pits, trenches or other mining activity)

- 20 m N of shaft
- tailings and waste rock in area
- 5 m E of path.

MM-41

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

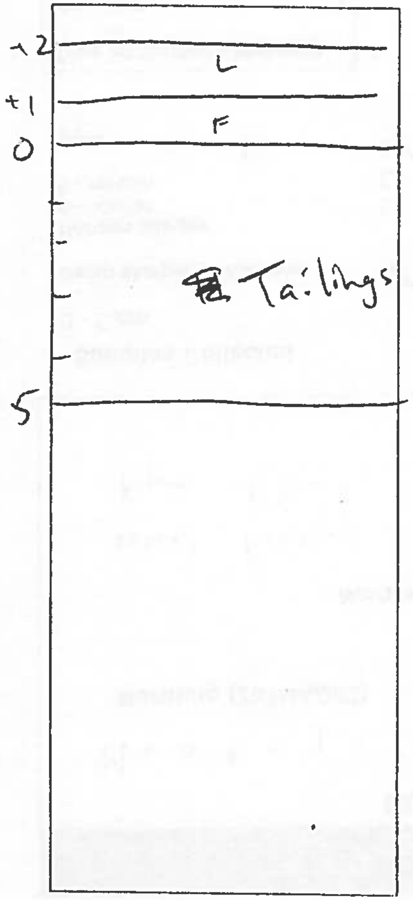
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org
3		Tailings			0		W	10 YR 3/2		10	sand
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
14:08 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-42

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Rekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other H ☑

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination

None ☒
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☑
- Garbage ☐
- Other Concrete ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 15 m N of road.
- 10-20 m S of large shaft.
- Concrete structure remnants. (10m to E)
- Dense tree cover.

MM - 42

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

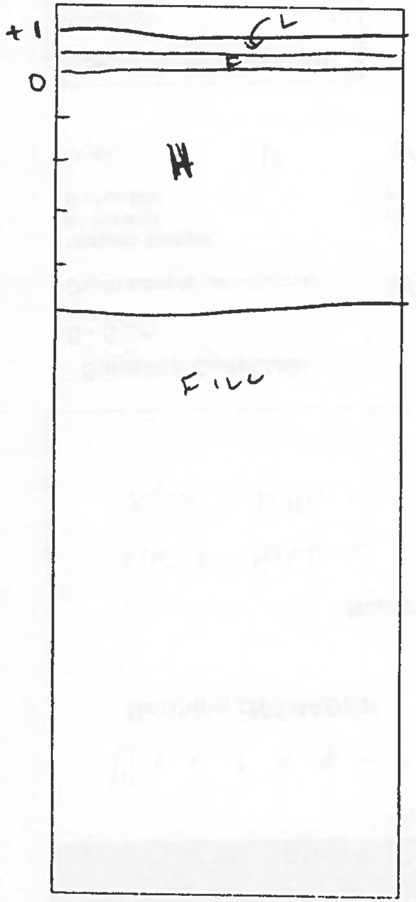
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam, Silt, Silty Sand, Silt Loam, Silty Clay Loam, Loam, Sandy Loam, Loamy Sand, Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	S			0	org.
3		H			0	-5	I	10YR 2/1		0	silty sand
4		Fill (waste rock)								80	gravel
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
13:35 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-43

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Hibbins
Ryan Fillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
13°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Large trees
- 5m S of road.
- Stamp mill 10m W.
- Waste rock in area.

M M - 43

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

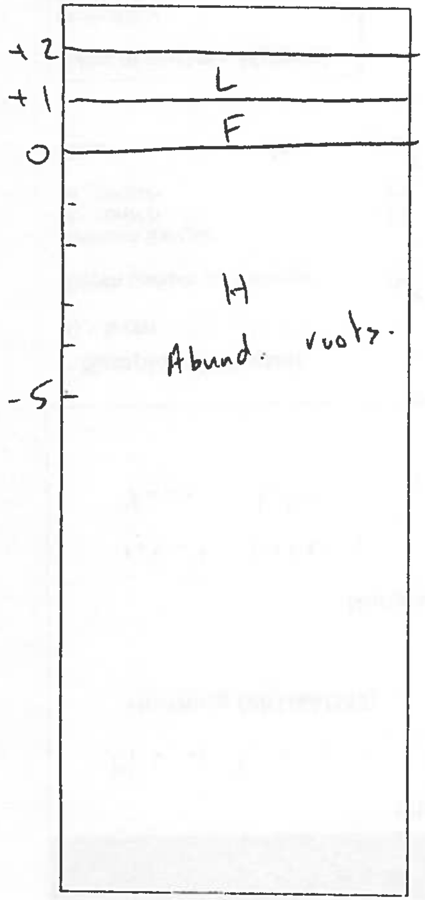
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silty sand
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montaguel Mines.

Date 15 May 08

Time 13:52 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-44

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Bakkers
Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site
No | Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m S of road.
- 15m N of trench
- tree fall in area.
- scattered waste rock.

MM-44

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

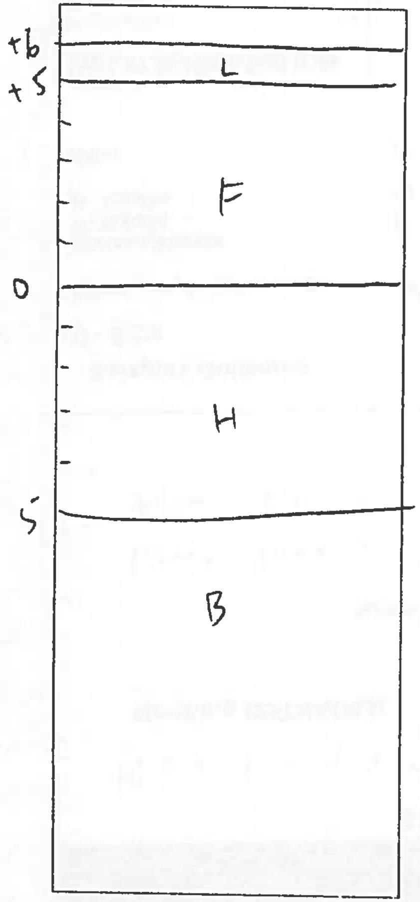
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+6	+5	W			0	org
2		F			+5	0	W			0	org
3		H			0	-5	W	10YR 3/2		0	silty sand.
4		B			-5						
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
20 May 08

Time
14 : 15
 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM - 47

Sample Type - Horizon
No Yes [✓]

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☑
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
14 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Abundant tree-fall
- 10m from edge of marsh (open area).
- Very wet soil.

MM - 47

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

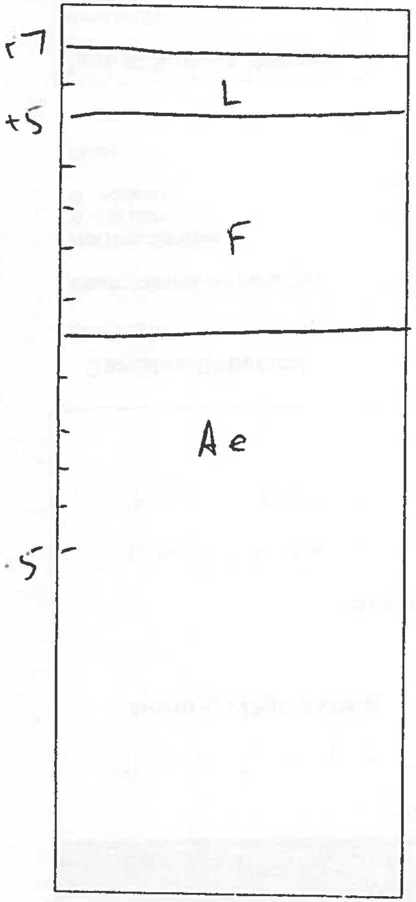
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☐
Looking West ☑
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+7	+5	W			0	org.
2		F			+5	0	W			0	org.
3		Ae			0		W	2.5Y 6/2		0	silty clay.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
15 : 30 | :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-48

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Bakkers
Kyran Pellisan

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☑
- Very poorly drained ☐

Contamination

- None ☑
- Possible ☐
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Wet (swampy) area.
- Abundant waste rock (boulders).
- 15 m N from brook.
- Dense tree cover.
- Very moist.

M M - 4 8

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

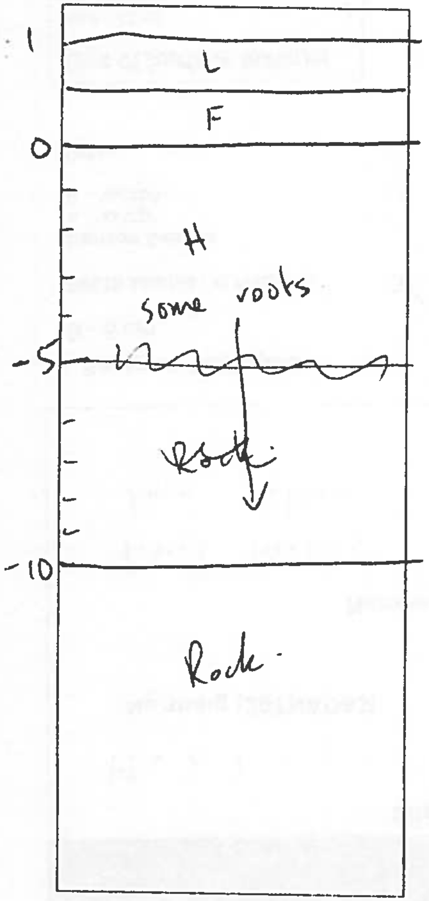
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-10	B	2.5Y 3/1		0	silt / org.
4		Rock.			-10					100	boulders
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Date
15 May 08

Time
16:45 :

Site ID
MM-50

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☑
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☑
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
13°C

Comments:
(E g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sampled on edge of forest / wet area.
- Abundant moss / grass cover.
- Tailings under moss.
- 10m W of road.
- Stream 10m N.

MM-50

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

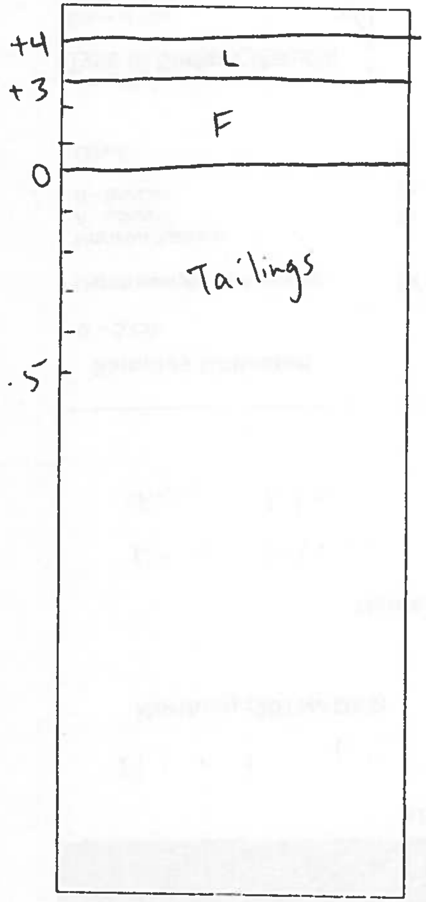
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		Tailings			0		I	7.5YR 4/3		0	silty sand.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 20 May 08
Time 15:40 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-51

Sample Type - Horizon
No ✓ Yes

Names of Samplers
Robert Rikkers
Ryan Fellman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Tailings area.
- On road.
- Wet area (brook) to South (20m)
- Forest 15m E and 40m S.

MM - 51

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

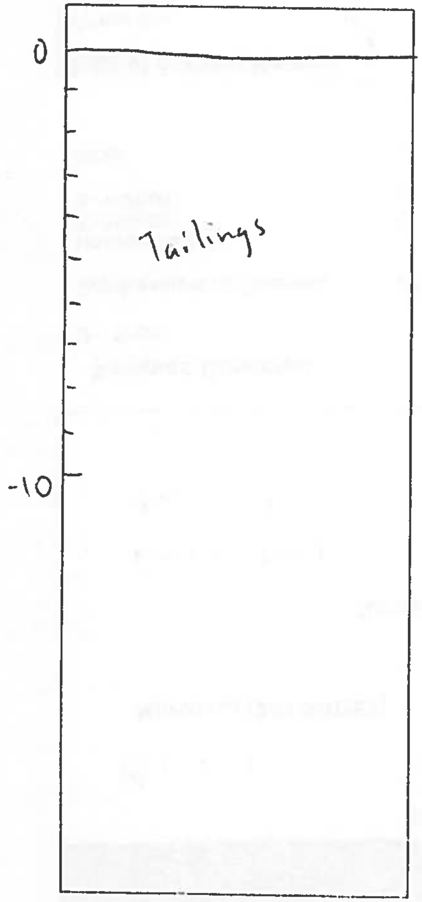
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		–	2.5Y 3/1		5	Sand.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
20 May 08

Time
15 : 30 | __ : __

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-52

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Rikkers
Ryan Pelleran

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☑
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☑

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
14 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- In tailings area (clearing)
- 3m N of forested area.
- 2m S of road.
- Boulders in area.

MM-52

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

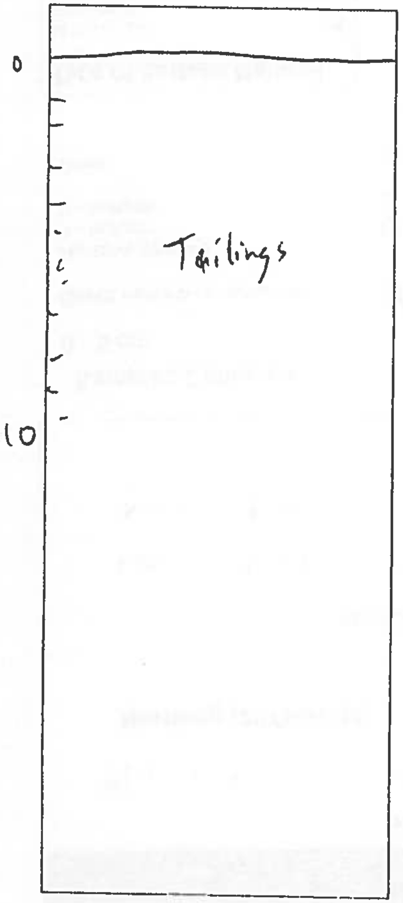
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF %	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low					
1		Tailings			0		-	10YR 3/2		15	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 15 May 08

Time 14 : 30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-41

Sample Type - Horizon No Yes ✓

Names of Samplers

Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected.

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other. ☑

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 12°C

Comments:

(E.g. Presence of waste rock, berms, pits, trenches or other mining activity)

- 20 m N of shaft
- tailings and waste rock in area
- 5 m E of path.

MM - 41

Codes for Horizon Description

Horizons
~~**D**: Lithological-discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

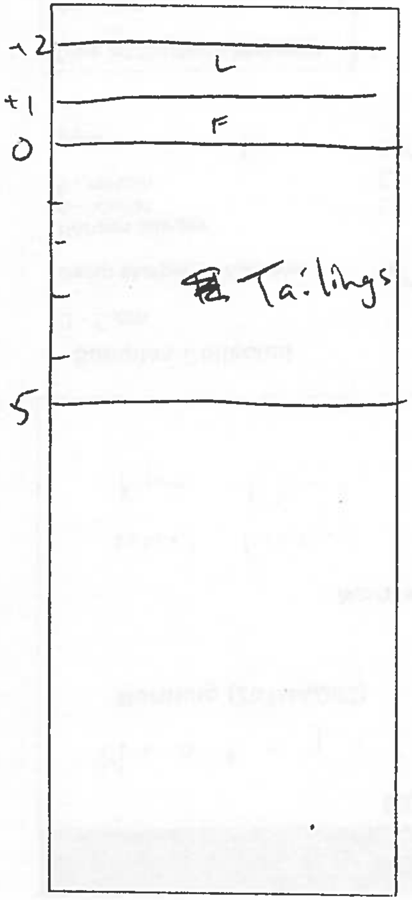
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Horizons Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org
2		F			+1	0	W			0	org
3		Tailings			0		W	10 YR 3/2		10	sand
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 15 May 08

Time 14:08 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-42

Sample Type - Horizon No Yes ✓

Names of Samplers

Robert Rikkers

Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample

A - horizon ☐

B - horizon ☐

Other: H ☑

Type of Surface Material

Mineral Soil ☐

Organic Soil ☐

Non-Soil ☑

Urban ☐

Local Surface Expression

Mineral Surface Form

Blanket ☐

Dissected ☐

Fan ☐

Hummocky ☐

Inclined ☐

Pitted ☐

Level ☐

Rolling ☑

Ridged ☐

Steep ☐

Terrace ☐

Undulating ☑

Veneer ☐

Vegetation Cover

Agricultural Crops ☐

Coniferous Forest ☑

Deciduous Forest ☑

Mixed Forest ☐

Meadow, Wet ☐

Field ☐

Parkland ☐

Shrubland ☐

Unvegetated Surface ☐

Drainage

Very rapidly drained ☐

Rapidly drained ☐

Well drained ☑

Moderately well drained ☐

Imperfectly drained ☐

Poorly drained ☐

Very poorly drained ☐

Contamination

- None ☒
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☐
  - Road ☑
  - Garbage ☐
  - Other concrete

Weather

Sunny/Clear ☐

Partly cloudy ☐

Overcast ☑

Rain ☐

Sleet ☐

Snow ☐

Air Temp. 12°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 15 m N of road.
- 10-20 m S of large shaft.
- Concrete structure remnants. (10m to E)
- Dense tree cover.

MM - 42

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

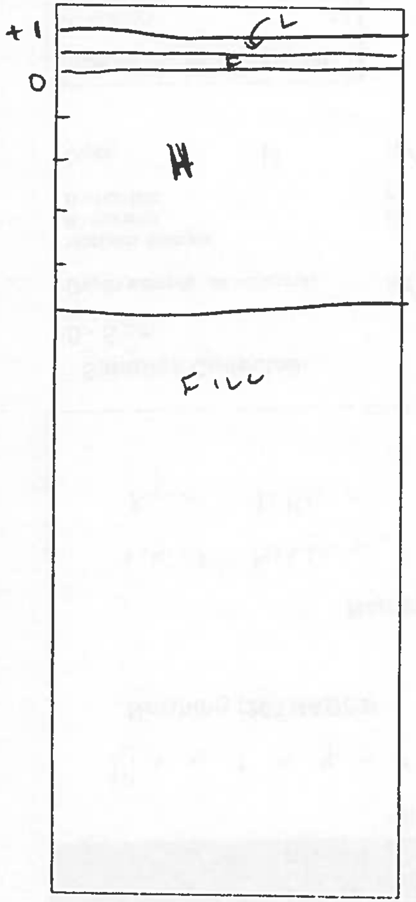
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	S			0	org.
3		H			0	-5	I	10YR 2/1		0	silty sand
4		Fill (waste rock)								80	gravel
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Bikkins
Ryan Fillson

Date 15 May 08

Time 13:35 :

Site ID MM-43

Sample Type - Horizon No [✓ Yes]

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons)	☑
Horizon Sample	
A - horizon	☐
B - horizon	☐
Other: H	☑

Type of Surface Material

Mineral Soil	☐
Organic Soil	☐
Non-Soil	☑
Urban	☐

Local Surface Expression

Mineral Surface Form

Blanket	☐
Dissected	☐
Fan	☐
Hummocky	☐
Inclined	☐
Pitted	☐
Level	☐
Rolling	☑
Ridged	☐
Steep	☐
Terrace	☐
Undulating	☑
Veneer	☐

Vegetation Cover

Agricultural Crops	☐
Coniferous Forest	☑
Deciduous Forest	☑
Mixed Forest	☐
Meadow, Wet	☐
Field	☐
Parkland	☐
Shrubland	☐
Unvegetated Surface	☐

Drainage

Very rapidly drained	☐
Rapidly drained	☐
Well drained	☑
Moderately well drained	☐
Imperfectly drained	☐
Poorly drained	☐
Very poorly drained	☐

Contamination

None	☑
Possible	☐
Probable	☐
Definite	☐
Farming	☐
Housing	☐
Industry	☐
Logging	☐
Mining	☐
Road	☐
Garbage	☐
Other	☐

Weather

Sunny/Clear	☐
Partly cloudy	☐
Overcast	☑
Rain	☐
Sleet	☐
Snow	☐

Air Temp. 13°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Large trees
- 5m S of road.
- Stamp mill 10m W.
- Waste rock in area.

MM - 43

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

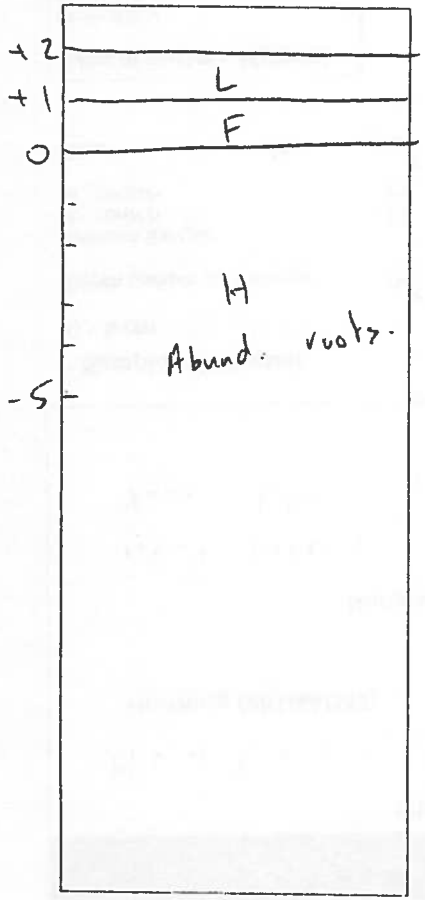
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silty sand
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 15 May 08
Time 13:52 :

Northing (20TNAD83)
Easting (20TNAD83)

Site ID MM-44

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bekkers
Ryan Pellman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes →

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
Farming ☐
Housing ☐
Industry ☐
Logging ☐
Mining ☐
Road ☐
Garbage ☐
Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m S of road.
- 15m N of trench
- tree fall in area.
- scattered waste rock

MM-44

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Codes for Horizon Description

Colour
Munsell colour or descriptive colour using table 1

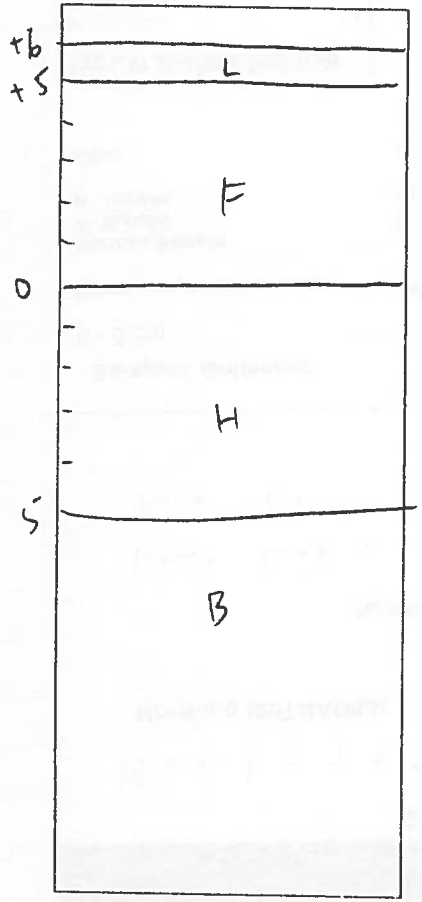
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+6	+5	W			0	org
2		F			+5	0	W			0	org
3		H			0	-5	W	10YR 3/2		0	silty sand.
4		B			-5						
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rikkers
Ryan Pellman

Date 20 May 08

Time 14:15 :

Site ID MM-47

Sample Type - Horizon No Yes ✓

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 14 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Abundant tree-fall
- 10m from edge of marsh (open area).
- Very wet soil.

MM - 47

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

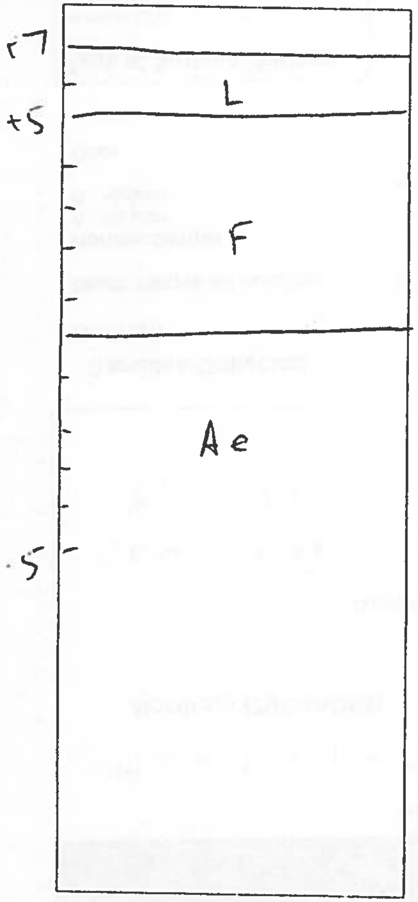
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☐
Looking West ☑
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+7	+5	W			0	org
2		F			+5	0	W			0	org.
3		Ae			0		W	2.5Y 6/2		0	silty clay.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 15 May 08

Time 15 : 30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM - 48

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Bakkers
Kyra Pellison

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material

Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover

Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage

Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination

None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather

Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Wet (swampy) area.
- Abundant waste rock (boulders).
- 15 m N ~~E~~ from brook.
- Dense tree cover.
- Very moist.

M.M - 48

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

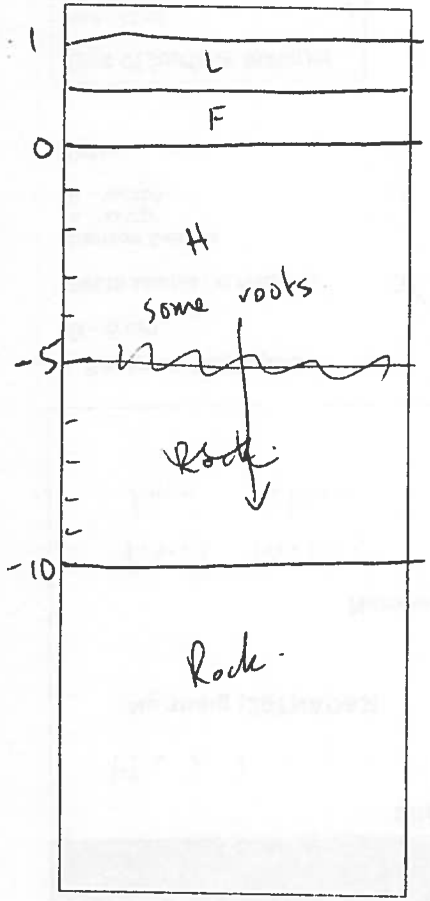
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-10	B	2.5Y 3/1		0	silt/org.
4		Rock.			-10					100	boulders
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Bekkers
Ryan Pelletan

Date 15 May 08

Time 16:45 :

Site ID MM-50

Sample Type - Horizon No Yes ✓

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other. ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☑
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☑
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 13°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sampled on edge of forest / wet area.
- Abundant moss / grass cover.
- Tailings under moss.
- 10m W of road.
- Stream 10m N.

MM - 50

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

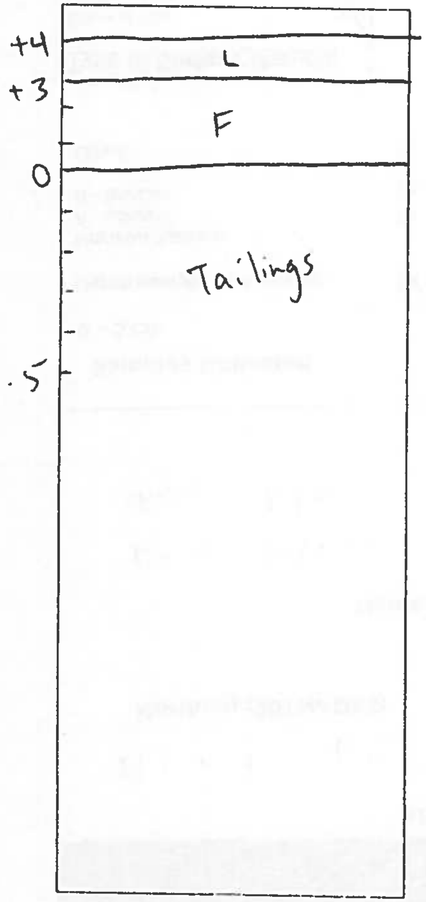
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	~~I~~ W			0	org.
3		Tailings			0		I	7.5YR 4/3		0	silty sand.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Ricketts
Ryan Fellows

Date 20 May 08

Time 15:40 :

Site ID MM-51

Sample Type - Horizon
[✓ No] Yes

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☑
- Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Tailings area.
- On road.
- Wet area (brook) to South (20m)
- Forest 15m E and 40m S.

MM - 51

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

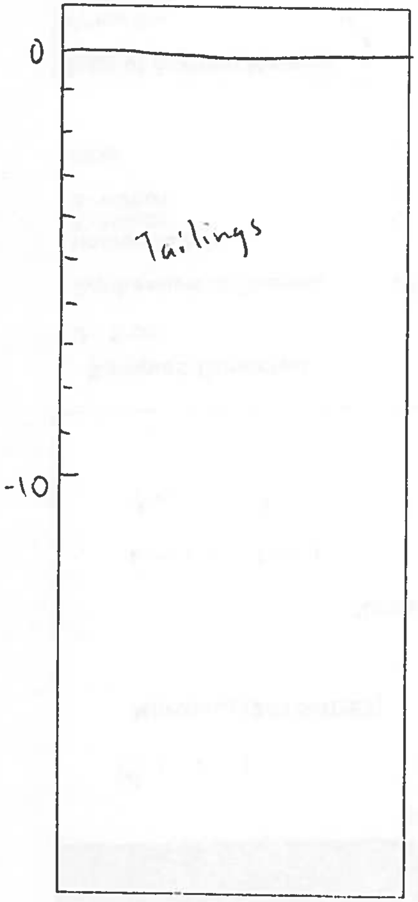
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		-	2.5Y 3/1		5	sand.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rikkers
Ryan Pellerin

Date 20 May 08

Time 15 : 30 :

Site ID MM-52

Sample Type - Horizon
No [✓ Yes]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☑
- Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- In tailings area (clearing)
- 3m N of forested area.
- 2m S of road.
- Boulders in area.

MM - S2

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

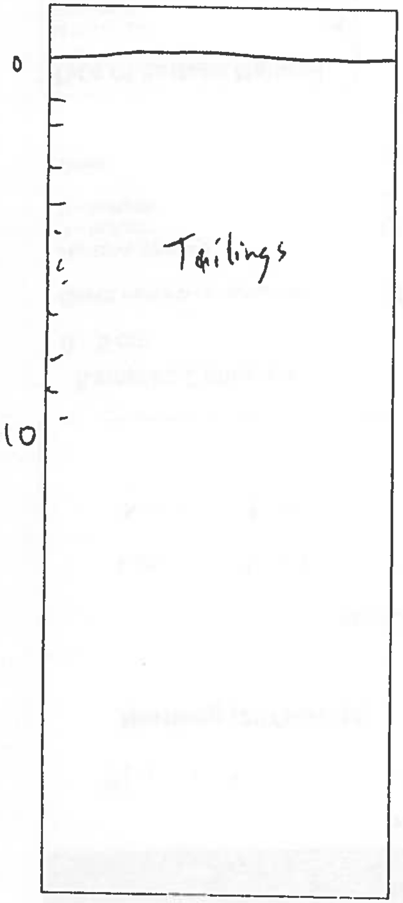
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		–	10 YR 3/2		15	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

MM - 42

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

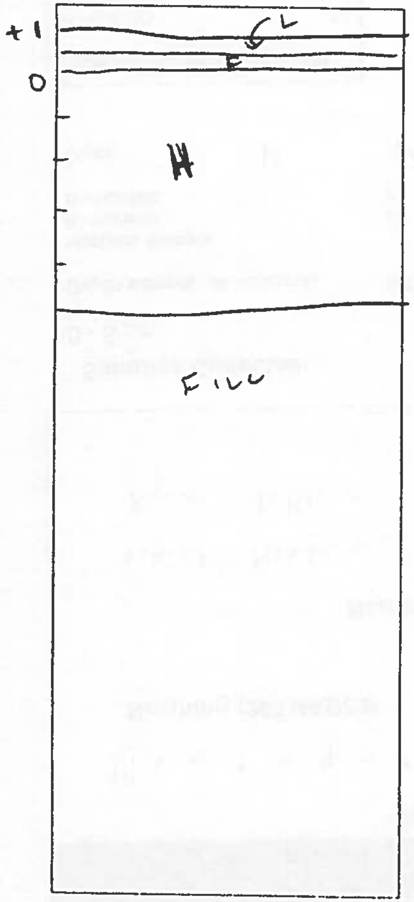
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	S			0	org.
3		H			0	-5	I	10YR 2/1		0	silty sand
4		Fill (waste rock)								80	gravel
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
13:35 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-43

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bibbins
Ryan Fillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
Farming ☐
Housing ☐
Industry ☐
Logging ☐
Mining ☐
Road ☐
Garbage ☐
Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
13°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Large trees
- 5m S of road.
- Stamp mill 10m W.
- Waste rock in area.

M M - 43

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

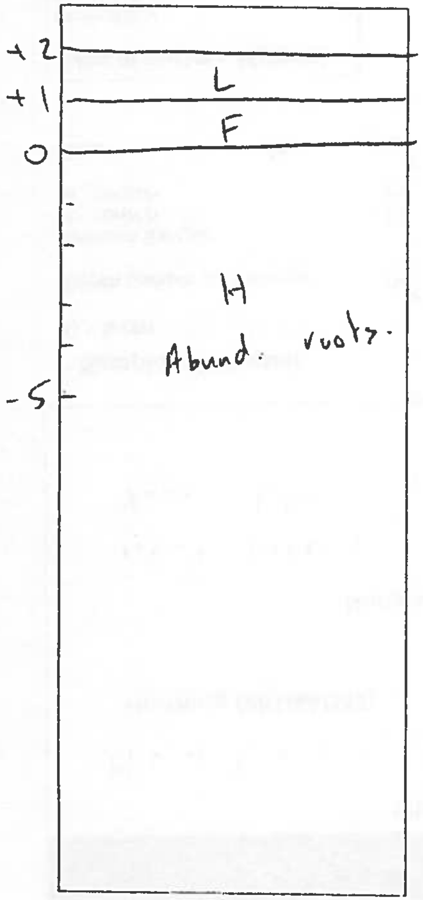
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Horizons Ma	Horizons Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silty sand
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Bekkers
Ryan Pellerin

Date 15 May 08

Time 13:52 ___:___

Site ID MM-44

Sample Type - Horizon No Yes ✓

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m S of road.
- 15m N of trench
- tree fall in area.
- scattered waste rock.

MM-44

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

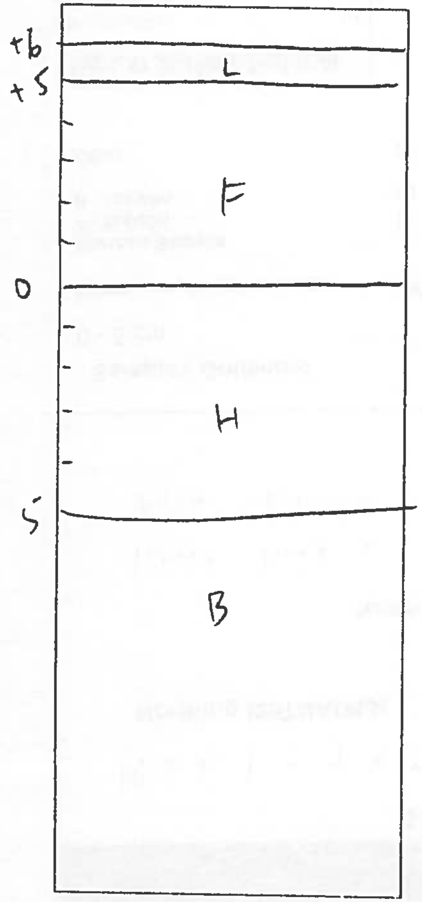
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+6	+5	W			0	org
2		F			+5	0	W			0	org
3		H			0	-5	W	10YR 3/2		0	silty sand.
4		B			-5						
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Bekkers
Ryan Pellerin

Date 20 May 08

Time 14:15 __ : __

Site ID MM-47

Sample Type - Horizon No Yes ✓

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other: ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☑
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 14 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Abundant tree-fall
- 10m from edge of marsh (open area).
- Very wet soil.

MM - 47

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

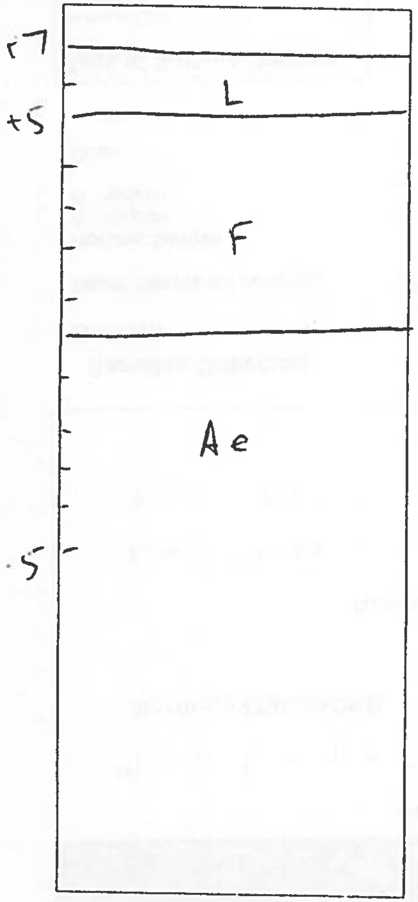
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☐
Looking West ☑
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+7	+5	W			0	org
2		F			+5	0	W			0	org.
3		Ae			0		W	2.5Y 6/2		0	silty clay.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Bakkers
Ryan Pellison

Date 15 May 08

Time 15 : 30 :

Site ID MM - 48

Sample Type - Horizon No [✓ Yes]

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Wet (swampy) area.
- Abundant waste rock (boulders).
- 15 m N ~~E~~ from brook.
- Dense tree cover.
- Very moist.

M.M - 4 8

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

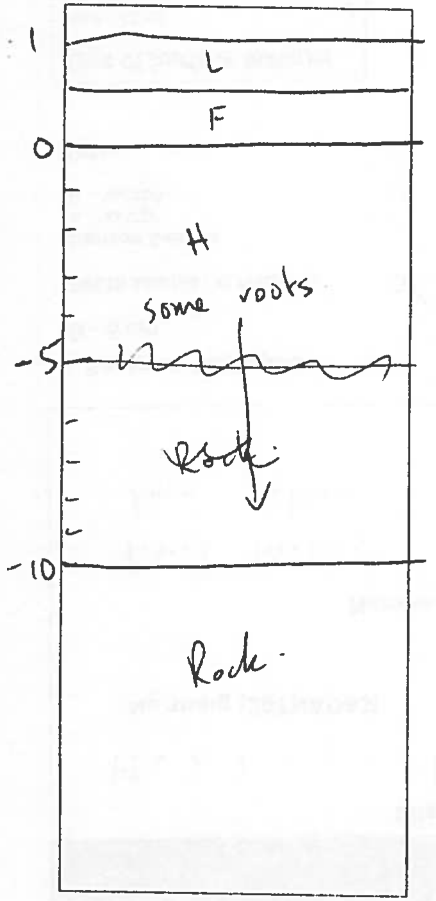
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-10	B	2.5Y 3/1		0	silt/org.
4		Rock.			-10					100	boulders
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 15 May 08

Time 16 : 45 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-50

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☑
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☑
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 13°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sampled on edge of forest / wet area.
- Abundant moss / grass cover.
- Tailings under moss.
- 10m W of road.
- Stream 10m N.

MM-50

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

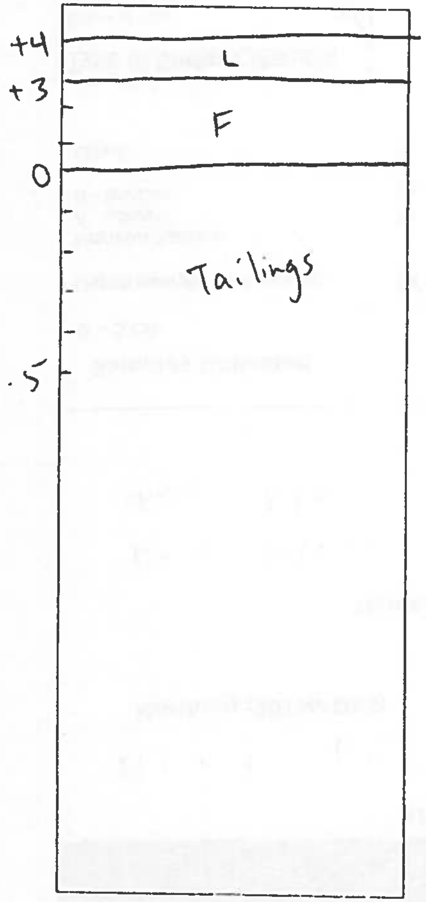
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		Tailings			0		I	7.5YR 4/3		0	silty sand.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site

Montagu el Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers

Robert Rikkers

Ryan Fellows

Date 20 May 08

Time 15:40 :

Site ID MM-51

Sample Type - Horizon

No ✓ Yes

RepStat

Sampling Depth

0 - 5 cm

Resampled Site

No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample

A - horizon ☐

B - horizon ☐

Other ☐

Type of Surface Material

Mineral Soil ☑

Organic Soil ☐

Non-Soil ☐

Urban ☐

Local Surface Expression

Mineral Surface Form

Blanket ☐

Dissected ☐

Fan ☐

Hummocky ☐

Inclined ☐

Pitted ☐

Level ☑

Rolling ☐

Ridged ☐

Steep ☐

Terrace ☐

Undulating ☐

Veneer ☐

Vegetation Cover

Agricultural Crops ☐

Coniferous Forest ☐

Deciduous Forest ☐

Mixed Forest ☐

Meadow, Wet ☐

Field ☐

Parkland ☐

Shrubland ☐

Unvegetated Surface ☑

Drainage

Very rapidly drained ☐

Rapidly drained ☐

Well drained ☐

Moderately well drained ☐

Imperfectly drained ☐

Poorly drained ☑

Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather

Sunny/Clear ☑

Partly cloudy ☐

Overcast ☐

Rain ☐

Sleet ☐

Snow ☐

Air Temp.

12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Tailings area.
- On road.
- Wet area (brook) to South (20m)
- Forest 15m E and 40m S.

MM - 51

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

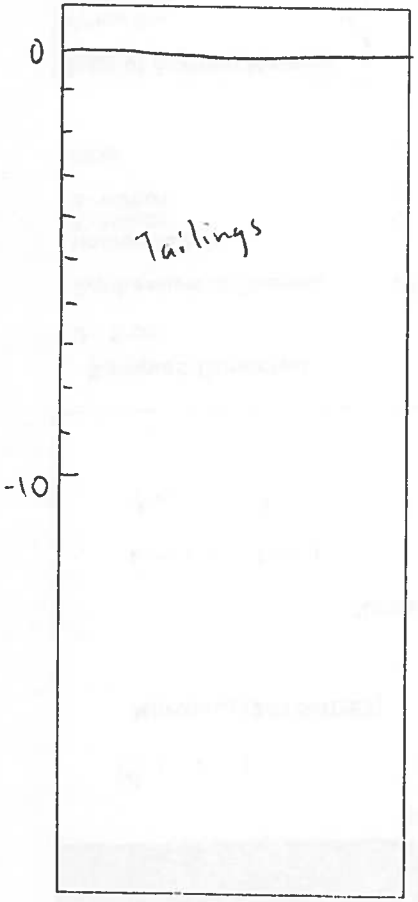
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		–	2.5Y 3/1		5	Sand.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 20 May 08

Time 15 : 30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-52

Sample Type - Horizon
No ✓ Yes

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- In tailings area (clearing)
- 3m N of forested area.
- 2m S of road.
- Boulders in area.

MM - 52

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

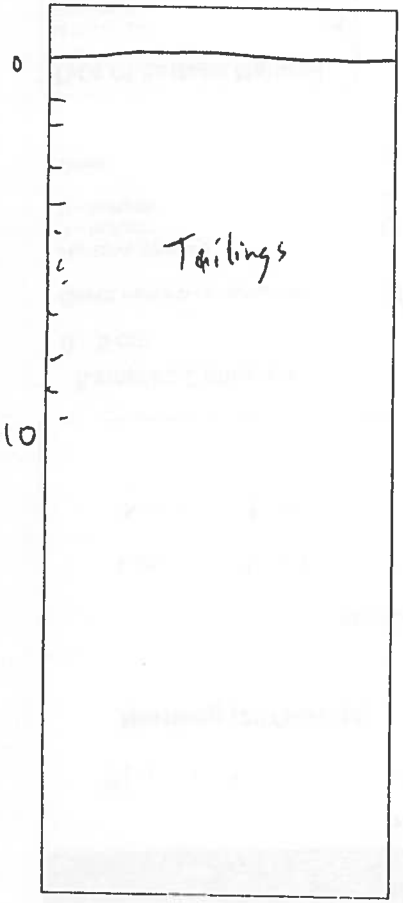
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour		CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low			~~RM~~	%	
1		Tailings			0		–	10 YR 3/2		15	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

MM- 43

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

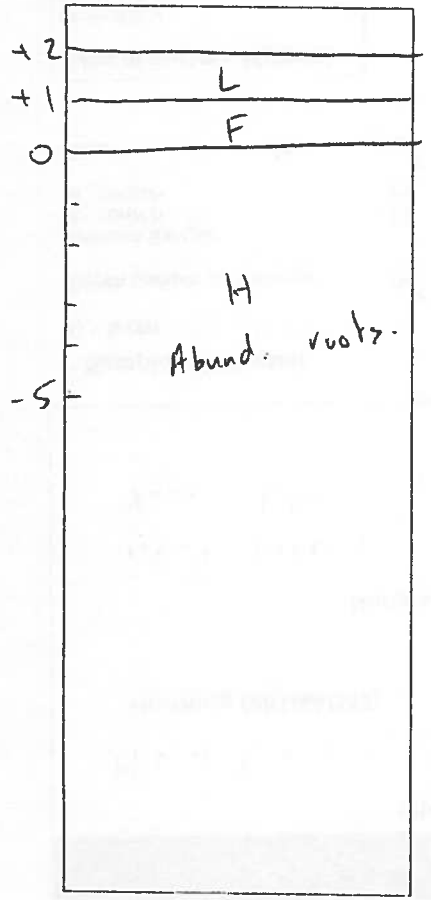
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	W			0	org.
2		F			+1	0	W			0	org.
3		H			0			10YR 3/2		0	silty sand
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 15 May 08
Time 13 : 52 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM - 44

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bekkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes →

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 5m S of road.
- 15m N of trench
- tree fall in area.
- scattered waste rock.

MM-44

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

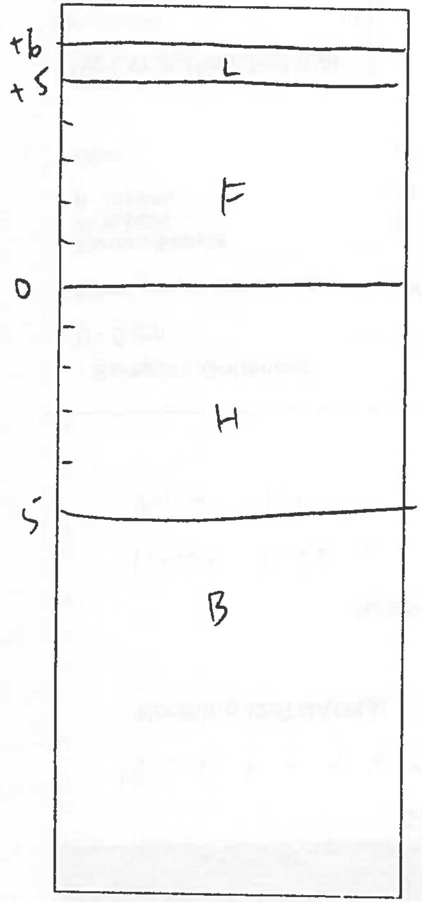
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+6	+5	W			0	org
2		F			+5	0	W			0	org
3		H			0	-5	W	10YR 3/2		0	silty sand.
4		B			-5						
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
20 May 08

Time
14:15 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-47

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bikkers
Ryan Fillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression
Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☑
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
14 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Abundant tree-fall
- 10m from edge of marsh (open area).
- Very wet soil.

MM - 47

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

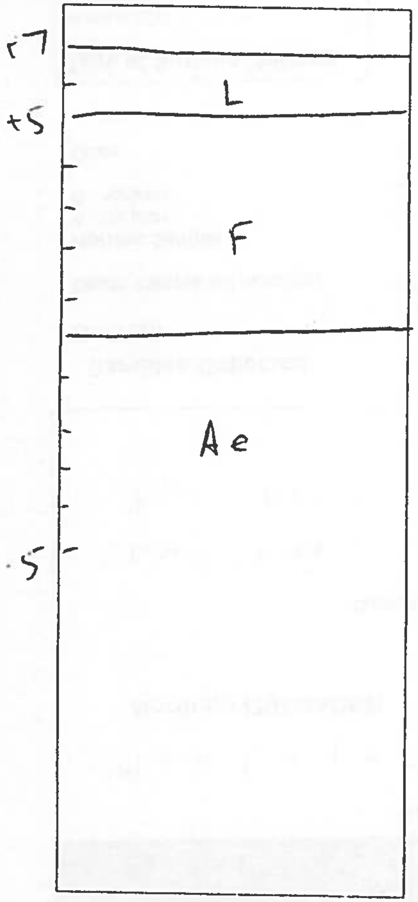
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☐
Looking West ☑
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	 Ma	 Suffix	 ~~M~~	Depth Up	 Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+7	+5	W			0	org
2		F			+5	0	W			0	org.
3		Ae			0		W	2.5Y 6/2		0	silty clay.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
15 May 08

Time
15:30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-48

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Bakkers
Kyan Pelison

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
  Farming ☐
  Housing ☐
  Industry ☐
  Logging ☐
  Mining ☐
  Road ☐
  Garbage ☐
  Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Wet (swampy) area.
- Abundant waste rock (boulders).
- 15 m N ~~E~~ from brook.
- Dense tree cover.
- Very moist.

M.M - 48

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

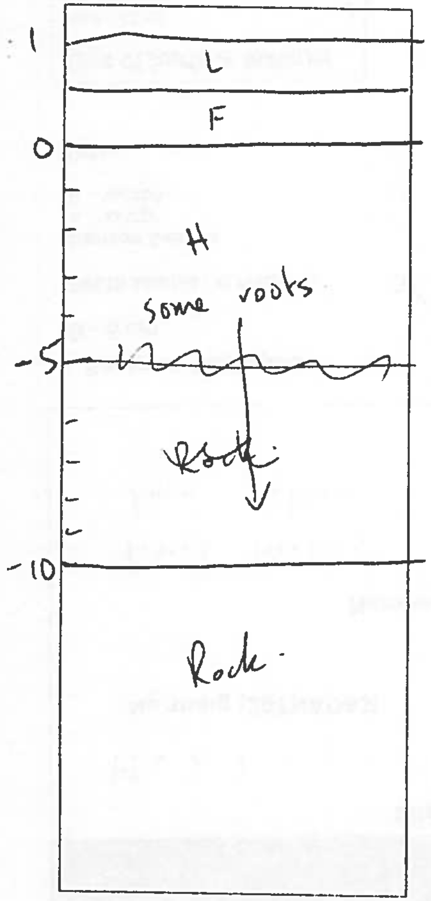
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-10	B	2.5Y 3/1		0	silt/org.
4		Rock.			-10					100	boulders
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site: Montague Mines

Date: 15 May 08

Time: 16:45 :

Northing (20TNAD83):

Easting (20TNAD83):

Site ID: MM-50

Sample Type - Horizon: No [✓ Yes]

Names of Samplers:
Robert Bekkers
Ryan Pellerin

RepStat:

Sampling Depth: 0 - 5 cm

Resampled Site: No Yes ➡

Samples Collected
0 - 5 cm
- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other. ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☑
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☑
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.: 13°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sampled on edge of forest / wet area.
- Abundant moss / grass cover.
- Tailings under moss.
- 10m W of road.
- Stream 10m N.

MM-50

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

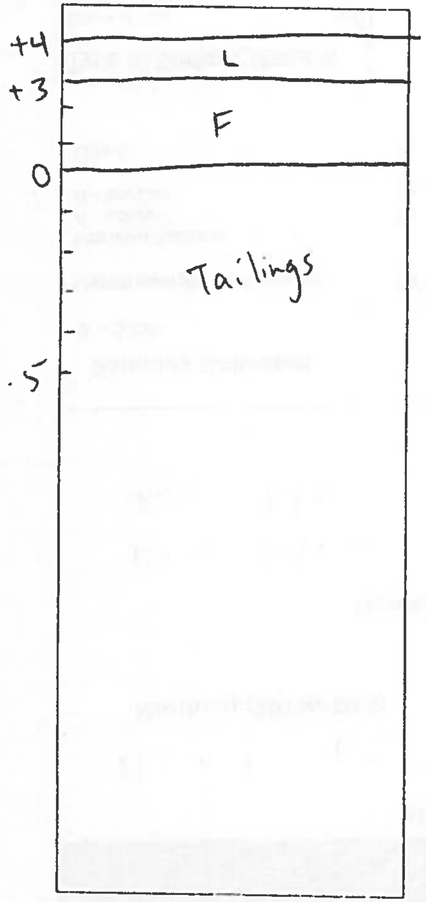
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Horizons Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		Tailings			0		I	7.5YR 4/3		0	silty sand.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rikkers
Ryan Fellows

Date
20 May 08

Time
15:40 :

Site ID
MM-51

Sample Type - Horizon
[✓ No] Yes

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
- **Depth sample** (all horizons) ☑
- **Horizon Sample**
  - A - horizon ☐
  - B - horizon ☐
- Other ☐

Type of Surface Material
- Mineral Soil ☑
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☑

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☑
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts. ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)
- Tailings area.
- On road.
- Wet area (brook) to south (20 m)
- Forest 15 m E and 40 m S.

MM - 51

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

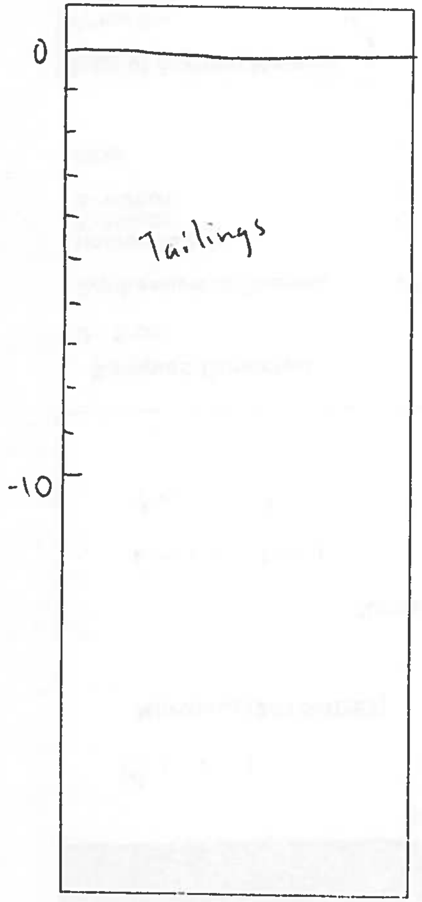
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		-	2.5Y 3/1		5	sand.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rikkers
Ryan Pellerin

Date
20 May 08

Time
15 : 30 :

Site ID
MM-52

Sample Type - Horizon
No ✓ Yes

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- In tailings area (clearing)
- 3m N of forested area.
- 2m S of road.
- Boulders in area.

MM - S2

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

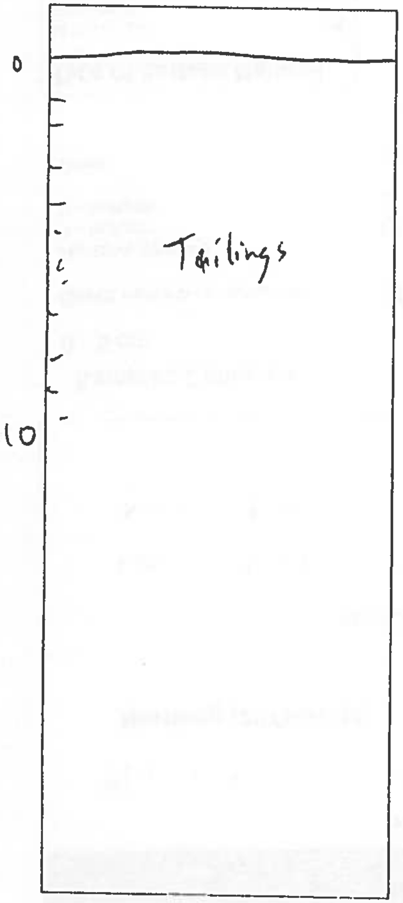
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		Tailings			0		/	10YR 3/2		15	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rikkers
Ryan Pellerin

Date
20 May 08

Time
14 : 15
 :

Site ID
MM - 47

Sample Type - Horizon
No Yes ✓

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
None ☐
Possible ☑
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Abundant tree-fall
- 10m from edge of marsh (open area).
- Very wet soil.

MM - 47

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

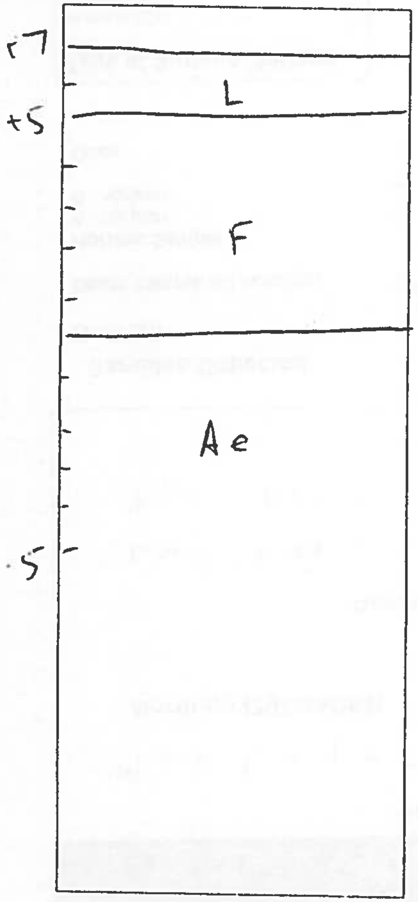
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☐
Looking West ☑
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+7	+5	W			0	org
2		F			+5	0	W			0	org.
3		Ae			0		W	2.5Y 6/2		0	silty clay.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Bakkers
Kyran Pellison

Date 15 May 08

Time 15 : 30 :

Site ID MM-48

Sample Type - Horizon No Yes ✓

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Wet (swampy) area.
- Abundant waste rock (boulders).
- 15 m N ~~E~~ from brook.
- Dense tree cover.
- Very moist.

M.M - 4 8

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

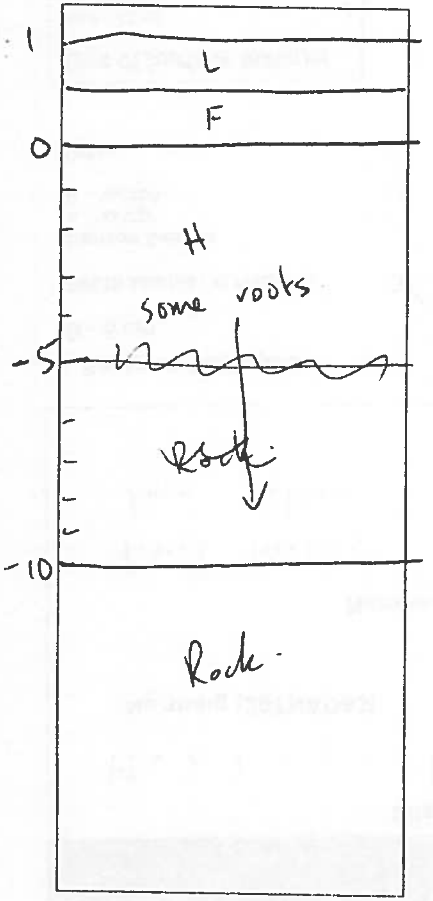
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-10	B	2.5Y 3/1		0	silt/org.
4		Rock.			-10					100	boulders
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Bekkers
Ryan Pellerin

Date 15 May 08

Time 16 : 45 :

Site ID MM-50

Sample Type - Horizon No Yes ✓

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☑
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☑
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 13°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sampled on edge of forest / wet area.
- Abundant moss / grass cover.
- Tailings under moss.
- 10m W of road.
- Stream 10m N.

MM-50

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

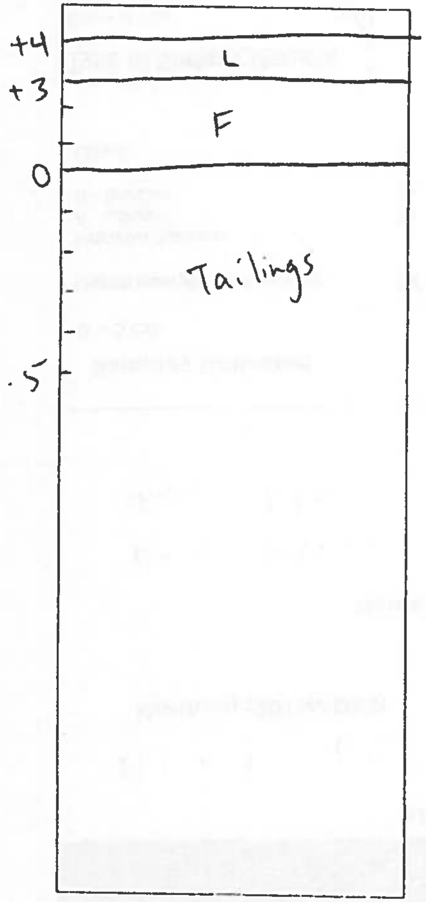
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	~~I~~W			0	org.
3		Tailings			0		I	7.5YR 4/3		0	silty sand.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
20 May 08

Time
15:40 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-51

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Rikkers
Ryan Fellman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☑
- Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
12 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Tailings area.
- On road.
- Wet area (brook) to South (20m)
- Forest 15m E and 40m S.

MM - 51

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

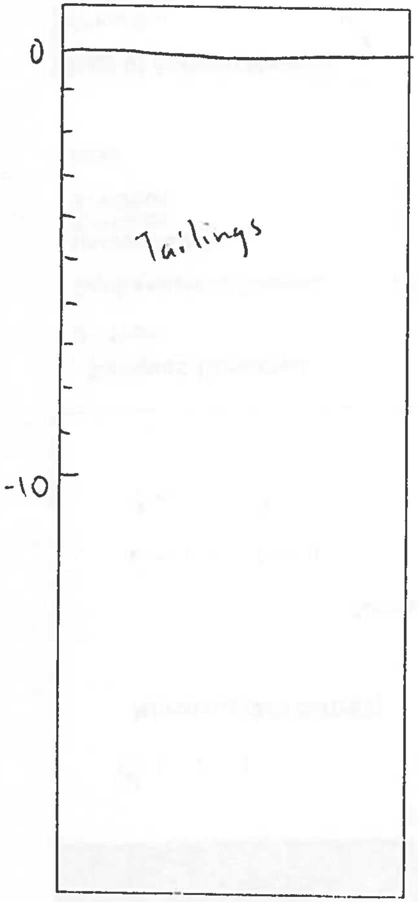
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		Tailings			0		–	2.5Y 3/1		5	Sand.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rikkers
Ryan Pellerin

Date
20 May 08

Time
15 : 30 :

Site ID
MM - 52

Sample Type - Horizon
No ✓ Yes

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
- Mineral Soil ☑
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☑

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
14 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- In tailings area (clearing)
- 3m N of forested area.
- 2m S of road.
- Boulders in area.

MM - 52

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

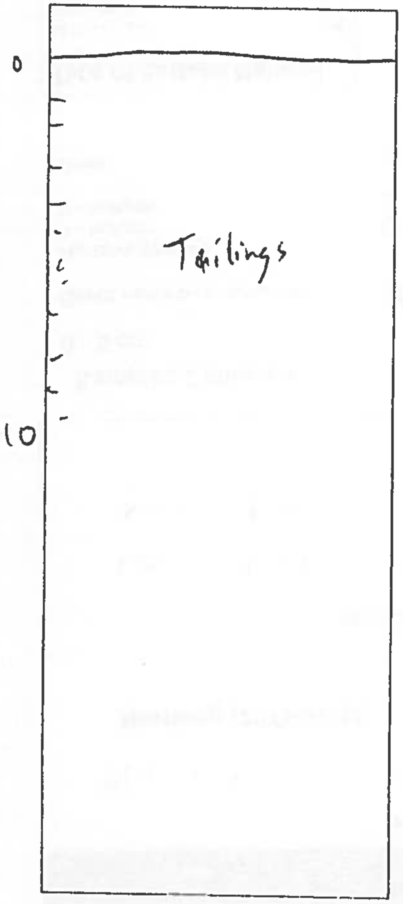
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		–	10YR 3/2		15	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montaguel Mines

Date 15 May 08

Time 15:30 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-48

Sample Type - Horizon No Yes [✓]

Names of Samplers
Robert Bakkers
Kyan Pelliman

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form ☐
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
None ☑
Possible ☐
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☐
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Wet (swampy) area.
- Abundant waste rock (boulders).
- 15 m N ~~[illegible]~~ from brook.
- Dense tree cover.
- Very moist.

M.M - 4 8

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

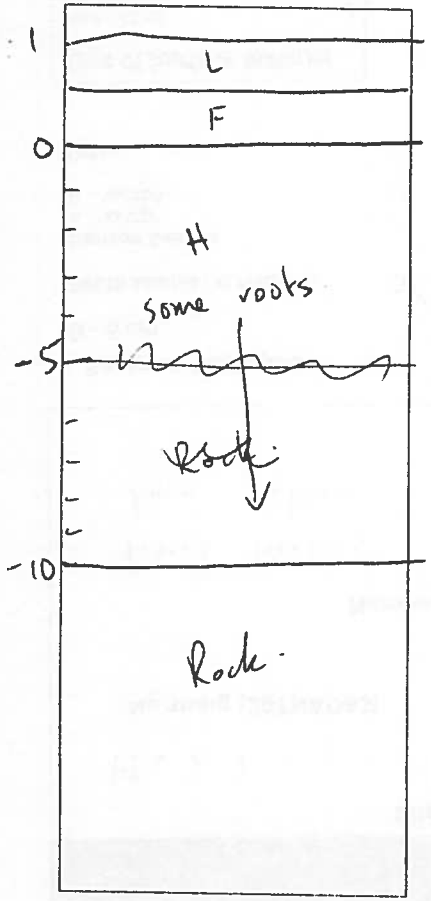
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+1	+0.5	W			0	org.
2		F			+0.5	0	W			0	org.
3		H			0	-10	B	2.5Y 3/1		0	silt/org.
4		Rock.			-10					100	boulders
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Bekkers
Ryan Pellerin

Date 15 May 08

Time 16 : 45 :

Site ID MM-50

Sample Type - Horizon No Yes ✓

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other. ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☑
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☑
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 13°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sampled on edge of forest / wet area.
- Abundant moss / grass cover.
- Tailings under moss.
- 10m W of road.
- Stream 10m N.

MM - 50

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

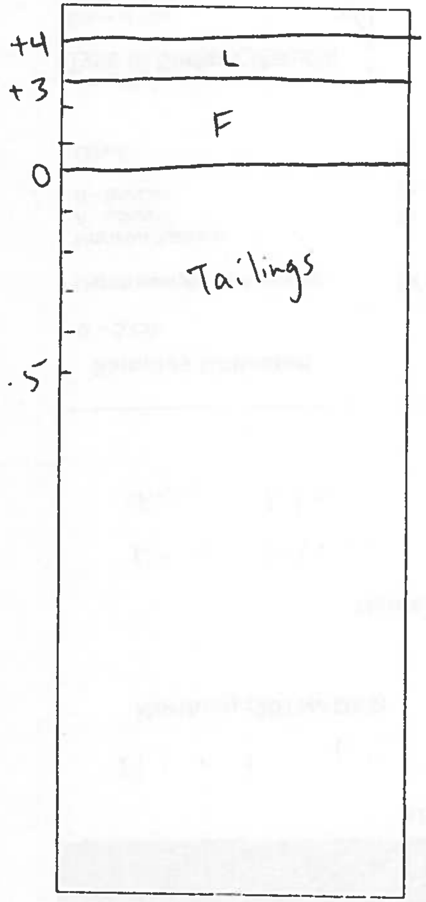
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	W			0	org.
3		Tailings			0		I	7.5YR 4/3		0	silty sand.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rikkers
Kyan Fellman

Date 20 May 08

Time 15:40 ___:___

Site ID MM-51

Sample Type - Horizon No ✓ Yes

RepStat

Sampling Depth 0 - 5 cm

Resampled Site
No | Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Tailings area.
- On road.
- Wet area (brook) to south (20m)
- Forest 15m E and 40m S.

MM - 51

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

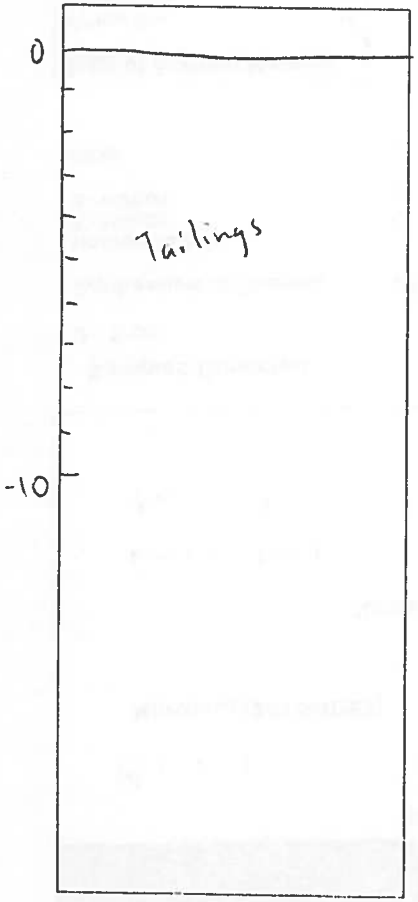
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		–	2.5Y 3/1		5	sand.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montaguel Mines

Date
20 May 08

Time
15 : 30 | :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM - 52

Sample Type - Horizon
No ✓ Yes

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No | Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- In tailings area (clearing)
- 3m N of forested area.
- 2m S of road.
- Boulders in area.

MM - 52

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

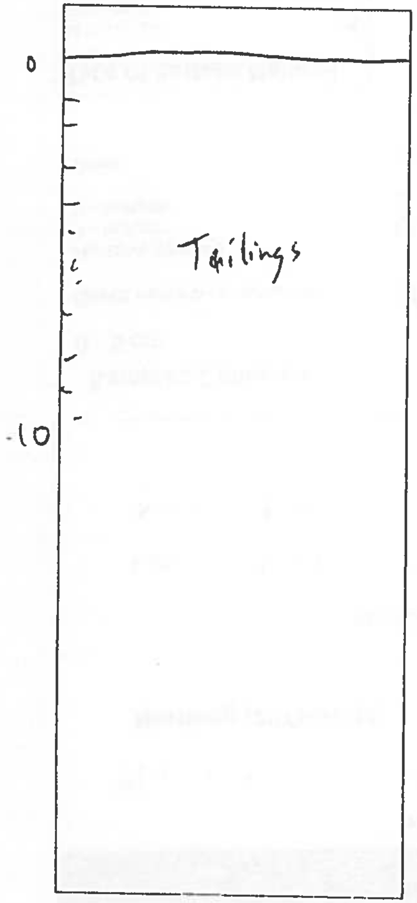
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		-	10 YR 3/2		15	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

MM - 50

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

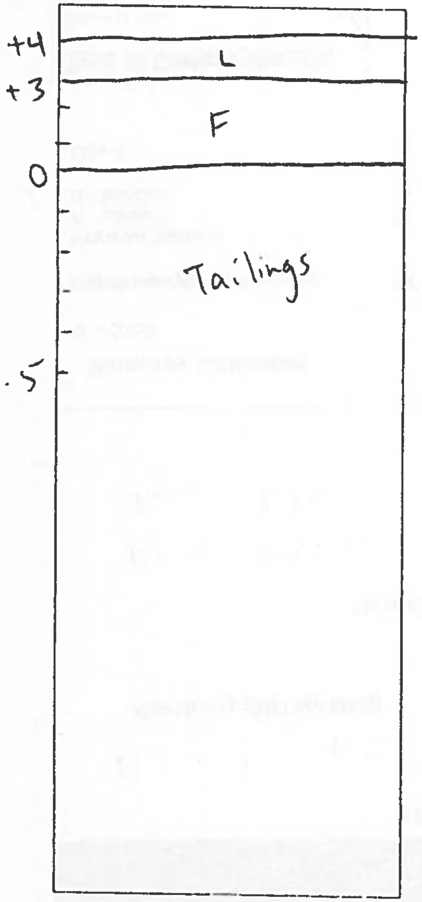
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+3	W			0	org.
2		F			+3	0	~~I~~W			0	org.
3		Tailings			0		I	7.5YR 4/3		0	silty sand.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 20 May 08

Time 15:40 ___:___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-51

Sample Type - Horizon [✓ No] Yes

Names of Samplers
Robert Rikkers
Ryan Fillman

RepStat

Sampling Depth 0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☑
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 12°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Tailings area.
- On road.
- Wet area (brook) to south (20m)
- Forest 15m E and 40m S.

MM - 51

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

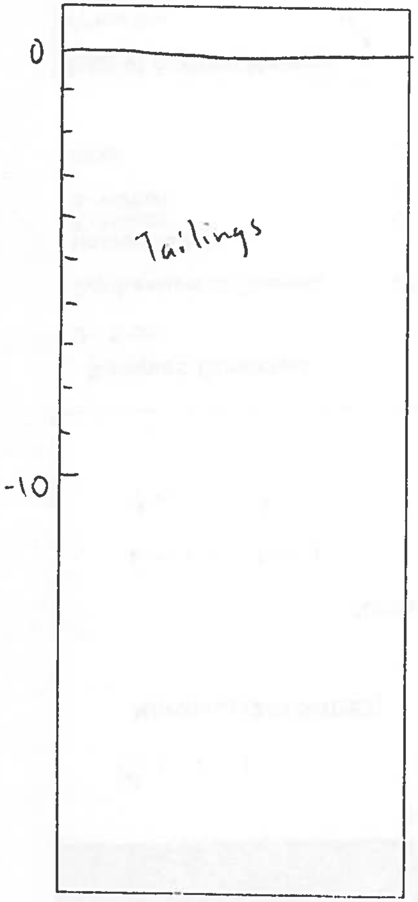
Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

Horizons					Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		–	2.5Y 3/1		5	Sand.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
20 May 08

Time
15 : 30 ___ : ___

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-52

Sample Type - Horizon
No ✓ Yes

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
- Mineral Soil ☑
- Organic Soil ☐
- Non-Soil ☐
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☐
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☐
- Deciduous Forest ☐
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☑

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other Car parts.

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- In tailings area (clearing)
- 3m N of forested area.
- 2m S of road.
- Boulders in area.

MM - S2

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

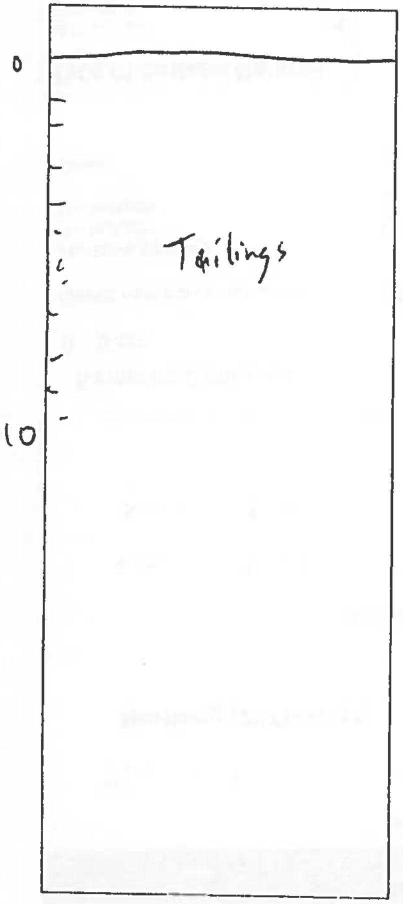
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Horizons Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		Tailings			0		—	10YR 3/2		15	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 20 May 08
Time 15:15 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-53

Sample Type - Horizon
No ✓ Yes

Names of Samplers
Robert Bekkers
Ryan Tillman

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No | Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
Mineral Soil ☑
Organic Soil ☐
Non-Soil ☐
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☐
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☐
Deciduous Forest ☐
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☑

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☐
Imperfectly drained ☑
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other Car parts ☐

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sampled in ATV race track.
- 30 m W of abandoned car.
- 40 m N of marsh.
- No vegetation in area.
- 20 m S of M.W.

MM-53

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

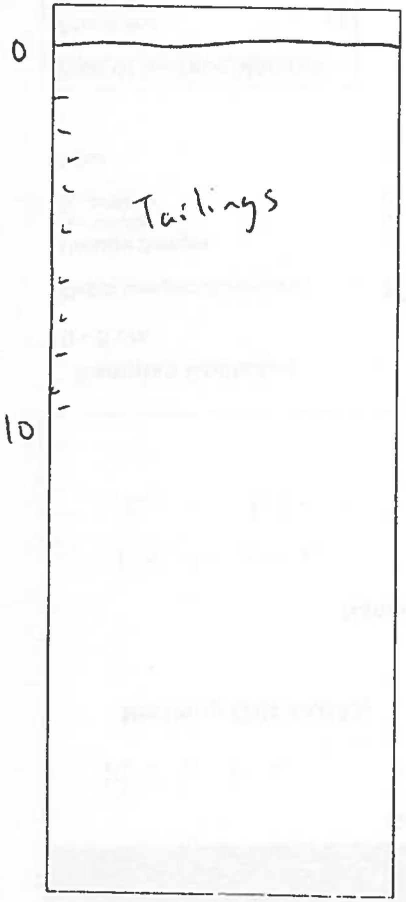
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF %	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low					
1		Tailings			0		—	10 YR 3/2		5	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 20 May 08

Time 15:05 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID MM-54

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☑
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 14 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sample on forested "island" between two open spaces.
- Tailings abundant
- Grass covered.
- Open.

MM-54

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

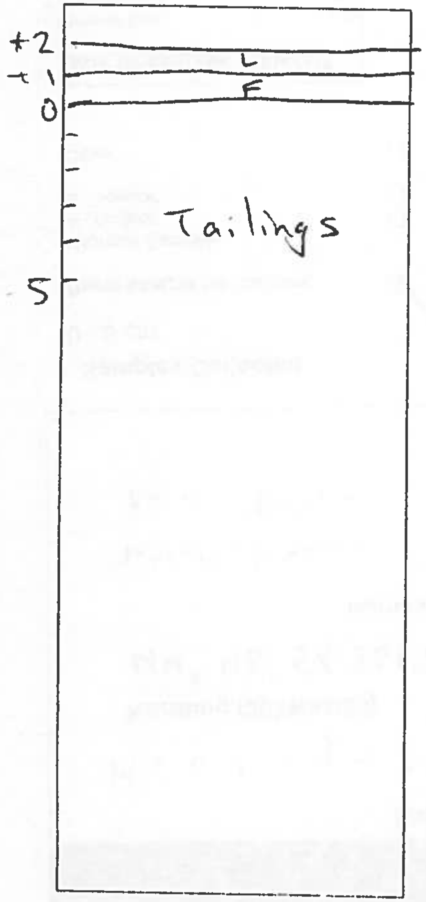
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+2	+1	S			0	org.
2		F			+1	0	S			0	o'g.
3		Tailings			0		S	10YR 3/1		0	silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
11 Jun 08

Time
09 : 50 ___ : ___

Northing (20TNAD83)
44° 42' 58.861"N

Easting (20TNAD83)
63° 31' 00.634"W

Site ID
MM-60

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat
Duplicate "MM-58"

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➔

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- At toe of upslope
- Large tree fall 2m to E.
- Open area.
- Leafy vegetation
- Boulders in area.
- Waste rock 20m to W.
- Abandoned vehicles 15m to E.

MM-6 ❶

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

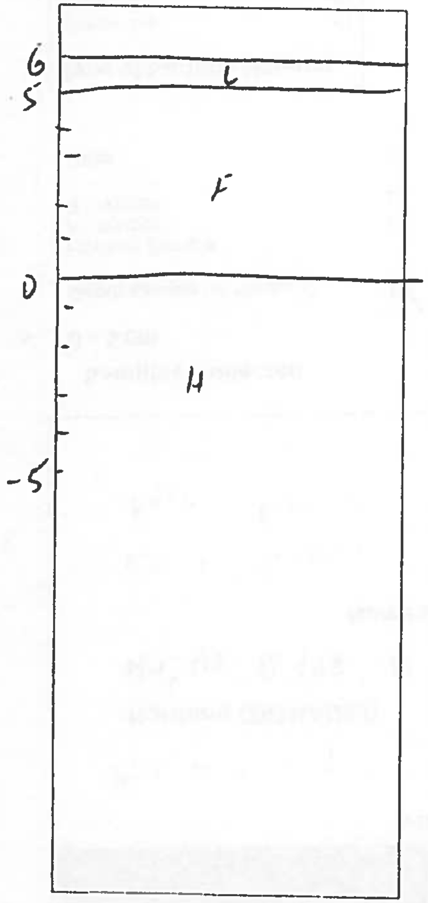
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF %	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low					
1		L			+6	+5	W			0	org
2		F			+5	0	W			0	org.
3		H			0	-5	W	10YR 3/1		0	silty.
4											
5											
6											
7											
8											
9											
10											

M M - 5 3

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

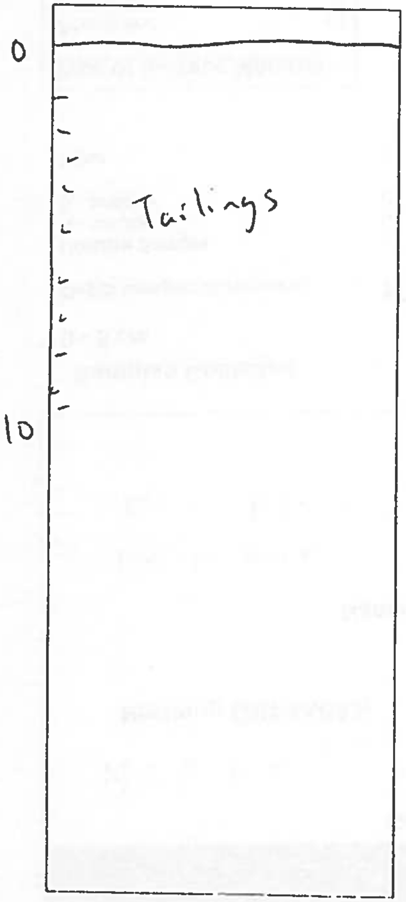
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		Tailings			0		—	10YR 3/2		5	Sandy.
2											
3											
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
20 May 08

Time
15:05 :

Northing (20TNAD83)

Easting (20TNAD83)

Site ID
MM-54

Sample Type - Horizon
No [✓ Yes]

Names of Samplers
Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes →

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☑
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☑
- Partly cloudy ☐
- Overcast ☐
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
14°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sample on forested "island" between two open spaces.
- Tailings abundant
- Grass covered.
- Open.

MM - 54

Codes for Horizon Description

Horizons
D: ~~Lithological-discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

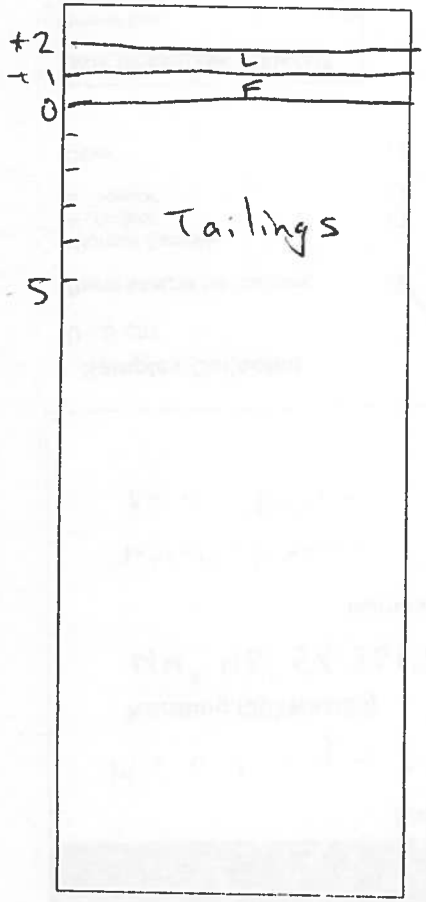
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos

Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	S			0	org.
2		F			+1	0	S			0	org.
3		Tailings			0		S	10YR 3/1		0	silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83) 44° 42' 58.861"N
Easting (20TNAD83) 63° 31' 00.634"W

Names of Samplers
Robert Rikkers
Ryan Pellerin

Date 11 Jun 08
Time 09 : 50 ___ : ___

Site ID MM-60

Sample Type - Horizon No Yes ✓

RepStat Duplicate "MM-58"

Sampling Depth 0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 14°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- At toe of upslope
- Large tree fall 2m to E.
- Open area.
- Leafy vegetation
- Boulders in area.
- Waste rock 20m to W.
- Abandoned vehicles 15m to E.

MM - 6 ●

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

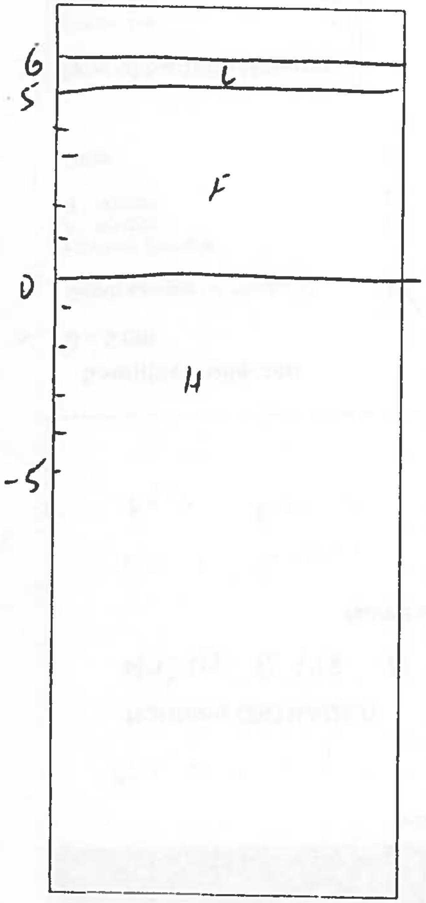
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+6	+5	W			0	org
2		F			+5	0	W			0	org.
3		H			0	-5	W	10YR 3/1		0	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Northing (20TNAD83)

Easting (20TNAD83)

Names of Samplers
Robert Rikkers
Ryan Pellerin

Date
20 May 08

Time
15:05 :

Site ID
MM-54

Sample Type - Horizon
No Yes ✓

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➜

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☑
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☐
Definite ☑
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☑
Partly cloudy ☐
Overcast ☐
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Sample on forested "island" between two open spaces.
- Tailings abundant
- Grass covered.
- Open.

MM - 54

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

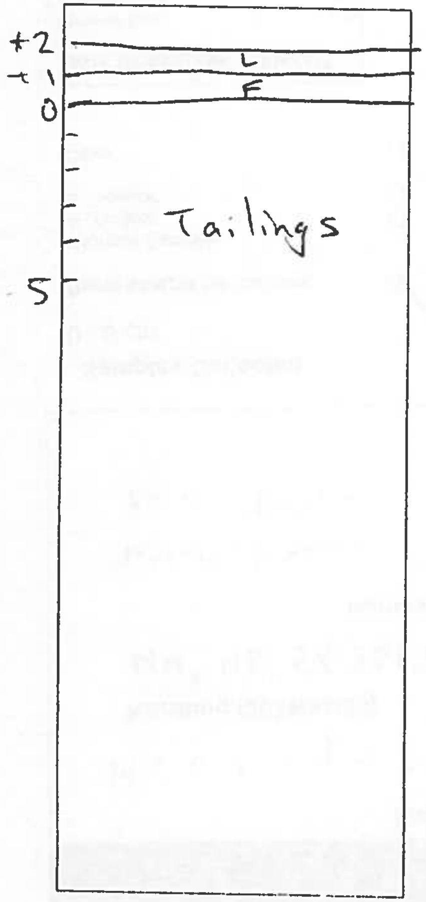
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☐
Looking North ☐
Looking East ☐
Looking South ☐
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+2	+1	S			0	org.
2		F			+1	0	S			0	org.
3		Tailings			0		S	10YR 3/1		0	silt.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site

Montague Mines

Northing (20TNAD83) 44° 42' 58.861"N

Easting (20TNAD83) 63° 31' 00.634"W

Names of Samplers

Robert Rikkers

Ryan Pellerin

Date 11 Jun 08

Time 09 : 50 __ : __

Site ID MM-60

Sample Type - Horizon No [✓ Yes]

RepStat Duplicate "MM-58"

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

- **Depth sample** (all horizons) ☑

Horizon Sample

- A - horizon ☐
- B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 14°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- At toe of upslope
- Large tree fall 2m to E.
- Open area.
- Leafy vegetation
- Boulders in area.
- Waste rock 20m to W.
- Abandoned vehicles 15m to E.

MM - 6 ●

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

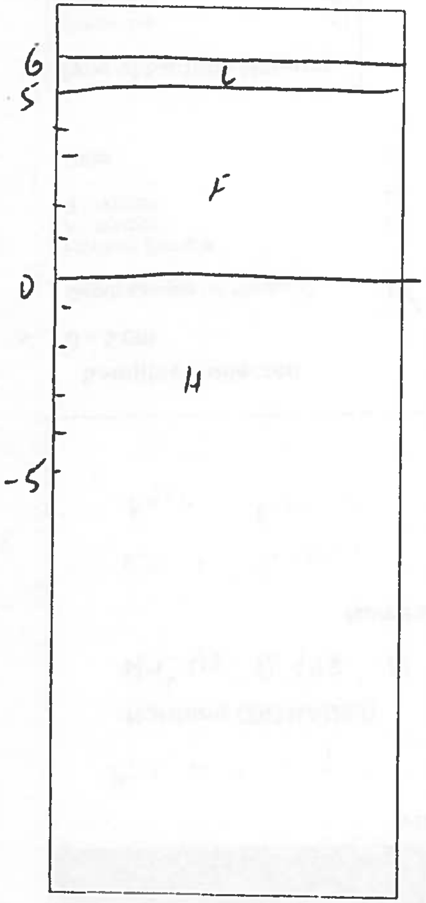
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+6	+5	W			0	org
2		F			+5	0	W			0	org.
3		H			0	-5	W	10YR 3/1		0	silty.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
11 Jun 08

Time
10 : 15 :

Northing (20TNAD83)
44° 42' 56.998" N

Easting (20TNAD83)
63° 30' 57.721" W

Site ID
MM-61

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Fikkers
Ryan Pellerin

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

- **Depth sample** (all horizons) ☑

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other ☐

Type of Surface Material
- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☐
- Rolling ☑
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover
- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage
- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☑
- Moderately well drained ☐
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☐
- Definite ☑
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp.
14°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- 10m W of road (trail)
- 7m S of waste rock pile & trench.
- Boulders in area.
- Moderate tree cover.

MM-61

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

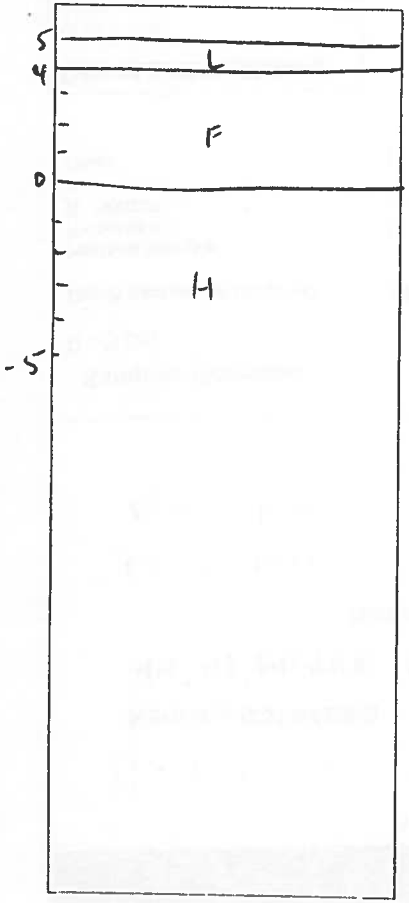
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+5	+4	W			0	org.
2		F			+4	0	W			0	org.
3		H			0	-5	S	10 YR 3/1		10	silty
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
11 Jun 08

Time
10:40 :

Northing (20TNAD83)
44° 43' 04.958" N

Easting (20TNAD83)
63° 30' 56.032" W

Site ID
MM-62

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert Rebbers
Kyran Pelleran

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☑
  - Other

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- House 20m to W.
- Trench and waste rock pile 5m to S and E.
- Leafy vegetation.
- Moderate tree cover.
- Garbage in area (debris)

MM-62

Codes for Horizon Description

Horizons
D: Lithological discontinuity
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

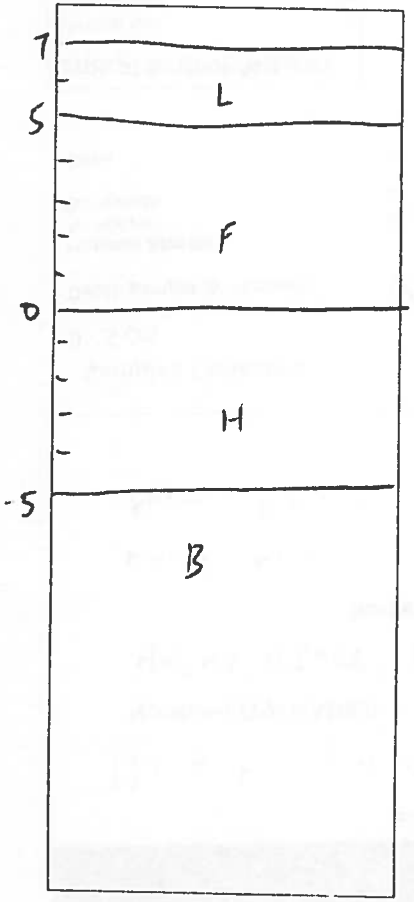
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

Horizons					Depth		HB	Colour	~~RM~~	CF	Field Texture
#	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+7	+5	W			0	org.
2		F			+5	0	W			0	org.
3		H			0	-5	S	10 YR 3/1		10	silty
4		B			-5			10 YR 3/4		40	silty sand
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 11 Jun 08

Time 11:05 :

Northing (20TNAD83) 44°43' 07.608" N

Easting (20TNAD83) 63°30' 56.992" W

Site ID MM-63

Sample Type - Horizon No Yes ✓

Names of Samplers
Robert Pekkers
Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No | Yes ➡

Samples Collected
0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression

Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☑
Rolling ☐
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☐
Moderately well drained ☑
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp. 14 °C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Toe of slope.
- Wet area 7m to W.
- Boulders in area.
- Mod. tree cover.
- Montague Rd. 20m to N.
- Trench 10m E.

MM-63

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

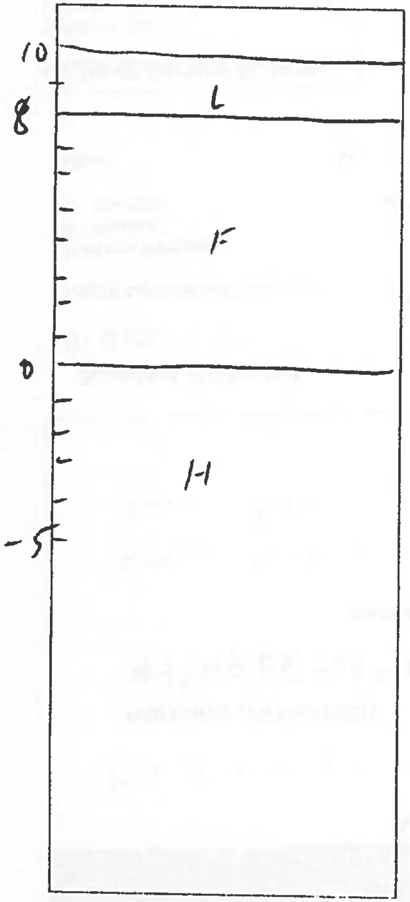
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑ N
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+10	+8	W			0	org.
2		F			+8	0	S			0	org.
3		H			0	-5	S	10YR 2/1		5	silty/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines.

Date
11 Jun 08

Time
11 : 20 :

Northing (20TNAD83)
44°43'05.729" N

Easting (20TNAD83)
63°30'55.300" W

Site ID
MM-64

Sample Type - Horizon
No Yes

Names of Samplers
Robert Bekkers
Ryan Fillman

RepStat
Dup. # 59 of B.

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☑
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☑
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
- None ☐
- Possible ☑
- Probable ☐
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
13°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Montague Rd. 30m N.
- Tree fall area 10m N.
- Open area.

MM-64

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

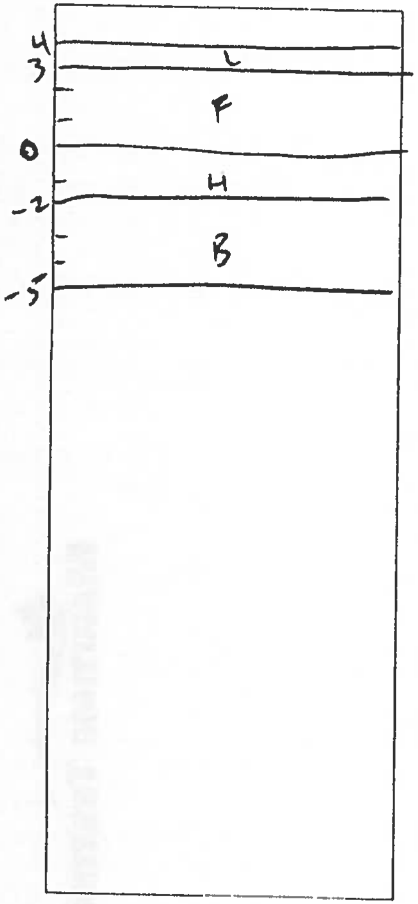
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	~~D~~	Horizons Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	B			0	org.
3		H			0	-2	B	10YR 3/1		10	silty
4		B			-2			10YR 3/3 and 10YR 5/8		20	silty.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
11 Jun 08

Time
10 : 40 :

Northing (20TNAD83)
44° 43' 04.958" N

Easting (20TNAD83)
63° 30' 56.032" W

Site ID
MM-62

Sample Type - Horizon
No Yes ✓

Names of Samplers
Robert [illegible]
Kyrin [illegible]

RepStat

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➡

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☐
Other: ☐

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☐
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☐
Probable ☑
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☑
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
14 °C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- House 20m to W.
- Trench and waste rock pile 5m to S and E.
- Leafy vegetation.
- Moderate tree cover.
- Garbage in area (debris)

MM - 62

Codes for Horizon Description

Horizons
D: ~~Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

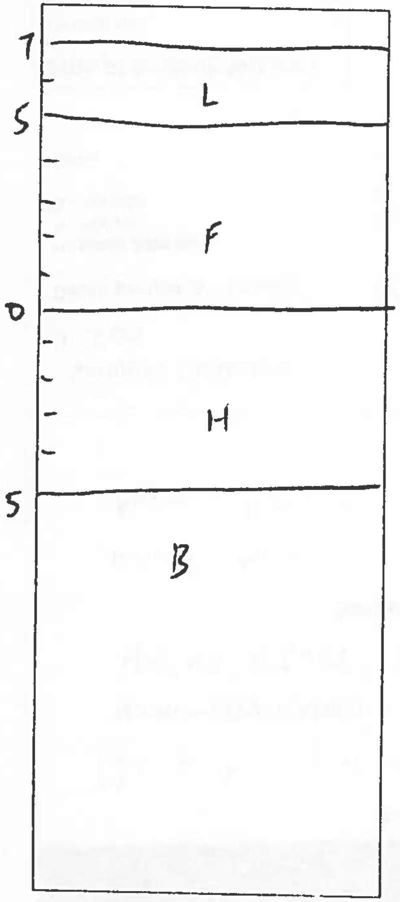
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
- Pit with Samples ☑
- Looking North ☑
- Looking East ☐
- Looking South ☑
- Looking West ☐
- Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+7	+5	W			0	org.
2		F			+5	0	W			0	org.
3		H			0	-5	S	10 YR 3/1		10	silty
4		B			-5			10 YR 3/4		40	silty sand
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 11 Jun 08

Time 11:05 ___:___

Northing (20TNAD83) 44°43' 07.608" N

Easting (20TNAD83) 63°30' 56.992" W

Site ID MM-63

Sample Type - Horizon No Yes ✓

Names of Samplers

Robert Rikkers

Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
- A - horizon ☐
- B - horizon ☐

Other ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form
- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 14°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Toe of slope.
- Wet area 7m to W.
- Boulders in area.
- Mod. tree cover.
- Montague Rd. 20m to N.
- Trench 10m E.

M M - 6 3

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

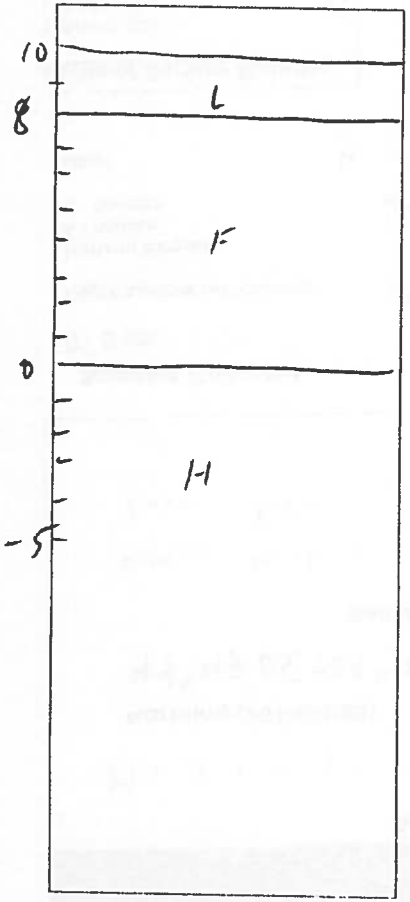
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+10	+8	W			0	org.
2		F			+8	0	S			0	org.
3		H			0	-5		10YR 2/1		5	silty/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date 11 Jun 08
Time 11:20 :

Northing (20TNAD83)
44°43'05.729" N

Easting (20TNAD83)
63°30'55.300" W

Site ID
MM-64

Sample Type - Horizon
No Yes

Names of Samplers
Robert Hakkens
Ryan Pelleman

RepStat
Dup. #59 of B.

Sampling Depth
0 - 5 cm

Resampled Site
No Yes →

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☑
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☑
Steep ☐
Terrace ☐
Undulating ☑
Vencer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☑
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
13°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Montague Rd. 30m N.
- Tree fall area 10m N.
- Open area.

MM-64

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

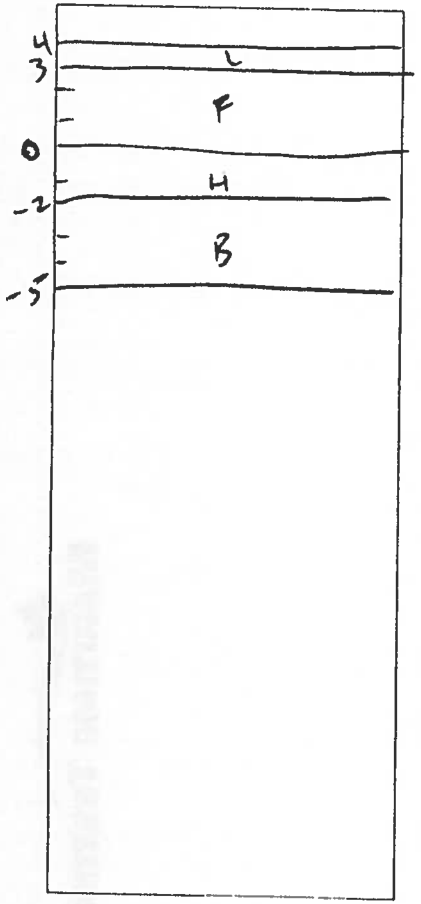
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+4	+3	W			0	org.
2		F			+3	0	B			0	org.
3		H			0	-2	B	10YR 3/1		10	silty
4		B			-2			10YR 3/3 and 10YR 5/8		20	silty.
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site Montague Mines

Date 11 Jun 08

Time 11:05 ___:___

Northing (20TNAD83) 44°43' 07.608" N

Easting (20TNAD83) 63°30' 56.992" W

Site ID MM-63

Sample Type - Horizon No Yes ✓

Names of Samplers

Robert Rikkers
Ryan Pellerin

RepStat

Sampling Depth 0 - 5 cm

Resampled Site No Yes ➡

Samples Collected

0 - 5 cm

Depth sample (all horizons) ☑

Horizon Sample
A - horizon ☐
B - horizon ☐

Other: ☐

Type of Surface Material

- Mineral Soil ☐
- Organic Soil ☐
- Non-Soil ☑
- Urban ☐

Local Surface Expression

Mineral Surface Form

- Blanket ☐
- Dissected ☐
- Fan ☐
- Hummocky ☐
- Inclined ☐
- Pitted ☐
- Level ☑
- Rolling ☐
- Ridged ☐
- Steep ☐
- Terrace ☐
- Undulating ☑
- Veneer ☐

Vegetation Cover

- Agricultural Crops ☐
- Coniferous Forest ☑
- Deciduous Forest ☑
- Mixed Forest ☐
- Meadow, Wet ☐
- Field ☐
- Parkland ☐
- Shrubland ☐
- Unvegetated Surface ☐

Drainage

- Very rapidly drained ☐
- Rapidly drained ☐
- Well drained ☐
- Moderately well drained ☑
- Imperfectly drained ☐
- Poorly drained ☐
- Very poorly drained ☐

Contamination

- None ☐
- Possible ☐
- Probable ☑
- Definite ☐
  - Farming ☐
  - Housing ☐
  - Industry ☐
  - Logging ☐
  - Mining ☑
  - Road ☐
  - Garbage ☐
  - Other ☐

Weather

- Sunny/Clear ☐
- Partly cloudy ☐
- Overcast ☑
- Rain ☐
- Sleet ☐
- Snow ☐

Air Temp. 14°C

Comments:

(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Toe of slope.
- Wet area 7m to W.
- Boulders in area.
- Mod. tree cover.
- Montague Rd. 20m to N.
- Trench 10m E.

M M - 6 3

Codes for Horizon Description

Horizons
~~D: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Colour
Munsell colour or descriptive colour using table 1

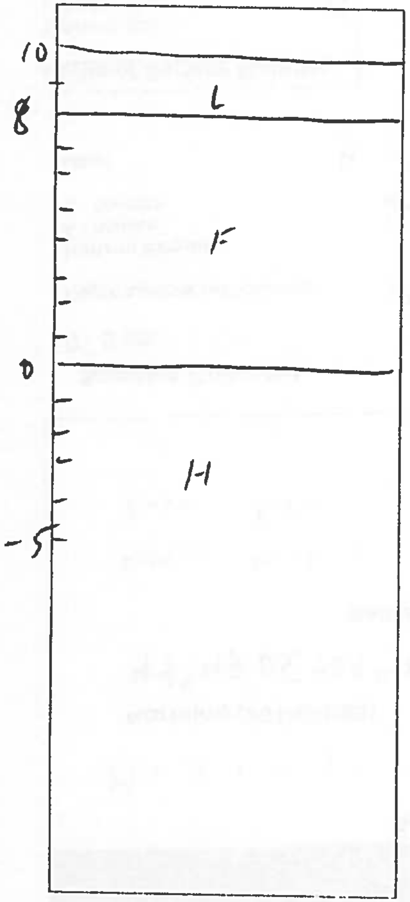
Redoximorphic Features (RM)
Y: Visible
N: Not visible

Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Soil Profile Diagram



Horizon Description

#	Horizons				Depth		HB	Colour	~~RM~~	CF	Field Texture
	~~D~~	Ma	Suffix	~~M~~	Up	Low				%	
1		L			+10	+8	W			0	org.
2		F			+8	0	S			0	org.
3		H			0	-5	[illegible]	10YR 2/1		5	silty/org.
4											
5											
6											
7											
8											
9											
10											

Gold Mine District Soil Sampling Field Data Sheet

Site
Montague Mines

Date
11 Jun 08

Time
11 : 20 :

Northing (20TNAD83)
44°43'05.729" N

Easting (20TNAD83)
63°30'55.300" W

Site ID
MM-64

Sample Type - Horizon
No Yes

Names of Samplers
Robert Hakkens
Ryan Fillman

RepStat
Dup. #59 of B.

Sampling Depth
0 - 5 cm

Resampled Site
No Yes ➔

Samples Collected
0 - 5 cm
Depth sample (all horizons) ☑
Horizon Sample
A - horizon ☐
B - horizon ☑
Other: H ☑

Type of Surface Material
Mineral Soil ☐
Organic Soil ☐
Non-Soil ☑
Urban ☐

Local Surface Expression
Mineral Surface Form
Blanket ☐
Dissected ☐
Fan ☐
Hummocky ☐
Inclined ☐
Pitted ☐
Level ☐
Rolling ☑
Ridged ☑
Steep ☐
Terrace ☐
Undulating ☑
Veneer ☐

Vegetation Cover
Agricultural Crops ☐
Coniferous Forest ☑
Deciduous Forest ☑
Mixed Forest ☐
Meadow, Wet ☐
Field ☐
Parkland ☐
Shrubland ☐
Unvegetated Surface ☐

Drainage
Very rapidly drained ☐
Rapidly drained ☐
Well drained ☑
Moderately well drained ☐
Imperfectly drained ☐
Poorly drained ☐
Very poorly drained ☐

Contamination
None ☐
Possible ☑
Probable ☐
Definite ☐
- Farming ☐
- Housing ☐
- Industry ☐
- Logging ☐
- Mining ☑
- Road ☐
- Garbage ☐
- Other ☐

Weather
Sunny/Clear ☐
Partly cloudy ☐
Overcast ☑
Rain ☐
Sleet ☐
Snow ☐

Air Temp.
13°C

Comments:
(E.g., Presence of waste rock, berms, pits, trenches or other mining activity)

- Montague Rd. 30m N.
- Tree fall area 10m N.
- Open area.

MM - 64

Codes for Horizon Description

Horizons
~~**D**: Lithological discontinuity~~
Ma: Master horizons (Humus, A, B, C)
Suffix: Suffixes
M: Modifier (B1, B2, B3)

Colour
Munsell colour or descriptive colour using table 1

Redoximorphic Features (RM)
Y: Visible
N: Not visible

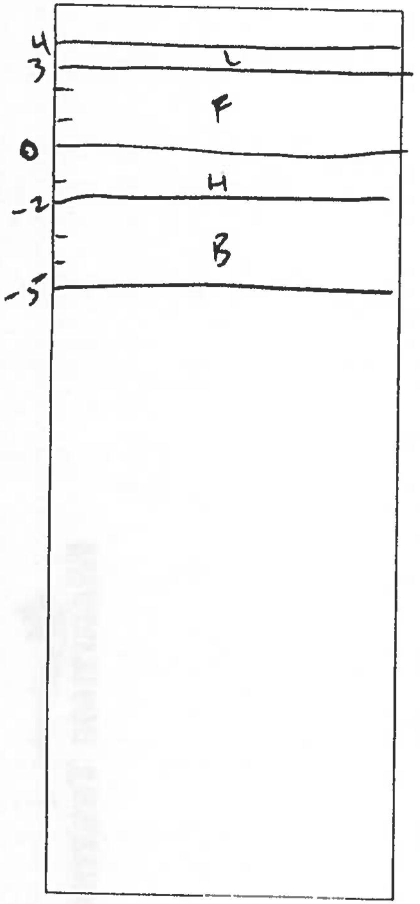
Coarse Fragments (CF)
Estimated value in %

Field Texture
Clay, Sandy Clay, Sandy Clay Loam
Silt, Silty Sand, Silt Loam, Silty Clay Loam
Loam, Sandy Loam, Loamy Sand
Sand, Very Fine Sand, Fine Sand, Medium Sand, Coarse Sand, Very Coarse Sand

Photos
Pit with Samples ☑
Looking North ☑
Looking East ☐
Looking South ☑
Looking West ☐
Others

Horizon Boundary (HB)
S: Smooth
W: Wavy
I: Irregular
B: Broken

Soil Profile Diagram



Horizon Description

#	Horizons ~~D~~	Ma	Suffix	~~M~~	Depth Up	Depth Low	HB	Colour	~~RM~~	CF %	Field Texture
1		L			+4	+3	W			0	org.
2		F			+3	0	B			0	org.
3		H			0	-2	B	10YR 3/1		10	silty
4		B			-2			10YR 3/3 and 10YR 5/8		20	silty.
5											
6											
7											
8											
9											
10											

Appendix D

Explanation of Symbols and Terms
Monitor Well and Borehole Logs

MARITIME TESTING
Consulting Engineering & Environmental Services

BOREHOLE LOG

PROJECT
Modified Phase II ESA
Former Gold Mines, Montague Mines, NS

LOGGED/DWN. RB
CKD. RB
DATE OF INVEST. 16/01/08
JOB NO. 7442
HOLE NO. MW1

CASING RESISTANCE blows/300mm
WC % wp- ☐ w- ● wl- △
10 20 30 40 50

DATUM MW1, assigned elevation 100 m.
SURFACE ELEVATION 100.00 meters
DRILL TYPE Track-mounted drill rig

DEPTH
ft: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
m: 1 2 3 4 5

MODIFIED USCS	SOIL DESCRIPTION	TYPE	PENE. RESIST.	Other Tests
SP SM	TAILINGS, sand, trace silt, layered, loose, wet, grey.	SS	n=0	Soil Hg, As.
PT	PEAT, wood debris, saturated, brown to black.	SS SS	n=5 n=5	Soil Hg, As. Soil Hg, As.
	Quartzite BOULDERS, some peat and sand, wet, brown to black.	SS	n=16	Soil Hg, As.
	Quartzite TILL, gravelly and silty sand, abundant cobbles and boulders, compact to dense, moist to wet, light grey.	SS SS	n=35 n=41	Soil Hg, As. Soil Hg, As.

PLATE 1

MARITIME TESTING
Consulting Engineering & Environmental Services

BOREHOLE LOG

PROJECT
Modified Phase II ESA
Former Gold Mines, Montague Mines, NS

LOGGED/DWN. RB	CKD. RB	DATE OF INVEST.16/01/08	JOB NO. 7442	HOLE NO.MW1

CASING RESISTANCE blows/300mm ⇩	DEPTH		MODIFIED USCS	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE			DRILL TYPE	
WC % wp-☐ w-● wl-△					DATUM MW1, assigned elevation 100 m.	COND.	TYPE	PENE. RESIST.	Track-mounted drill rig	
10 20 30 40 50	ft	m			SURFACE ELEVATION100.00 meters				Well Details	Other Tests
	18				End of borehole at 5.18 metres in quartzite TILL. Groundwater measured on January 18, 2008.					
	19									
	20	6								
	21									
	22									
	23	7								
	24									
	25									
	26	8								
	27									
	28									
	29	9								
	30									
	31									
	32									
	33	10								

PLATE 2

MARITIME TESTING
Consulting Engineering & Environmental Services

BOREHOLE LOG

PROJECT
Modified Phase II ESA
Former Gold Mines, Montague Mines, NS

LOGGED/DWN. RB
CKD. RB
DATE OF INVEST.17/01/08
JOB NO. 7442
HOLE NO.MW2

CASING RESISTANCE blows/300mm ⇩
WC % wp- □ w- ● wl- △
10 20 30 40 50

DATUM MW1, assigned elevation 100 m.
SURFACE ELEVATION99.93 meters

DRILL TYPE
Track-mounted drill rig

DEPTH ft	DEPTH m	MODIFIED USCS	SOIL DESCRIPTION	SOIL SAMPLE TYPE	PENE. RESIST.	Other Tests
0 ▽	0	SP SM	TAILINGS, sand, trace silt, layered, loose, wet, grey.			
2				SS	n=3	Soil Hg, As.
3	1	PT	PEAT, saturated, brown to black.			
4				SS	n=17	Soil Hg, As.
5			Quartzite BOULDERS, some peat and sand, compact, wet, brown.			
6	2			SS	n=33	Soil Hg, As.
7			Quartzite TILL, silt, light grey.Quartzite TILL, gravelly and silty sand, abundant cobbles and boulders, compact to dense, moist to wet, light grey.			
8				SS	n=20	Soil Hg, As.
10	3			SS	n=49	Soil Hg, As.
14	4			AUGER		
15			End of borehole at 4.6 metres in quartzite TILL. Groundwater measured on January 18, 2008.			
16	5					

PLATE 3

MARITIME TESTING
Consulting Engineering & Environmental Services

BOREHOLE LOG

PROJECT
Modified Phase II ESA
Former Gold Mines, Montague Mines, NS

LOGGED/DWN. RB
CKD. RB
DATE OF INVEST.17/01/08
JOB NO. 7442
HOLE NO.MW3

CASING RESISTANCE blows/300mm ⇩
WC % wp-☐ w-● wl-△ 10 20 30 40 50

DEPTH ft m
DATUM MW1, assigned elevation 100 m.
SURFACE ELEVATION100.23 meters
DRILL TYPE Track-mounted drill rig

Depth (ft): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
Depth (m): 1, 2, 3, 4, 5

∇

MODIFIED USCS	SOIL DESCRIPTION	COND.	TYPE	PENE. RESIST.	Other Tests
SP SM	TAILINGS, sand, trace silt, layered, loose, wet, grey.				
			SS	n=3	Soil Hg, As.
			SS	n=2	Soil Hg, As.
PT	PEAT, wood debris, saturated, brown to yellow-brown.				
	Quartzite BOULDERS, peat, wet, brown.		SS	n=26	Soil Hg, As.
	Quartzite TILL, silt, light grey.Quartzite TILL, gravelly and silty sand, abundant cobbles and boulders, compact to dense, moist to wet, light grey.		AUGER		Soil Hg, As.
	End of borehole at 4.3 metres in quartzite TILL. Groundwater measured on January 18, 2008.				

Well Details

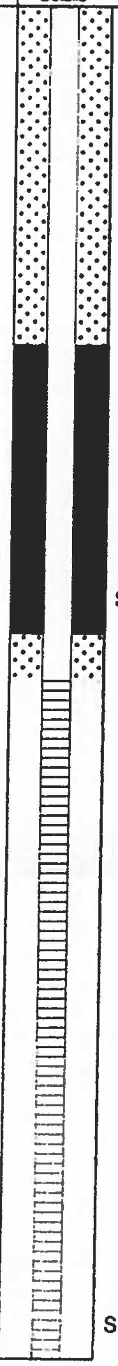


PLATE 4

SOIL CLASSIFICATION SYSTEM (MODIFIED U.S.C.)

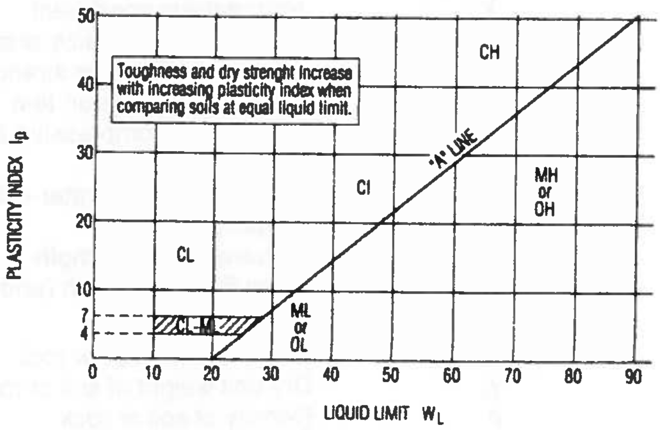
MAJOR DIVISION			GROUP SYMBOL	GRAPHIC SYMBOL	COLOR CODE	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
HIGHLY ORGANIC SOILS			Pt		ORANGE	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOR OR ODOR, AND OFTEN FIBROUS TEXTURE	
COARSE-GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN NO. 200 SIEVE SIZE)	GRAVELS MORE THAN HALF COARSE FRACTION LARGER THAN NO.4 SIEVE SIZE	CLEAN GRAVELS	GW		RED	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, <5% FINES	$Cu = \frac{D_{60}}{D_{10}} > 4$ $Cc = \frac{(D_{30})^2}{D_{10} x D_{60}} = 1$ to 3	
			GP		RED	POORLY-GRADED GRAVELS, AND GRAVEL-SAND MIXTURES, <5% FINES	NOT MEETING ALL ABOVE REQUIRMENTS	
		DIRTY GRAVELS	GM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES >12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR $I_p < 4$	
			GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES >12% FINES	ATTERBERG LIMITS ABOVE "A" LINE OR $I_p > 7$	
	SANDS MORE THAN HALF COARSE FRACTION SMALLER THAN NO.4 SIEVE SIZE	CLEAN SANDS	SW		RED	WELL-GRADED SANDS, GRAVELLY SANDS, <5% FINES	$Cu = \frac{D_{60}}{D_{10}} > 6$ $Cc = \frac{(D_{30})^2}{D_{10} x D_{60}} = 1$ to 3	
			SP		RED	POORLY-GRADED SANDS, OR GRAVELLY SANDS, <5% FINES	NOT MEETING ALL ABOVE REQUIRMENTS	
		DIRTY SANDS	SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES >12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR $I_p < 4$	
			SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES >12% FINES	ATTERBERG LIMITS ABOVE "A" LINE OR $I_p > 7$	
FINE - GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSES NO.200 SIEVE SIZE)	SILTS BELOW "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		ML		GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	$W_L < 50$	SEE CHART BELOW
			MH		BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	$W_L > 50$	
	CLAYS ABOVE "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		CL		GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS	$W_L < 30$	
			CI		GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY SILTY CLAYS	$W_L > 30, < 50$	
			CH		BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	$W_L > 50$	
	ORGANIC SILTS & ORGANIC CLAYS BELOW "A" LINE ON PLASTICITY CHART		OL		GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	$W_L < 50$	
			OH		BLUE	ORGANIC CLAYS OF HIGH PLASTICITY	$W_L > 50$	

▦ FILL

▨ TILL

▨ BEDROCK

PLASTICITY CHART



1. All sieve sizes mentioned on this chart are U.S. Standard, ASTM E11.

2. Boundary classifications possessing characteristics of two groups are given combined group symbols eg GW-GC is a well-graded gravel-sand mixture with clay binder between 5% and 12%.

3. Soil fractions and limiting textural boundaries are in accordance with the Unified Soil Classification System, except that an inorganic clay of medium plasticity (CI) is recognized.

4. The following adjectives may be employed to define percentage ranges by weight of minor components:

and	50 - 36%
gravelly, sandy, silty, clayey, ect.	35 - 21%
some	20 - 11%
trace	10 - 1%

MARITIME TESTING

Consulting Engineering & Environmental Services

SOIL SAMPLES

CONDITION – This column graphically indicates the depth and condition of the sample:

◪ undisturbed   ☒ disturbed   ⧅ not recovered

TYPE – The type of sample is indicated in this column as follows:

A auger sample
B block sample
C rock core, or frozen soil core
D drive sample
G grab sample
SS split spoon
P Pitcher tube sample
U tube sample (usually thin-walled)
W wash or air return sample
O other (see report text)

PENETRATION RESISTANCE – Unless otherwise noted this column refers to the number of blows (N) of a 140 pound (63.5 kg) hammer freely dropping 30 inches (0.76 m) required to drive a 2 inch (50.8 mm) O.D. open-end sampler 0.5 feet (0.15 m) to 1.5 feet (0.45 m) into the soil, or until 100 blows have been applied, in which case, the penetration is stated. This is the standard penetration test referred to in ASTM D 1586.

OTHER TESTS

In this column are tabulated results of other laboratory tests as indicated by the following symbols:

*C	Consolidation test
Fines	Percentage by weight smaller than #200 sieve
D_R	Relative density (formerly specific gravity)
k	Permeability coefficient
*MA	Mechanical grain size analysis and hydrometer test (if appropiate)
pp	Pocket pentrometer strength
*q	Triaxial compression test
q_U	Unconfined compressive strength
*SB	Shearbox test
SO_4	Concentration of water-soluble sulphate
*ST	Swelling test
TV	Torvane shear strength
VS	Vane Shear Strength (undistrubed-remolded)
ε_f	Unit strain at failure
γ	Unit weight of soil or rock
γ_d	Dry unit weight of soil or rock
ρ	Density of soil or rock
ρ_d	Dry density of soil or rock

* The results of these tests usually are reported separately

SYMBOLS AND TERMS USED ON THE BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Behavioural properties (i.e. plasticity, permeability) take precedence over particle gradation in describing soils.

Terminology describing soil structure:

Desiccated	- having visible signs of weathering by oxidation of clay minerals, shrinkage cracks etc.
Fissured	- having cracks, and hence a blocky structure
Varved	-composed of regular alternating layers of silt and clay
Stratified	- composed of alternating layers or different soil types, e.g. silt and sand or silt and clay
Well Graded	- having wide range in grain sizes and substantial amounts of all intermediate particle sizes
Uniformly Graded	- predominantly of one grain size.

Terminology used for describing soil strata based upon the proportion of individual particle size present:

Trace, or occasional	Less than 10%
Some	10-20%
Adjective (e.g. silty or sandy)	20-35%
And (e.g. silt and sand)	35-50%

The standard terminology to describe cohesionless soils includes the relative density, as determined by laboratory test or by the Standard Penetration Test 'N' - value: the number of blows of 140 pound (64 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (305 mm) into the soil.

Relative Density	'N' Value	Relative Density %
Very loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by insitu vane tests, penetrometer tests, unconfined compression test, or occasionally by standard penetration tests.

Consistency	Undrained Shear Strength		'N' Value
	Kips/sq.ft.	kPa	
Very Soft	<0.25	<12.5	<2
Soft	0.25-0.5	12.5-25	2-4
Firm	0.5-1.0	25-50	4-8
Stiff	1.0-2.0	50-100	8-15
Very Stiff	2.0-4.0	100-200	15-30
Hard	>4.0	>200	>30

Appendix E

Laboratory Analytical Results
Mercury, Arsenic and Total Organic Carbon

TABLE E2: Mercury, Arsenic and Total Organic Carbon Results in <2mm Soil Fraction
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: January 16, January 17, 2008
MTL Project No. 7442

Parameter		Mercury[1]	Arsenic[1]	Total Organic Carbon
Units		mg/kg	mg/kg	g/kg
CCME Residential Guidelines		6.6	12	-
Sample ID (depth)	MW1/1 (0.3-1.5 m)	0.7	**5,300**	-
	MW1/2 (1.5-2.1 m)	4.4	**1,700**	-
	MW1/3 (2.1-2.7 m)	0.41	**900**	-
	MW1/4 (3.0-3.7 m)	0.04	**190**	-
	MW1/5 (3.7-4.3 m)	0.22	**510**	-
	MW1/6 (4.7-5.2 m)	0.03	**25**	-
	MW2/1 (0.3-0.9 m)	3.3	**8,900**	-
	MW2/2 (0.9-1.5 m)	0.07	**30**	-
	MW2/3 (1.5-2.1 m)	0.09	**290**	-
	MW2/4 (2.1-2.7 m)	0.05	**120**	-
	MW2/5 (2.7-3.4 m)	0.05	**76**	-
	MW3/1 (0.3-0.9 m)	0.96	**2,400**	-
	MW3/2 (0.9-1.5 m)	1.9	**2,800**	-
	MW3/3 (1.5-2.1 m)	0.69	**1,900**	-
	MW3/4 (4.0-4.3 m)	0.03	**78**	-
	MM-1 (0-5 cm)	0.14	**16**	70
	MM-1 (0-3.5 cm)	0.19	**18**	280
	MM-1 (3.5-5 cm)	0.04	7	27
	MM-2 (0-5 cm)	0.08	**66**	33
	MM-2 (0-5 cm) LAB DUP	-	**66**	-
	MM-2 (0-3 cm)	0.25	**34**	170
	MM-2 (3-5 cm)	0.04	**24**	15
	MM-3 (0-5 cm)	3.6	**32**	180
	MM-4 (0-5 cm)	**7.6**	**3,500**	3.1
	MM-4 (0-5 cm) LAB DUP	-	**3,500**	-
	MM-5 (0-5 cm)	1.6	**320**	61
	MM-7 (0-5 cm)	1.9	**220**	53
	MM-7 (0-3 cm)	2.1	**290**	130
	MM-7 (3-5 cm)	0.47	**390**	33

Notes:

[value] - Exceeds applicable guideline

[1] Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

TABLE E2 (cont'd): Mercury, Arsenic and Total Organic Carbon Results in <2mm Soil Fraction
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: May 15 and June 2, 2008
MTL Project No. 7442

Parameter		Mercury[1]	Arsenic[1]	Total Organic Carbon
Units		mg/kg	mg/kg	g/kg
CCME Residential Guidelines		6.6	12	-
Sample ID (depth)	MM-8 (0-5 cm)	**16**	**4,100**	18
	MM-9 (0-5 cm)	0.63	**340**	250
	MM-10 (0-5 cm)	0.09	**45**	47
	MM-10 (0-1.5 cm)	0.21	11	230
	MM-10 (1.5-5 cm)	0.1	**67**	26
	MM-11 (0-5 cm)	0.16	**130**	70
	MM-11 (0-2 cm)	0.23	10	230
	MM-11 (2-5 cm)	0.17	**150**	46
	MM-12 (0-5 cm)	0.26	12	350
	MM-12 (0-5 cm) LAB DUP	-	-	340
	MM-13 (0-5 cm)	0.15	9	320
	MM-14 (0-5 cm)	0.31	**25**	290
	MM-15 (0-5 cm)	0.38	**55**	310
	MM-16 (0-5 cm)	0.24	12	240
	MM-17 (0-5 cm)	0.22	**14**	310
	MM-18 (0-5 cm)	0.22	**18**	320
	MM-19 (0-5 cm)	0.28	**26**	310
	MM-20 (0-5 cm)	0.33	**23**	330
	MM-21 (0-5 cm)	0.25	**20**	200
	MM-22 (0-5 cm)	0.29	**43**	330
	MM-23 (0-5 cm)	0.17	**98**	68
	MM-23 (0-5 cm) LAB DUP	0.15	-	-
	MM-23 (0-3 cm)	0.32	**110**	250
	MM-23 (3-5 cm)	0.13	**64**	43
	MM-23 (3-5 cm) LAB DUP	-	**67**	-
	MM-24 (0-5 cm)	0.16	**98**	73
	MM-25 (0-5 cm)	0.24	**160**	110
	MM-26 (0-5 cm)	0.12	**17**	76
	MM-26 (0-2 cm)	0.2	**22**	210
	MM-26 (2-5 cm)	0.02	**16**	11

Notes:

[value] - Exceeds applicable guideline

[1] Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

TABLE E2 (cont'd): Mercury, Arsenic and Total Organic Carbon Results in <2mm Soil Fraction
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: May 15, May 20 and June 2, 2008
MTL Project No. 7442

Parameter		Mercury[1]	Arsenic[1]	Total Organic Carbon
Units		mg/kg	mg/kg	g/kg
CCME Residential Guidelines		6.6	12	-
Sample ID (depth)	MM-27 (0-5 cm)	0.21	**50**	340
	MM-28 (0-5 cm)	0.15	**2,100**	64
	MM-28 (0-5 cm) LAB DUP	-	-	71
	MM-28 (0-3 cm)	0.44	**1,100**	210
	MM-28 (3-5 cm)	0.19	**2,200**	79
	MM-28 (3-5 cm) LAB DUP	-	**2,100**	-
	MM-29 (0-5 cm)	0.32	**77**	390
	MM-30 (0-5 cm)	0.31	**31**	210
	MM-31 (0-5 cm)	0.13	**40**	400
	MM-32 (0-5 cm)	0.46	**270**	190
	MM-33 (0-5 cm)	1.1	**11,000**	140
	MM-34 (0-5 cm)	0.48	**220**	350
	MM-35 (0-5 cm)	0.2	**610**	22
	MM-36 (0-5 cm)	0.7	**580**	250
	MM-38 (0-5 cm)	2.4	**780**	67
	MM-39 (0-5 cm)	3.2	**1,200**	21
	MM-40 (0-5 cm)	0.56	**330**	73
	MM-41 (0-5 cm)	1.2	**2,400**	9
	MM-42 (0-5 cm)	2.1	**890**	110
	MM-43 (0-5 cm)	0.67	**250**	94
	MM-44 (0-5 cm)	0.9	**640**	110
	MM-47 (0-5 cm)	**25**	**63**	24
	MM-48 (0-5 cm)	2.8	**1,000**	70
	MM-50 (0-5 cm)	4.4	**2,500**	27
	MM-50 (0-5 cm) LAB DUP	-	-	24
	MM-51 (0-10 cm)	0.94	**1,800**	1.4
	MM-51 (0-10 cm) LAB DUP	-	-	1.6
	MM-52 (0-10 cm)	0.58	**17,000**	1.1
	MM-53 (0-10 cm)	0.3	**2,600**	0.3
	MM-54 (0-10 cm)	**8.1**	**2,600**	70

Notes:

▨ **[value]** - Exceeds applicable guideline

[1] Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

TABLE E2 (cont'd): Mercury, Arsenic and Total Organic Carbon Results in <2mm Soil Fraction
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: May 20, June 2 and June 11, 2008
MTL Project No. 7442

Parameter		**Mercury[1]**	**Arsenic[1]**	**Total Organic Carbon**
Units		mg/kg	mg/kg	g/kg
CCME Residential Guidelines		6.6	12	-
Sample ID (depth)	MM-55 (0-5 cm) MTL DUP of MM-33 (0-5 cm)	1.1	**12,000**	170
	MM-55 (0-5 cm) LAB DUP	-	-	200
	MM-56 (0-5 cm) MTL DUP of MM-26 (0-5 cm)	0.16	**16**	120
	MM-57 (0-5 cm) MTL DUP of MM-23 (0-5 cm)	0.15	**140**	71
	MM-58 (0-5 cm) MTL DUP of MM-60 (0-5 cm)	0.38	**51**	280
	MM-59 (2-5 cm) MTL DUP of MM-64 (2-5 cm)	0.17	**110**	39
	MM-59 (2-5 cm) LAB DUP	0.16	-	-
	MM-60 (0-5 cm)	0.37	**48**	250
	MM-61 (0-5 cm)	0.4	**37**	310
	MM-62 (0-5 cm)	0.33	**25**	310
	MM-63 (0-5 cm)	0.28	**17**	360
	MM-64 (0-5 cm)	0.22	**110**	110
	MM-64 (0-2 cm)	0.27	**32**	330
	MM-64 (2-5 cm)	0.16	**120**	52

Notes:

▨ **[value]** - Exceeds applicable guideline

[1] Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

TABLE E3: Arsenic and Total Organic Carbon Results in <150μm Soil Fraction
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: May 15, May 20 and June 2, 2008
MTL Project No. 7442

Parameter		Arsenic[1]	Total Organic Carbon
Units		mg/kg	g/kg
CCME Residential Guidelines		12	-
Sample ID (depth)	MM-1 (0-5 cm)	10	46
	MM-1 (0-3.5 cm)	**30**	150
	MM-1 (0-3.5 cm) LAB DUP	-	150
	MM-1 (3.5-5 cm)	6	22
	MM-2 (0-5 cm)	**76**	70
	MM-2 (0-3 cm)	**40**	250
	MM-2 (3-5 cm)	**13**	13
	MM-3 (0-5 cm)	**28**	190
	MM-4 (0-5 cm)	**3,600**	2.8
	MM-5 (0-5 cm)	**520**	49
	MM-7 (0-5 cm)	**460**	53
	MM-7 (0-3 cm)	**210**	120
	MM-7 (3-5 cm)	**440**	32
	MM-8 (0-5 cm)	**3,900**	30
	MM-9 (0-5 cm)	**230**	260
	MM-9 (0-5 cm) LAB DUP	-	260
	MM-10 (0-5 cm)	**29**	30
	MM-10 (0-1.5 cm)	11	230
	MM-10 (1.5-5 cm)	**86**	31
	MM-10 (1.5-5 cm) LAB DUP	**86**	-
	MM-11 (0-5 cm)	**130**	45
	MM-11 (0-2 cm)	8	160
	MM-11 (2-5 cm)	**170**	36
	MM-12 (0-5 cm)	10	300
	MM-13 (0-5 cm)	10	240
	MM-14 (0-5 cm)	**31**	300
	MM-15 (0-5 cm)	**54**	240
	MM-16 (0-5 cm)	**23**	430
	MM-17 (0-5 cm)	**17**	320

Notes:

[value] - Exceeds applicable guideline

[1] Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

TABLE E3 (cont'd): Arsenic and Total Organic Carbon Results in <150µm Soil Fraction
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Dates Sampled: May 15, May 20 and June 2, 2008
MTL Project No. 7442

Parameter		**Arsenic[1]**	**Total Organic Carbon**
Units		mg/kg	g/kg
CCME Residential Guidelines		12	-
Sample ID (depth)	**MM-18 (0-5 cm)**	**27**	350
	MM-19 (0-5 cm)	**23**	360
	MM-20 (0-5 cm)	**17**	320
	MM-21 (0-5 cm)	**19**	160
	MM-22 (0-5 cm)	**62**	240
	MM-23 (0-5 cm)	**120**	68
	MM-23 (0-3 cm)	**70**	220
	MM-23 (3-5 cm)	**70**	42
	MM-23 (3-5 cm) LAB DUP	-	39
	MM-24 (0-5 cm)	**110**	55
	MM-24 (0-5 cm) LAB DUP	**120**	-
	MM-25 (0-5 cm)	**190**	91
	MM-26 (0-5 cm)	**20**	91
	MM-26 (0-2 cm)	**22**	210
	MM-26 (2-5 cm)	**19**	7.1
	MM-27 (0-5 cm)	**40**	210
	MM-28 (0-5 cm)	**2,600**	53
	MM-28 (0-5 cm) LAB DUP	-	57
	MM-28 (0-3 cm)	**770**	230
	MM-28 (3-5 cm)	**2,500**	54
	MM-29 (0-5 cm)	**100**	350
	MM-30 (0-5 cm)	**32**	230
	MM-31 (0-5 cm)	**47**	400
	MM-32 (0-5 cm)	**240**	190
	MM-33 (0-5 cm)	**12,000**	95
	MM-34 (0-5 cm)	**250**	290
	MM-35 (0-5 cm)	**520**	29
	MM-36 (0-5 cm)	**640**	220
	MM-38 (0-5 cm)	**980**	57

Notes:

[value] - Exceeds applicable guideline

[1] Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

TABLE E3 (cont'd): Arsenic and Total Organic Carbon Results in <150µm Soil Fraction
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Dates Sampled: May 15, May 20, June 2 and June 11, 2008
MTL Project No. 7442

Parameter		Arsenic[1]	Total Organic Carbon
Units		mg/kg	g/kg
CCME Residential Guidelines		12	-
Sample ID (depth)	MM-38 (0-5 cm) LAB DUP	**1,000**	-
	MM-39 (0-5 cm)	**1,600**	19
	MM-40 (0-5 cm)	**290**	75
	MM-41 (0-5 cm)	**3,000**	32
	MM-42 (0-5 cm)	**1,000**	110
	MM-43 (0-5 cm)	**350**	52
	MM-44 (0-5 cm)	**630**	94
	MM-47 (0-5 cm)	**54**	18
	MM-48 (0-5 cm)	**860**	66
	MM-50 (0-5 cm)	**2,700**	18
	MM-51 (0-10 cm)	**3,500**	3.8
	MM-52 (0-10 cm)	**35,000**	2.6
	MM-53 (0-10 cm)	**5,700**	0.4
	MM-54 (0-10 cm)	**5,700**	54
	MM-55 (0-5 cm) MTL DUP of MM-33 (0-5 cm)	**12,000**	120
	MM-56 (0-5 cm) MTL DUP of MM-26 (0-5 cm)	**15**	110
	MM-57 (0-5 cm) MTL DUP of MM-23 (0-5 cm)	**110**	57
	MM-58 (0-5 cm) MTL DUP of MM-60 (0-5 cm)	**73**	230
	MM-59 (2-5 cm) MTL DUP of MM-64 (2-5 cm)	**130**	45
	MM-59 (2-5 cm) LAB DUP	**130**	-
	MM-60 (0-5 cm)	**41**	270
	MM-60 (0-5 cm) LAB DUP	-	270
	MM-61 (0-5 cm)	**51**	290
	MM-62 (0-5 cm)	**31**	340
	MM-63 (0-5 cm)	**21**	300
	MM-64 (0-5 cm)	**120**	110
	MM-64 (0-2 cm)	**39**	300
	MM-64 (2-5 cm)	**130**	60

Notes:

[value] - Exceeds applicable guideline

[1] Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

TABLE E4: Dry Weight Calculations and Moisture Results in Soil
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: May 15, 2008 - June 11, 2008
MTL Project No. 7442

Parameter		< 2mm	< 150 µm	Moisture
Units		(% passing)	(% passing)	(%)
Sample ID	MM-1 (0-5 cm)	88	29	44
	MM-1 (0-3.5 cm)	94	24	65
	MM-1 (3.5-5 cm)	81	30	24
	MM-2 (0-5 cm)	88	30	41
	MM-2 (0-3 cm)	91	40	60
	MM-2 (3-5 cm)	86	36	25
	MM-3 (0-5 cm)	96	27	68
	MM-4 (0-5 cm)	100	99	30
	MM-5 (0-5 cm)	83	45	36
	MM-7 (0-5 cm)	80	37	41
	MM-7 (0-3 cm)	97	46	57
	MM-7 (3-5 cm)	91	52	29
	MM-8 (0-5 cm)	96	42	35
	MM-9 (0-5 cm)	64	12	74
	MM-10 (0-5 cm)	84	17	37
	MM-10 (0-1.5 cm)	99	49	66
	MM-10 (1.5-5 cm)	98	41	29
	MM-11 (0-5 cm)	73	23	34
	MM-11 (0-2 cm)	99	22	64
	MM-11 (2-5 cm)	68	18	34
	MM-12 (0-5 cm)	100	31	67
	MM-13 (0-5 cm)	97	25	75
	MM-14 (0-5 cm)	95	23	71
	MM-15 (0-5 cm)	99	30	73
	MM-16 (0-5 cm)	90	20	79
	MM-17 (0-5 cm)	96	36	75

TABLE E4 (Con't): Dry Weight Calculations and Moisture Results in Soil
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: May 15, 2008 - June 11, 2008
MTL Project No. 7442

Parameter		< 2mm	< 150 µm	Moisture
Units		(% passing)	(% passing)	(%)
Sample ID	MM-18 (0-5 cm)	96	28	73
	MM-18 (0-5 cm) LAB DUP	95	31	-
	MM-19 (0-5 cm)	95	29	74
	MM-20 (0-5 cm)	91	23	74
	MM-21 (0-5 cm)	81	27	78
	MM-22 (0-5 cm)	93	20	67
	MM-23 (0-5 cm)	92	42	37
	MM-23 (0-3 cm)	95	40	64
	MM-23 (3-5 cm)	93	35	35
	MM-24 (0-5 cm)	85	41	41
	MM-25 (0-5 cm)	99	40	50
	MM-26 (0-5 cm)	95	34	35
	MM-26 (0-2 cm)	98	38	56
	MM-26 (2-5 cm)	94	34	19
	MM-27 (0-5 cm)	96	26	74
	MM-28 (0-5 cm)	90	25	44
	MM-28 (0-3 cm)	96	44	73
	MM-28 (3-5 cm)	74	25	47
	MM-29 (0-5 cm)	85	25	78
	MM-30 (0-5 cm)	96	49	69
	MM-31 (0-5 cm)	100	36	77
	MM-32 (0-5 cm)	96	45	60
	MM-33 (0-5 cm)	94	34	58
	MM-34 (0-5 cm)	89	31	69
	MM-35 (0-5 cm)	94	57	29
	MM-36 (0-5 cm)	61	32	53
	MM-38 (0-5 cm)	97	50	38

TABLE E4 (Con't): Dry Weight Calculations and Moisture Results in Soil
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: May 15, 2008 - June 11, 2008
MTL Project No. 7442

Parameter		< 2mm	< 150 µm	Moisture
Units		(% passing)	(% passing)	(%)
Sample ID	MM-39 (0-5 cm)	81	27	18
	MM-40 (0-5 cm)	100	40	43
	MM-41 (0-5 cm)	93	40	21
	MM-42 (0-5 cm)	84	27	41
	MM-43 (0-5 cm)	96	27	41
	MM-44 (0-5 cm)	99	42	42
	MM-47 (0-5 cm)	100	9.2	41
	MM-48 (0-5 cm)	100	33	45
	MM-50 (0-5 cm)	100	38	42
	MM-51 (0-10 cm)	100	17	15
	MM-52 (0-10 cm)	100	21	16
	MM-53 (0-10 cm)	100	24	16
	MM-54 (0-10 cm)	100	47	73
	MM-55 (0-5 cm) DUP of MM-33 (0-5 cm)	95	42	55
	MM-56 (0-5 cm) DUP of MM-26 (0-5 cm)	64	39	40
	MM-57 (0-5 cm) DUP of MM-23 (0-5 cm)	92	44	40
	MM-58 (0-5 cm) DUP of MM-60 (0-5 cm)	69	16	57
	MM-59 (2-5 cm) DUP of MM-64 (2-5 cm)	82	44	32
	MM-59 (2-5 cm) LAB DUP	83	49	-
	MM-60 (0-5 cm)	92	14	66
	MM-61 (0-5 cm)	97	47	69
	MM-62 (0-5 cm)	95	27	68
	MM-63 (0-5 cm)	98	24	69
	MM-64 (0-5 cm)	91	38	44
	MM-64 (0-2 cm)	99	57	61
	MM-64 (2-5 cm)	80	37	35

TABLE E5: 1F-MS and Group 7AR Mercury and Arsenic Results in Tailings
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: May 20, 2008
MTL Project No. 7442

Parameter		**Mercury** [1]	**Arsenic** [1]	**Arsenic**
Units		ppm	ppm	%
CCME Residential Guidelines		6.6	12	-
Sample ID/Date	MW-51 - May 20/08	1.45	**[2178]**	n/a
	MW-52 - May 20/08	0.821	**[>10,000]**	2.1
	MW-53 - May 20/08	0.511	**[3141]**	n/a

Notes: **[value]** - Exceeds applicable guideline
n/a - Not analyzed
ppm = mg/kg

[1] Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

TABLE E6: Mercury and Arsenic Results in Groundwater
Client: NS Department of Transportation and Infrastructure Renewal
Site: Former Gold Mine Site, Montague Mines, NS
Date Sampled: January 18, 2008 and May 20, 2008
MTL Project No. 7442

Parameter		Mercury	Arsenic
Units		µg/L	µg/L
CCME Residential Guidelines		1	10
Sample ID/Date	MW1 - Jan. 18/08	0.02	**400**
	MW2 - Jan. 18/08	0.15	**250**
	MW3 - Jan. 18/08	0.02	**570**
	MW3 - May 20/08	0.57	**3,100**

Notes: **[value]** - Exceeds applicable guideline

Criteria published in 2007 Update of CCME *Canadian Environmental Quality Guidelines* for residential land use.

MARITIME TESTING

Appendix F

Laboratory Certificates of Analysis and Chain of Custody Forms

Sieve Analysis

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: Z22334-01 **Client ID:** MM-4 (0-5CM)

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*			0		
0.15	*2.74*			0.21	*-1*	100.0
Pan				16.9	*2.74*	98.8

Total Sediment Weight = 17.11

Sieve Analysis

Laboratory ID: Z22335-01 **Client ID:** MM-8 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.31		
0.15	*2.74*			4.48	*-1*	96.3
Pan				3.51	*2.74*	42.3

Total Sediment Weight = 8.3

Laboratory ID: Z22336-01 **Client ID:** MM-39 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.65		
0.15	*2.74*			4.74	*-1*	81.2
Pan				2.38	*2.74*	27.1

Total Sediment Weight = 8.77

Laboratory ID: Z22337-01 **Client ID:** MM-50 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			6.67	*-1*	100.0
Pan				4	*2.74*	37.5

Total Sediment Weight = 10.67

Laboratory ID: Z22338-01 **Client ID:** MM-51 (0-10CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			15.42	*-1*	100.0
Pan				3.06	*2.74*	16.6

Total Sediment Weight = 18.48

Laboratory ID: Z22339-01 **Client ID:** MM-52 (0-10CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			13.26	*-1*	100.0
Pan				3.52	*2.74*	21.0

Total Sediment Weight = 16.78

Sieve Analysis

Laboratory ID: Z22340-01 **Client ID:** MM-53 (0-10CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1			0		
0.15	2.74			12.07	-1	100.0
Pan				3.73	2.74	23.6

Total Sediment Weight = 15.8

Laboratory ID: Z22341-01 **Client ID:** MM-54 (0-10CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1			0.01		
0.15	2.74			3.58	-1	99.9
Pan				3.18	2.74	47.0

Total Sediment Weight = 6.77

Laboratory ID: Z22342-01 **Client ID:** MM-41 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1			0.91		
0.15	2.74			6.6	-1	92.7
Pan				4.91	2.74	39.5

Total Sediment Weight = 12.42

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1					
0.15	2.74				-1	#DIV/0!
Pan					2.74	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1					
0.15	2.74				-1	#DIV/0!
Pan					2.74	#DIV/0!

Total Sediment Weight = 0

Sieve Analysis

Laboratory ID:

Client ID:

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID:

Client ID:

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID:

Client ID:

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: Z23443-01

Client ID: MM-2 (0-5CM)

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*			1.07		
0.15	*2.74*			5.41	*-1*	88.4
Pan				2.74	*2.74*	29.7

Total Sediment Weight = 9.22

Laboratory ID: Z23451-01

Client ID: MM-2 (0-3CM)

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*			0.55		
0.15	*2.74*			3.07	*-1*	90.8
Pan				2.36	*2.74*	39.5

Total Sediment Weight = 5.98

Sieve Analysis

Laboratory ID: Z23452-01 **Client ID:** MM-2 (3-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.52		
0.15	*2.74*			5.52	*-1*	86.2
Pan				3.98	*2.74*	36.1

Total Sediment Weight = 11.02

Laboratory ID: Z23453-01 **Client ID:** MM-3 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.22		
0.15	*2.74*			3.86	*-1*	96.1
Pan				1.53	*2.74*	27.3

Total Sediment Weight = 5.61

Laboratory ID: Z23454-01 **Client ID:** MM-5 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.04		
0.15	*2.74*			2.38	*-1*	83.3
Pan				2.81	*2.74*	45.1

Total Sediment Weight = 6.23

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

Sieve Analysis

Laboratory ID: Z23455-01 **Client ID:** MM-7(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.61		
0.15	*2.74*			3.35	*-1*	79.6
Pan				2.95	*2.74*	37.3

Total Sediment Weight = 7.91

Laboratory ID: Z23456-01 **Client ID:** MM-7(0-3CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.17		
0.15	*2.74*			2.66	*-1*	96.7
Pan				2.39	*2.74*	45.8

Total Sediment Weight = 5.22

Laboratory ID: Z23457-01 **Client ID:** MM-7(3-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1		
0.15	*2.74*			4.52	*-1*	91.3
Pan				5.95	*2.74*	51.9

Total Sediment Weight = 11.47

Laboratory ID: Z23458-01 **Client ID:** MM-42(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.14		
0.15	*2.74*			4.16	*-1*	84.3
Pan				1.95	*2.74*	26.9

Total Sediment Weight = 7.25

Laboratory ID: Z23459-01 **Client ID:** MM-38(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.22		
0.15	*2.74*			3.26	*-1*	96.8
Pan				3.47	*2.74*	49.9

Total Sediment Weight = 6.95

Sieve Analysis

Laboratory ID: Z23460-01 **Client ID:** MM-40(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			4.64	*-1*	100.0
Pan				3.08	*2.74*	39.9

Total Sediment Weight = 7.72

Laboratory ID: Z23461-01 **Client ID:** MM-44(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.07		
0.15	*2.74*			3.15	*-1*	98.7
Pan				2.28	*2.74*	41.5

Total Sediment Weight = 5.5

Laboratory ID: Z23462-01 **Client ID:** MM-48(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			5.61	*-1*	100.0
Pan				2.76	*2.74*	33.0

Total Sediment Weight = 8.37

Laboratory ID: Z23463-01 **Client ID:** MM-43(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.49		
0.15	*2.74*			7.82	*-1*	95.7
Pan				3.05	*2.74*	26.8

Total Sediment Weight = 11.36

Laboratory ID: Z23464-01 **Client ID:** MM-1(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.12		
0.15	*2.74*			5.6	*-1*	88.2
Pan				2.78	*2.74*	29.3

Total Sediment Weight = 9.5

Sieve Analysis

Laboratory ID: Z23465-01 **Client ID:** MM-1(0-3.5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1			0.33		
0.15	2.74			3.64	-1	93.6
Pan				1.22	2.74	23.5

Total Sediment Weight = 5.19

Laboratory ID: Z23466-01 **Client ID:** MM-1(3.5-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1			3.39		
0.15	2.74			8.72	-1	80.5
Pan				5.26	2.74	30.3

Total Sediment Weight = 17.37

Laboratory ID: Z23467-01 **Client ID:** MM-47(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1			0		
0.15	2.74			13.77	-1	100.0
Pan				1.4	2.74	9.2

Total Sediment Weight = 15.17

Laboratory ID: Z23468-01 **Client ID:** MM-33(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment		Passing	
mm	PHI	(grams)	(grams)		PHI	%
2	-1			0.39		
0.15	2.74			3.98	-1	94.1
Pan				2.2	2.74	33.5

Total Sediment Weight = 6.57

Laboratory ID: Z23469-01 **Client ID:** MM-34(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	-1			0.46		
0.15	2.74			2.29	-1	88.5
Pan				1.25	2.74	31.3

Total Sediment Weight = 4

Sieve Analysis

Laboratory ID: Z23470-01 **Client ID:** MM-55(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.41		
0.15	*2.74*			4.09	*-1*	94.7
Pan				3.22	*2.74*	41.7

Total Sediment Weight = 7.72

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			0	*-1*	#DIV/0!
Pan				0	*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			0	*-1*	#DIV/0!
Pan				0	*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			0	*-1*	#DIV/0!
Pan				0	*2.74*	#DIV/0!

Total Sediment Weight = 0

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			0	*-1*	#DIV/0!
Pan				0	*2.74*	#DIV/0!

Total Sediment Weight = 0

Your Project #: 7442
Your C.O.C. #: B 30972

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/06/20

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A861395
Received: 2008/06/12, 11:09

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Metals Solid Avail. MS - N-per, <150 um	6	N/A	2008/06/18	ATL SOP 00024 R3	Based on EPA6020A
Metals Solid Avail. MS - N-per, <150 um	3	N/A	2008/06/19	ATL SOP 00024 R3	Based on EPA6020A
Particle size in solids (dry sieves)	9	N/A	2008/06/18	ATL SOP 00012 R2	based on MSAMS-1978
Total Organic Carbon in Soil (<150 um)	9	N/A	2008/06/18	ATL SOP 00044 R2	LECO 203-601-224

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY, Project Manager
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A861395
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z22334		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-4 (0-5CM) PREV#Y72291**	**RDL**	**QC Batch**
Inorganics				
< 150 um Organic Carbon (TOC)	g/kg	2.8	0.2	1541417
< -1 Phi (2 mm)	%	100	0.1	1540594
< PHI +2.7 (0.15 mm)	%	99	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z22335	Z22336		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30972	B 30972		
Registration #					
	Units	**MM-8 (0-5CM) PREV#Y72296**	**MM-39 (0-5CM) PREV#Y72297**	**RDL**	**QC Batch**
Inorganics					
< 150 um Organic Carbon (TOC)	g/kg	30	19	2	1540283
< -1 Phi (2 mm)	%	96	81	0.1	1540594
< PHI +2.7 (0.15 mm)	%	42	27	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z22337		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-50 (0-5CM) PREV#Y72299**	**RDL**	**QC Batch**
Inorganics				
< 150 um Organic Carbon (TOC)	g/kg	18	2	1540283
< -1 Phi (2 mm)	%	100	0.1	1540594
< PHI +2.7 (0.15 mm)	%	38	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z22338	Z22339		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30972	B 30972		
Registration #					
	Units	**MM-51 (0-10CM) PREV#Y72998**	**MM-52 (0-10CM) PREV#Y72299**	**RDL**	**QC Batch**
Inorganics					
< 150 um Organic Carbon (TOC)	g/kg	3.8	2.6	0.2	1541417
< -1 Phi (2 mm)	%	100	100	0.1	1540594
< PHI +2.7 (0.15 mm)	%	17	21	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861395
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z22340		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-53 (0-10CM) PREV#Y72300**	**RDL**	**QC Batch**
Inorganics				
< 150 um Organic Carbon (TOC)	g/kg	0.4	0.2	1541417
< -1 Phi (2 mm)	%	100	0.1	1540594
< PHI +2.7 (0.15 mm)	%	24	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z22341		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-54 (0-10CM) PREV#Y72301**	**RDL**	**QC Batch**
Inorganics				
< 150 um Organic Carbon (TOC)	g/kg	54	5	1540283
< -1 Phi (2 mm)	%	100	0.1	1540594
< PHI +2.7 (0.15 mm)	%	47	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861395
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z22342		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-41 (0-5CM) PREV#Y72303**	**RDL**	**QC Batch**

Inorganics				
< 150 um Organic Carbon (TOC)	g/kg	32	3	1540283
< -1 Phi (2 mm)	%	93	0.1	1540594
< PHI +2.7 (0.15 mm)	%	40	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861395
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22334		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-4 (0-5CM) PREV#Y72291**	**RDL**	**QC Batch**
Metals				
available (<150 um) Aluminum (Al)	mg/kg	15000	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	ND	2	1541389
available (<150 um) Arsenic (As)	mg/kg	3600	2	1541389
available (<150 um) Barium (Ba)	mg/kg	48	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	ND	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	0.5	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	18	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	14	1	1541389
available (<150 um) Copper (Cu)	mg/kg	120	2	1541389
available (<150 um) Iron (Fe)	mg/kg	35000	50	1541389
available (<150 um) Lead (Pb)	mg/kg	61	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	330	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	34	2	1541389
available (<150 um) Selenium (Se)	mg/kg	ND	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	11	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.4	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	0.5	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	22	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	160	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22335		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-8 (0-5CM) PREV#Y72296**	**RDL**	**QC Batch**
Metals				
available (<150 um) Aluminum (Al)	mg/kg	8400	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	ND	2	1541389
available (<150 um) Arsenic (As)	mg/kg	3900	2	1541389
available (<150 um) Barium (Ba)	mg/kg	29	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	ND	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	ND	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	12	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	3	1	1541389
available (<150 um) Copper (Cu)	mg/kg	38	2	1541389
available (<150 um) Iron (Fe)	mg/kg	29000	50	1541389
available (<150 um) Lead (Pb)	mg/kg	190	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	230	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	13	2	1541389
available (<150 um) Selenium (Se)	mg/kg	ND	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	5	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.2	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	0.3	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	24	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	58	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22336		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-39 (0-5CM) PREV#Y72297**	**RDL**	**QC Batch**
Metals				
available (<150 um) Aluminum (Al)	mg/kg	8400	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	ND	2	1541389
available (<150 um) Arsenic (As)	mg/kg	1600	2	1541389
available (<150 um) Barium (Ba)	mg/kg	23	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	ND	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	ND	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	13	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	9	1	1541389
available (<150 um) Copper (Cu)	mg/kg	39	2	1541389
available (<150 um) Iron (Fe)	mg/kg	21000	50	1541389
available (<150 um) Lead (Pb)	mg/kg	130	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	290	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	16	2	1541389
available (<150 um) Selenium (Se)	mg/kg	ND	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	5	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.2	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	0.3	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	25	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	86	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22337		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-50 (0-5CM) PREV#Y72299**	**RDL**	**QC Batch**
Metals				
available (<150 um) Aluminum (Al)	mg/kg	8400	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	ND	2	1541389
available (<150 um) Arsenic (As)	mg/kg	2700	2	1541389
available (<150 um) Barium (Ba)	mg/kg	14	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	ND	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	ND	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	12	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	3	1	1541389
available (<150 um) Copper (Cu)	mg/kg	29	2	1541389
available (<150 um) Iron (Fe)	mg/kg	22000	50	1541389
available (<150 um) Lead (Pb)	mg/kg	62	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	190	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	12	2	1541389
available (<150 um) Selenium (Se)	mg/kg	ND	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	6	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.1	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	0.3	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	24	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	63	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861395
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22338		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-51 (0-10CM) PREV#Y72998**	**RDL**	**QC Batch**
Metals				
available (<150 um) Aluminum (Al)	mg/kg	10000	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	ND	2	1541389
available (<150 um) Arsenic (As)	mg/kg	3500	2	1541389
available (<150 um) Barium (Ba)	mg/kg	34	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	ND	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	ND	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	13	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	13	1	1541389
available (<150 um) Copper (Cu)	mg/kg	82	2	1541389
available (<150 um) Iron (Fe)	mg/kg	27000	50	1541389
available (<150 um) Lead (Pb)	mg/kg	35	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	400	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	30	2	1541389
available (<150 um) Selenium (Se)	mg/kg	ND	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	11	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.2	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	0.4	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	15	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	130	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22339		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-52 (0-10CM) PREV#Y72299**	**RDL**	**QC Batch**

Metals				
available (<150 um) Aluminum (Al)	mg/kg	8300	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	20	2	1541389
available (<150 um) Arsenic (As)	mg/kg	35000	20	1541389
available (<150 um) Barium (Ba)	mg/kg	26	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	ND	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	ND	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	11	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	3	1	1541389
available (<150 um) Copper (Cu)	mg/kg	19	2	1541389
available (<150 um) Iron (Fe)	mg/kg	65000	500	1541389
available (<150 um) Lead (Pb)	mg/kg	150	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	150	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	15	2	1541389
available (<150 um) Selenium (Se)	mg/kg	ND	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	7	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.3	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	0.3	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	14	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	44	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861395
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22340		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-53 (0-10CM) PREV#Y72300**	**RDL**	**QC Batch**
Metals				
available (<150 um) Aluminum (Al)	mg/kg	11000	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	ND	2	1541389
available (<150 um) Arsenic (As)	mg/kg	5700	2	1541389
available (<150 um) Barium (Ba)	mg/kg	25	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	ND	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	ND	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	12	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	24	1	1541389
available (<150 um) Copper (Cu)	mg/kg	89	2	1541389
available (<150 um) Iron (Fe)	mg/kg	32000	500	1541389
available (<150 um) Lead (Pb)	mg/kg	29	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	540	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	52	2	1541389
available (<150 um) Selenium (Se)	mg/kg	ND	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	26	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.2	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	0.3	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	12	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	160	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22341		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-54 (0-10CM) PREV#Y72301**	**RDL**	**QC Batch**
Metals				
available (<150 um) Aluminum (Al)	mg/kg	19000	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	2	2	1541389
available (<150 um) Arsenic (As)	mg/kg	5700	2	1541389
available (<150 um) Barium (Ba)	mg/kg	110	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	2	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	2.8	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	17	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	76	1	1541389
available (<150 um) Copper (Cu)	mg/kg	120	2	1541389
available (<150 um) Iron (Fe)	mg/kg	55000	500	1541389
available (<150 um) Lead (Pb)	mg/kg	190	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	780	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	150	2	1541389
available (<150 um) Selenium (Se)	mg/kg	2	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	11	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.6	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	1.3	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	60	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	430	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z22342		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	MM-41 (0-5CM) PREV#Y72303	RDL	QC Batch
Metals				
available (<150 um) Aluminum (Al)	mg/kg	13000	10	1541389
available (<150 um) Antimony (Sb)	mg/kg	ND	2	1541389
available (<150 um) Arsenic (As)	mg/kg	3000	2	1541389
available (<150 um) Barium (Ba)	mg/kg	190	5	1541389
available (<150 um) Beryllium (Be)	mg/kg	ND	2	1541389
available (<150 um) Boron (B)	mg/kg	ND	5	1541389
available (<150 um) Cadmium (Cd)	mg/kg	1.1	0.3	1541389
available (<150 um) Chromium (Cr)	mg/kg	19	2	1541389
available (<150 um) Cobalt (Co)	mg/kg	14	1	1541389
available (<150 um) Copper (Cu)	mg/kg	75	2	1541389
available (<150 um) Iron (Fe)	mg/kg	33000	500	1541389
available (<150 um) Lead (Pb)	mg/kg	630	0.5	1541389
available (<150 um) Manganese (Mn)	mg/kg	370	2	1541389
available (<150 um) Molybdenum (Mo)	mg/kg	ND	2	1541389
available (<150 um) Nickel (Ni)	mg/kg	36	2	1541389
available (<150 um) Selenium (Se)	mg/kg	ND	2	1541389
available (<150 um) Silver (Ag)	mg/kg	ND	0.5	1541389
available (<150 um) Strontium (Sr)	mg/kg	18	5	1541389
available (<150 um) Thallium (Tl)	mg/kg	0.3	0.1	1541389
available (<150 um) Uranium (U)	mg/kg	0.5	0.1	1541389
available (<150 um) Vanadium (V)	mg/kg	35	2	1541389
available (<150 um) Zinc (Zn)	mg/kg	440	5	1541389

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA861395

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1540283 CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/18		91	%	75 - 125
	Method Blank	< 150 um Organic Carbon (TOC)	2008/06/18	ND, RDL=0.2		g/kg	
	RPD	< 150 um Organic Carbon (TOC)	2008/06/18	1.5		%	35
1540594 BAN	RPD	< -1 Phi (2 mm)	2008/06/18	1.2		%	25
		< PHI +2.7 (0.15 mm)	2008/06/18	10.8		%	25
1541389 DLB	MATRIX SPIKE	available (<150 um) Aluminum (Al)	2008/06/18		NC	%	75 - 125
		available (<150 um) Antimony (Sb)	2008/06/18		8.0 (1)	%	75 - 125
		available (<150 um) Arsenic (As)	2008/06/18		NC	%	75 - 125
		available (<150 um) Barium (Ba)	2008/06/18		NC	%	75 - 125
		available (<150 um) Beryllium (Be)	2008/06/18		91	%	75 - 125
		available (<150 um) Boron (B)	2008/06/18		56 (2)	%	75 - 125
		available (<150 um) Cadmium (Cd)	2008/06/18		97	%	75 - 125
		available (<150 um) Chromium (Cr)	2008/06/18		NC	%	75 - 125
		available (<150 um) Cobalt (Co)	2008/06/18		99	%	75 - 125
		available (<150 um) Copper (Cu)	2008/06/18		NC	%	75 - 125
		available (<150 um) Iron (Fe)	2008/06/18		NC	%	75 - 125
		available (<150 um) Lead (Pb)	2008/06/18		NC	%	75 - 125
		available (<150 um) Manganese (Mn)	2008/06/18		NC	%	75 - 125
		available (<150 um) Molybdenum (Mo)	2008/06/18		93	%	75 - 125
		available (<150 um) Nickel (Ni)	2008/06/18		NC	%	75 - 125
		available (<150 um) Selenium (Se)	2008/06/18		87	%	75 - 125
		available (<150 um) Silver (Ag)	2008/06/18		94	%	75 - 125
		available (<150 um) Strontium (Sr)	2008/06/18		97	%	75 - 125
		available (<150 um) Thallium (Tl)	2008/06/18		96	%	75 - 125
		available (<150 um) Uranium (U)	2008/06/18		92	%	75 - 125
		available (<150 um) Vanadium (V)	2008/06/18		NC	%	75 - 125
		available (<150 um) Zinc (Zn)	2008/06/18		90	%	75 - 125
	QC STANDARD	available (<150 um) Aluminum (Al)	2008/06/18		78	%	75 - 125
		available (<150 um) Arsenic (As)	2008/06/18		111	%	75 - 125
		available (<150 um) Barium (Ba)	2008/06/18		114	%	75 - 125
		available (<150 um) Chromium (Cr)	2008/06/18		89	%	75 - 125
		available (<150 um) Cobalt (Co)	2008/06/18		97	%	75 - 125
		available (<150 um) Copper (Cu)	2008/06/18		98	%	75 - 125
		available (<150 um) Iron (Fe)	2008/06/18		84	%	75 - 125
		available (<150 um) Lead (Pb)	2008/06/18		98	%	75 - 125
		available (<150 um) Manganese (Mn)	2008/06/18		98	%	75 - 125
		available (<150 um) Nickel (Ni)	2008/06/18		103	%	75 - 125
		available (<150 um) Strontium (Sr)	2008/06/18		91	%	75 - 125
		available (<150 um) Vanadium (V)	2008/06/18		88	%	75 - 125
		available (<150 um) Zinc (Zn)	2008/06/18		97	%	75 - 125
	Spiked Blank	available (<150 um) Aluminum (Al)	2008/06/18		111	%	75 - 125
		available (<150 um) Antimony (Sb)	2008/06/18		101	%	75 - 125
		available (<150 um) Arsenic (As)	2008/06/18		96	%	75 - 125
		available (<150 um) Barium (Ba)	2008/06/18		102	%	75 - 125
		available (<150 um) Beryllium (Be)	2008/06/18		98	%	75 - 125
		available (<150 um) Boron (B)	2008/06/18		98	%	75 - 125
		available (<150 um) Cadmium (Cd)	2008/06/18		95	%	75 - 125
		available (<150 um) Chromium (Cr)	2008/06/18		104	%	75 - 125
		available (<150 um) Cobalt (Co)	2008/06/18		100	%	75 - 125
		available (<150 um) Copper (Cu)	2008/06/18		105	%	75 - 125
		available (<150 um) Iron (Fe)	2008/06/18		107	%	75 - 125
		available (<150 um) Lead (Pb)	2008/06/18		102	%	75 - 125
		available (<150 um) Manganese (Mn)	2008/06/18		103	%	75 - 125
		available (<150 um) Molybdenum (Mo)	2008/06/18		100	%	75 - 125
		available (<150 um) Nickel (Ni)	2008/06/18		102	%	75 - 125

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name:

Quality Assurance Report (Continued)

Maxxam Job Number: DA861395

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1541389 DLB	Spiked Blank	available (<150 um) Selenium (Se)	2008/06/18		93	%	75 - 125
		available (<150 um) Silver (Ag)	2008/06/18		98	%	75 - 125
		available (<150 um) Strontium (Sr)	2008/06/18		101	%	75 - 125
		available (<150 um) Thallium (Tl)	2008/06/18		100	%	75 - 125
		available (<150 um) Uranium (U)	2008/06/18		100	%	75 - 125
		available (<150 um) Vanadium (V)	2008/06/18		104	%	75 - 125
		available (<150 um) Zinc (Zn)	2008/06/18		88	%	75 - 125
	Method Blank	available (<150 um) Aluminum (Al)	2008/06/19	ND, RDL=10		mg/kg	
		available (<150 um) Antimony (Sb)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Arsenic (As)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Barium (Ba)	2008/06/19	ND, RDL=5		mg/kg	
		available (<150 um) Beryllium (Be)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Boron (B)	2008/06/19	ND, RDL=5		mg/kg	
		available (<150 um) Cadmium (Cd)	2008/06/19	ND, RDL=0.3		mg/kg	
		available (<150 um) Chromium (Cr)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Cobalt (Co)	2008/06/19	ND, RDL=1		mg/kg	
		available (<150 um) Copper (Cu)	2008/06/19	7, RDL=2 (3)		mg/kg	
		available (<150 um) Iron (Fe)	2008/06/19	ND, RDL=50		mg/kg	
		available (<150 um) Lead (Pb)	2008/06/19	ND, RDL=0.5		mg/kg	
		available (<150 um) Manganese (Mn)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Molybdenum (Mo)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Nickel (Ni)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Selenium (Se)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Silver (Ag)	2008/06/19	ND, RDL=0.5		mg/kg	
		available (<150 um) Strontium (Sr)	2008/06/19	ND, RDL=5		mg/kg	
		available (<150 um) Thallium (Tl)	2008/06/19	ND, RDL=0.1		mg/kg	
		available (<150 um) Uranium (U)	2008/06/19	ND, RDL=0.1		mg/kg	
		available (<150 um) Vanadium (V)	2008/06/19	ND, RDL=2		mg/kg	
		available (<150 um) Zinc (Zn)	2008/06/19	ND, RDL=5		mg/kg	
	RPD	available (<150 um) Arsenic (As)	2008/06/18	3.5		%	35
1541417 CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/19		88	%	75 - 125
	Method Blank	< 150 um Organic Carbon (TOC)	2008/06/19	ND, RDL=0.2		g/kg	
	RPD	< 150 um Organic Carbon (TOC)	2008/06/19	6.3		%	35

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample
(1) Low recovery due to digestion efficiency.
(2) Low recovery due to sample matrix.
(3) Low level lab contamination. Minimal impact on data quality.

Your Project #: 7442
Your C.O.C. #: B 30970

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/06/18

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A861676
Received: 2008/06/12, 10:36

Sample Matrix: Soil
Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Particle size in solids (dry sieves)	21	N/A	2008/06/18	ATL SOP 00012 R2	based on MSAMS-1978

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY, Project Manager
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A861676
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z23443	Z23451		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-2(0-5CM) (P#Y72464)**	**MM-2(0-3CM) (P#Y72484)**	**RDL**	**QC Batch**
Inorganics					
< -1 Phi (2 mm)	%	88	91	0.1	1540594
< PHI +2.7 (0.15 mm)	%	30	40	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z23452	Z23453		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-2(3-5CM) (P#Y72485)**	**MM-3(0-5CM) (P#Y72519)**	**RDL**	**QC Batch**
Inorganics					
< -1 Phi (2 mm)	%	86	96	0.1	1540602
< PHI +2.7 (0.15 mm)	%	36	27	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z23454	Z23455		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-5(0-5CM) (P#Y72520)**	**MM-7(0-5CM) (P#Y72541)**	**RDL**	**QC Batch**
Inorganics					
< -1 Phi (2 mm)	%	83	80	0.1	1540602
< PHI +2.7 (0.15 mm)	%	45	37	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z23456	Z23457		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-7(0-3CM) (P#Y72548)**	**MM-7(3-5CM) (P#Y72552)**	**RDL**	**QC Batch**
Inorganics					
< -1 Phi (2 mm)	%	97	91	0.1	1540602
< PHI +2.7 (0.15 mm)	%	46	52	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z23458	Z23459		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-42(0-5CM) (P#Y72553)**	**MM-38(0-5CM) (P#Y72554)**	**RDL**	**QC Batch**
Inorganics					
< -1 Phi (2 mm)	%	84	97	0.1	1540602
< PHI +2.7 (0.15 mm)	%	27	50	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z23460	Z23461		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-40(0-5CM) (P#Y72564)**	**MM-44(0-5CM) (P#Y72572)**	**RDL**	**QC Batch**
Inorganics					
< -1 Phi (2 mm)	%	100	99	0.1	1540602
< PHI +2.7 (0.15 mm)	%	40	42	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861676
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z23462	Z23463		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-48(0-5CM) (P#Y72573)**	**MM-43(0-5CM) (P#Y72574)**	**RDL**	**QC Batch**

Inorganics					
< -1 Phi (2 mm)	%	100	96	0.1	1540602
< PHI +2.7 (0.15 mm)	%	33	27	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z23464	Z23465		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-1(0-5CM) (P#Y72576)**	**MM-1(0-3.5CM) (P#Y72585)**	**RDL**	**QC Batch**

Inorganics					
< -1 Phi (2 mm)	%	88	94	0.1	1540602
< PHI +2.7 (0.15 mm)	%	29	24	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z23466	Z23467		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-1(3.5-5CM) (P#Y72590)**	**MM-47(0-5CM) (P#Y72592)**	**RDL**	**QC Batch**

Inorganics					
< -1 Phi (2 mm)	%	81	100	0.1	1540602
< PHI +2.7 (0.15 mm)	%	30	9.2	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861676
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z23468	Z23469		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30970	B 30970		
Registration #					
	Units	**MM-33(0-5CM) (P#Y72593)**	**MM-34(0-5CM) (P#Y72594)**	**RDL**	**QC Batch**

Inorganics					
< -1 Phi (2 mm)	%	94	89	0.1	1540602
< PHI +2.7 (0.15 mm)	%	34	31	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z23470		
Sampling Date		2008/05/15		
COC Number		B 30970		
Registration #				
	Units	**MM-55(0-5CM) (P#Y72595)**	**RDL**	**QC Batch**

Inorganics				
< -1 Phi (2 mm)	%	95	0.1	1540602
< PHI +2.7 (0.15 mm)	%	42	0.1	1540602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA861676

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1540594 BAN	RPD	< -1 Phi (2 mm)	2008/06/18	1.2		%	25
		< PHI +2.7 (0.15 mm)	2008/06/18	10.8		%	25

RPD = Relative Percent Difference

Your Project #: 7442
Site: MONTAGUE MINES
Your C.O.C. #: B 39881

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/06/20

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A861171
Received: 2008/06/12, 12:50

Sample Matrix: Soil
Samples Received: 47

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Metals Solid Avail. MS - N-per, <150 um	38	N/A	2008/06/17	ATL SOP 00024 R3	Based on EPA6020A
Metals Solid Avail. MS - N-per, <150 um	9	N/A	2008/06/18	ATL SOP 00024 R3	Based on EPA6020A
Particle size in solids (dry sieves)	47	N/A	2008/06/18	ATL SOP 00012 R2	based on MSAMS-1978
Total Organic Carbon in Soil (<150 um)	19	N/A	2008/06/17	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil (<150 um)	24	N/A	2008/06/18	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil (<150 um)	4	N/A	2008/06/19	ATL SOP 00044 R2	LECO 203-601-224

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY, Project Manager
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A861171
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21112	Z21112		Z21113		
Sampling Date							
COC Number		B 39881	B 39881		B 39881		
Registration #							
	Units	MM-9 (0-5CM)	MM-9 (0-5CM) Lab-Dup	RDL	MM-10 (0-5CM)	RDL	QC Batch
Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	260	260	2	30	0.6	1538399
< -1 Phi (2 mm)	%	64		0.1	84	0.1	1540554
< PHI +2.7 (0.15 mm)	%	12		0.1	17	0.1	1540554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21114		Z21115		
Sampling Date						
COC Number		B 39881		B 39881		
Registration #						
	Units	MM-10 (0-1.5CM)	RDL	MM-10 (1.5-5CM)	RDL	QC Batch
Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	230	2	31	0.6	1538399
< -1 Phi (2 mm)	%	99	0.1	98	0.1	1540554
< PHI +2.7 (0.15 mm)	%	49	0.1	41	0.1	1540554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21116		Z21117		
Sampling Date						
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-11 (0-5CM)**	**RDL**	**MM-11 (0-2CM)**	**RDL**	**QC Batch**
Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	45	0.5	160	2	1538399
< -1 Phi (2 mm)	%	73	0.1	99	0.1	1540554
< PHI +2.7 (0.15 mm)	%	23	0.1	22	0.1	1540554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21118		Z21119	Z21120		
Sampling Date							
COC Number		B 39881		B 39881	B 39881		
Registration #							
	Units	**MM-11 (2-5CM)**	**RDL**	**MM-12 (0-5CM)**	**MM-13 (0-5CM)**	**RDL**	**QC Batch**
Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	36	0.5	300	240	2	1538399
< -1 Phi (2 mm)	%	68	0.1	100	97	0.1	1540554
< PHI +2.7 (0.15 mm)	%	18	0.1	31	25	0.1	1540554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21121	Z21122		
Sampling Date					
COC Number		B 39881	B 39881		
Registration #					
	Units	**MM-14 (0-5CM)**	**MM-15 (0-5CM)**	**RDL**	**QC Batch**
Inorganics					
< 150 um Organic Carbon (TOC)	g/kg	300	240	2	1538399
< -1 Phi (2 mm)	%	95	99	0.1	1540554
< PHI +2.7 (0.15 mm)	%	23	30	0.1	1540554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21123			Z21124		
Sampling Date							
COC Number		B 39881			B 39881		
Registration #							
	Units	MM-16 (0-5CM)	RDL	QC Batch	MM-17 (0-5CM)	RDL	QC Batch
Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	430	5	1540283	320	2	1538399
< -1 Phi (2 mm)	%	90	0.1	1540554	96	0.1	1540554
< PHI +2.7 (0.15 mm)	%	20	0.1	1540554	36	0.1	1540554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21125	Z21125	Z21126		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	MM-18 (0-5CM)	MM-18 (0-5CM) Lab-Dup	MM-19 (0-5CM)	RDL	QC Batch
Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	350		360	2	1538399
< -1 Phi (2 mm)	%	96	95	95	0.1	1540554
< PHI +2.7 (0.15 mm)	%	28	31	29	0.1	1540554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21127	Z21128	Z21129		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-20 (0-5CM)**	**MM-21 (0-5CM)**	**MM-22 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	320	160	240	2	1538399
< -1 Phi (2 mm)	%	91	81	93	0.1	1540554
< PHI +2.7 (0.15 mm)	%	23	27	20	0.1	1540554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21130			Z21131		
Sampling Date							
COC Number		B 39881			B 39881		
Registration #							
	Units	**MM-23 (0-5CM)**	**RDL**	**QC Batch**	**MM-23 (0-3CM)**	**RDL**	**QC Batch**
Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	68	1	1538399	220	2	1538399
< -1 Phi (2 mm)	%	92	0.1	1540554	95	0.1	1540579
< PHI +2.7 (0.15 mm)	%	42	0.1	1540554	40	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861171
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21132	Z21132	Z21134		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-23 (3-5CM)**	**MM-23 (3-5CM) Lab-Dup**	**MM-24 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	42	39	55	0.7	1539266
< -1 Phi (2 mm)	%	93		85	0.1	1540579
< PHI +2.7 (0.15 mm)	%	35		41	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21135	Z21136		Z21137		
Sampling Date							
COC Number		B 39881	B 39881		B 39881		
Registration #							
	Units	**MM-25 (0-5CM)**	**MM-26 (0-5CM)**	**RDL**	**MM-26 (0-2CM)**	**RDL**	**QC Batch**
Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	91	91	1	210	2	1539266
< -1 Phi (2 mm)	%	99	95	0.1	98	0.1	1540579
< PHI +2.7 (0.15 mm)	%	40	34	0.1	38	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861171
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21138		Z21139		
Sampling Date						
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-26 (2-5CM)**	**RDL**	**MM-27 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	7.1	0.6	210	2	1539266
< -1 Phi (2 mm)	%	94	0.1	96	0.1	1540579
< PHI +2.7 (0.15 mm)	%	34	0.1	26	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21140	Z21140		Z21141		
Sampling Date							
COC Number		B 39881	B 39881		B 39881		
Registration #							
	Units	**MM-28 (0-5CM)**	**MM-28 (0-5CM) Lab-Dup**	**RDL**	**MM-28 (0-3CM)**	**RDL**	**QC Batch**
Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	53	57	2	230	5	1541417
< -1 Phi (2 mm)	%	90		0.1	96	0.1	1540579
< PHI +2.7 (0.15 mm)	%	25		0.1	44	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21142			Z21143		
Sampling Date							
COC Number		B 39881			B 39881		
Registration #							
	Units	**MM-28 (3-5CM)**	**RDL**	**QC Batch**	**MM-29 (0-5CM)**	**RDL**	**QC Batch**

Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	54	5	1541417	350	2	1539266
< -1 Phi (2 mm)	%	74	0.1	1540579	85	0.1	1540579
< PHI +2.7 (0.15 mm)	%	25	0.1	1540579	25	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21144	Z21145		
Sampling Date					
COC Number		B 39881	B 39881		
Registration #					
	Units	**MM-30 (0-5CM)**	**MM-31 (0-5CM)**	**RDL**	**QC Batch**

Inorganics					
< 150 um Organic Carbon (TOC)	g/kg	230	400	2	1539266
< -1 Phi (2 mm)	%	96	100	0.1	1540579
< PHI +2.7 (0.15 mm)	%	49	36	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21146			Z21147		
Sampling Date							
COC Number		B 39881			B 39881		
Registration #							
	Units	**MM-32 (0-5CM)**	**RDL**	**QC Batch**	**MM-35 (0-5CM)**	**RDL**	**QC Batch**

Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	190	5	1541417	29	0.5	1539266
< -1 Phi (2 mm)	%	96	0.1	1540579	94	0.1	1540579
< PHI +2.7 (0.15 mm)	%	45	0.1	1540579	57	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21148		Z21149		
Sampling Date						
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-36 (0-5CM)**	**RDL**	**MM-56 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	220	2	110	0.8	1539266
< -1 Phi (2 mm)	%	61	0.1	64	0.1	1540579
< PHI +2.7 (0.15 mm)	%	32	0.1	39	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21150		Z21151		
Sampling Date						
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-57 (0-5CM)**	**RDL**	**MM-58 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	57	0.5	230	2	1539266
< -1 Phi (2 mm)	%	92	0.1	69	0.1	1540579
< PHI +2.7 (0.15 mm)	%	44	0.1	16	0.1	1540579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21152	Z21152		
Sampling Date					
COC Number		B 39881	B 39881		
Registration #					
	Units	**MM-59 (2-5CM)**	**MM-59 (2-5CM) Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
< 150 um Organic Carbon (TOC)	g/kg	45		0.5	1539266
< -1 Phi (2 mm)	%	82	83	0.1	1540594
< PHI +2.7 (0.15 mm)	%	44	49	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21153	Z21153		Z21154		
Sampling Date							
COC Number		B 39881	B 39881		B 39881		
Registration #							
	Units	**MM-60 (0-5CM)**	**MM-60 (0-5CM) Lab-Dup**	**RDL**	**MM-61 (0-5CM)**	**RDL**	**QC Batch**
Inorganics							
< 150 um Organic Carbon (TOC)	g/kg	270	270	5	290	4	1540283
< -1 Phi (2 mm)	%	92		0.1	97	0.1	1540594
< PHI +2.7 (0.15 mm)	%	14		0.1	47	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861171
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21155	Z21156	Z21157		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-62 (0-5CM)**	**MM-63 (0-5CM)**	**MM-64 (0-5CM)**	**RDL**	**QC Batch**

Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	340	300	110	5	1540283
< -1 Phi (2 mm)	%	95	98	91	0.1	1540594
< PHI +2.7 (0.15 mm)	%	27	24	38	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21158		Z21159		
Sampling Date						
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-64 (0-2CM)**	**RDL**	**MM-64 (2-5CM)**	**RDL**	**QC Batch**

Inorganics						
< 150 um Organic Carbon (TOC)	g/kg	300	5	60	2	1540283
< -1 Phi (2 mm)	%	99	0.1	80	0.1	1540594
< PHI +2.7 (0.15 mm)	%	57	0.1	37	0.1	1540594

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861171
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21112	Z21113	Z21114		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	MM-9 (0-5CM)	MM-10 (0-5CM)	MM-10 (0-1.5CM)	RDL	QC Batch
Metals						
available (<150 um) Arsenic (As)	mg/kg	230	29	11	2	1539823

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21115	Z21115	Z21116		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	MM-10 (1.5-5CM)	MM-10 (1.5-5CM) Lab-Dup	MM-11 (0-5CM)	RDL	QC Batch
Metals						
available (<150 um) Arsenic (As)	mg/kg	86	86	130	2	1539823

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21117	Z21118	Z21119		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	MM-11 (0-2CM)	MM-11 (2-5CM)	MM-12 (0-5CM)	RDL	QC Batch
Metals						
available (<150 um) Arsenic (As)	mg/kg	8	170	10	2	1539823

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21120	Z21121	Z21122		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-13 (0-5CM)**	**MM-14 (0-5CM)**	**MM-15 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	10	31	54	2	1539823

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21123	Z21124	Z21125		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-16 (0-5CM)**	**MM-17 (0-5CM)**	**MM-18 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	23	17	27	2	1539823

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21126	Z21127	Z21128		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-19 (0-5CM)**	**MM-20 (0-5CM)**	**MM-21 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	23	17	19	2	1539823

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21129	Z21130	Z21131		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-22 (0-5CM)**	**MM-23 (0-5CM)**	**MM-23 (0-3CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	62	120	70	2	1539869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21132	Z21134	Z21134		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-23 (3-5CM)**	**MM-24 (0-5CM)**	**MM-24 (0-5CM) Lab-Dup**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	70	110	120	2	1539869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21135	Z21136	Z21137		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-25 (0-5CM)**	**MM-26 (0-5CM)**	**MM-26 (0-2CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	190	20	22	2	1539869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21138	Z21139	Z21140		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-26 (2-5CM)**	**MM-27 (0-5CM)**	**MM-28 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	19	40	2600	2	1539869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21141	Z21142	Z21143		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-28 (0-3CM)**	**MM-28 (3-5CM)**	**MM-29 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	770	2500	100	2	1539869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21144	Z21145	Z21146		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-30 (0-5CM)**	**MM-31 (0-5CM)**	**MM-32 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	32	47	240	2	1539869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861171
Report Date: 2008/06/20

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21147	Z21148	Z21149		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-35 (0-5CM)**	**MM-36 (0-5CM)**	**MM-56 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	520	640	15	2	1539869

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21150		Z21151	Z21152		
Sampling Date							
COC Number		B 39881		B 39881	B 39881		
Registration #							
	Units	**MM-57 (0-5CM)**	**QC Batch**	**MM-58 (0-5CM)**	**MM-59 (2-5CM)**	**RDL**	**QC Batch**
Metals							
available (<150 um) Arsenic (As)	mg/kg	110	1539869	73	130	2	1541389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21152	Z21153	Z21154		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-59 (2-5CM) Lab-Dup**	**MM-60 (0-5CM)**	**MM-61 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	130	41	51	2	1541389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21155	Z21156	Z21157		
Sampling Date						
COC Number		B 39881	B 39881	B 39881		
Registration #						
	Units	**MM-62 (0-5CM)**	**MM-63 (0-5CM)**	**MM-64 (0-5CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	31	21	120	2	1541389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21158	Z21159		
Sampling Date					
COC Number		B 39881	B 39881		
Registration #					
	Units	**MM-64 (0-2CM)**	**MM-64 (2-5CM)**	**RDL**	**QC Batch**
Metals					
available (<150 um) Arsenic (As)	mg/kg	39	130	2	1541389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name: MONTAGUE MINES

Quality Assurance Report

Maxxam Job Number: DA861171

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1538399 CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/17		94	%	75 - 125
	Method Blank	< 150 um Organic Carbon (TOC)	2008/06/17	ND, RDL=0.2		g/kg	
	RPD [Z21112-01]	< 150 um Organic Carbon (TOC)	2008/06/17	0.8		%	35
1539266 CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/18		91	%	75 - 125
	Method Blank	< 150 um Organic Carbon (TOC)	2008/06/18	ND, RDL=0.2		g/kg	
	RPD [Z21132-01]	< 150 um Organic Carbon (TOC)	2008/06/18	6.7		%	35
1539823 DLB	MATRIX SPIKE [Z21115-01]	available (<150 um) Arsenic (As)	2008/06/17		NC	%	75 - 125
	QC STANDARD	available (<150 um) Arsenic (As)	2008/06/17		100	%	75 - 125
	Spiked Blank	available (<150 um) Arsenic (As)	2008/06/17		91	%	75 - 125
	Method Blank	available (<150 um) Arsenic (As)	2008/06/17	ND, RDL=2		mg/kg	
	RPD [Z21115-01]	available (<150 um) Arsenic (As)	2008/06/17	0.7		%	35
1539869 DLB	MATRIX SPIKE [Z21134-01]	available (<150 um) Arsenic (As)	2008/06/17		NC	%	75 - 125
	QC STANDARD	available (<150 um) Arsenic (As)	2008/06/17		111	%	75 - 125
	Spiked Blank	available (<150 um) Arsenic (As)	2008/06/17		91	%	75 - 125
	Method Blank	available (<150 um) Arsenic (As)	2008/06/17	ND, RDL=2		mg/kg	
	RPD [Z21134-01]	available (<150 um) Arsenic (As)	2008/06/17	6.2		%	35
1540283 CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/18		91	%	75 - 125
	Method Blank	< 150 um Organic Carbon (TOC)	2008/06/18	ND, RDL=0.2		g/kg	
	RPD [Z21153-01]	< 150 um Organic Carbon (TOC)	2008/06/18	1.5		%	35
1540554 SBK	RPD [Z21125-01]	< -1 Phi (2 mm)	2008/06/18	1.3		%	25
		< PHI +2.7 (0.15 mm)	2008/06/18	11.4		%	25
1540594 BAN	RPD [Z21152-01]	< -1 Phi (2 mm)	2008/06/18	1.2		%	25
		< PHI +2.7 (0.15 mm)	2008/06/18	10.8		%	25
1541389 DLB	MATRIX SPIKE [Z21152-01]	available (<150 um) Arsenic (As)	2008/06/18		NC	%	75 - 125
	QC STANDARD	available (<150 um) Arsenic (As)	2008/06/18		111	%	75 - 125
	Spiked Blank	available (<150 um) Arsenic (As)	2008/06/18		96	%	75 - 125
	Method Blank	available (<150 um) Arsenic (As)	2008/06/19	ND, RDL=2		mg/kg	
	RPD [Z21152-01]	available (<150 um) Arsenic (As)	2008/06/18	3.5		%	35
1541417 CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/19		88	%	75 - 125
	Method Blank	< 150 um Organic Carbon (TOC)	2008/06/19	ND, RDL=0.2		g/kg	
	RPD [Z21140-01]	< 150 um Organic Carbon (TOC)	2008/06/19	6.3		%	35

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Maxxam Analytics Inc

Driven by Service and Science
www.maxxamanalytics.com

Your Project #: 7442
Site: MONTAGUE MINES
Your C.O.C. #: B 39881

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/06/18

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A861150
Received: 2008/06/11, 12:50

Sample Matrix: Soil
\# Samples Received: 47

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury (CVAA)	47	N/A	2008/06/17	ATL SOP 00026 R3	Based on EPA245.5
Metals Solid Avail. MS - N-per	24	N/A	2008/06/13	ATL SOP 00024 R3	Based on EPA6020A
Metals Solid Avail. MS - N-per	23	N/A	2008/06/16	ATL SOP 00024 R3	Based on EPA6020A
Total Organic Carbon in Soil	7	N/A	2008/06/13	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	19	N/A	2008/06/16	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	20	N/A	2008/06/17	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	1	N/A	2008/06/18	ATL SOP 00044 R2	LECO 203-601-224

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY, Project Manager
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A861150
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z20996		Z20997		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-9 (0-5CM)**	**RDL**	**MM-10 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	250	4	47	1	1536810

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z20998		Z20999	Z21000		
Sampling Date		2008/06/02		2008/06/02	2008/06/02		
COC Number		B 39881		B 39881	B 39881		
Registration #							
	Units	**MM-10 (0-1.5CM)**	**RDL**	**MM-10 (1.5-5CM)**	**MM-11 (0-5CM)**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	230	5	26	70	1	1536810

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21001		Z21002		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-11 (0-2CM)**	**RDL**	**MM-11 (2-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	230	5	46	1	1536810

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21003	Z21003		Z21004		
Sampling Date		2008/06/02	2008/06/02		2008/06/02		
COC Number		B 39881	B 39881		B 39881		
Registration #							
	Units	**MM-12 (0-5CM)**	**MM-12 (0-5CM) Lab-Dup**	**RDL**	**MM-13 (0-5CM)**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	350	340	3	320	4	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21005		Z21006		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-14 (0-5CM)**	**RDL**	**MM-15 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	290	4	310	3	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21007	Z21008		Z21009		
Sampling Date		2008/06/02	2008/06/02		2008/06/02		
COC Number		B 39881	B 39881		B 39881		
Registration #							
	Units	**MM-16 (0-5CM)**	**MM-17 (0-5CM)**	**RDL**	**MM-18 (0-5CM)**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	240	310	4	320	3	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21010			Z21011		
Sampling Date		2008/06/02			2008/06/02		
COC Number		B 39881			B 39881		
Registration #							
	Units	**MM-19 (0-5CM)**	**RDL**	**QC Batch**	**MM-20 (0-5CM)**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	310	2	1538397	330	5	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21012		Z21013		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-21 (0-5CM)**	**RDL**	**MM-22 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	200	4	330	5	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21014		Z21015		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-23 (0-5CM)**	**RDL**	**MM-23 (0-3CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	68	0.9	250	2	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21016		Z21017	Z21018		
Sampling Date		2008/06/02		2008/06/02	2008/06/02		
COC Number		B 39881		B 39881	B 39881		
Registration #							
	Units	**MM-23 (3-5CM)**	**RDL**	**MM-24 (0-5CM)**	**MM-25 (0-5CM)**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	43	0.9	73	110	1	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21019		Z21020		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-26 (0-5CM)**	**RDL**	**MM-26 (0-2CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	76	1	210	2	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21021		Z21022		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-26 (2-5CM)**	**RDL**	**MM-27 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	11	0.3	340	5	1538215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21023	Z21023		
Sampling Date		2008/06/02	2008/06/02		
COC Number		B 39881	B 39881		
Registration #					
	Units	**MM-28 (0-5CM)**	**MM-28 (0-5CM) Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
Organic Carbon (TOC)	g/kg	64	71	1	1539215

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21024		Z21025		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-28 (0-3CM)**	**RDL**	**MM-28 (3-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	210	2	79	1	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21026		Z21027	Z21028		
Sampling Date		2008/06/02		2008/06/02	2008/06/02		
COC Number		B 39881		B 39881	B 39881		
Registration #							
	Units	**MM-29 (0-5CM)**	**RDL**	**MM-30 (0-5CM)**	**MM-31 (0-5CM)**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	390	2	210	400	3	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21029		Z21030		
Sampling Date		2008/06/02		2008/06/02		
COC Number		B 39881		B 39881		
Registration #						
	Units	MM-32 (0-5CM)	RDL	MM-35 (0-5CM)	RDL	QC Batch
Inorganics						
Organic Carbon (TOC)	g/kg	190	2	22	0.5	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21031		Z21032	Z21033		
Sampling Date		2008/06/02		2008/06/02	2008/06/02		
COC Number		B 39881		B 39881	B 39881		
Registration #							
	Units	MM-36 (0-5CM)	RDL	MM-56 (0-5CM)	MM-57 (0-5CM)	RDL	QC Batch
Inorganics							
Organic Carbon (TOC)	g/kg	250	2	120	71	1	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21034		Z21035		
Sampling Date		2008/06/11		2008/06/11		
COC Number		B 39881		B 39881		
Registration #						
	Units	MM-58 (0-5CM)	RDL	MM-59 (2-5CM)	RDL	QC Batch
Inorganics						
Organic Carbon (TOC)	g/kg	280	2	39	0.9	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21036		Z21037		
Sampling Date		2008/06/11		2008/06/11		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-60 (0-5CM)**	**RDL**	**MM-61 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	250	4	310	5	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21038		Z21039		
Sampling Date		2008/06/11		2008/06/11		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-62 (0-5CM)**	**QC Batch**	**MM-63 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	310	1539215	360	5	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21040		Z21041		
Sampling Date		2008/06/11		2008/06/11		
COC Number		B 39881		B 39881		
Registration #						
	Units	**MM-64 (0-5CM)**	**RDL**	**MM-64 (0-2CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	110	1	330	3	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z21042		
Sampling Date		2008/06/11		
COC Number		B 39881		
Registration #				
	Units	**MM-64 (2-5CM)**	**RDL**	**QC Batch**
Inorganics				
Organic Carbon (TOC)	g/kg	52	1	1538397

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Z20996	Z20997	Z20998	Z20999		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-9 (0-5CM)**	**MM-10 (0-5CM)**	**MM-10 (0-1.5CM)**	**MM-10 (1.5-5CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.63	0.09	0.21	0.10	0.01	1539279

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21000	Z21001	Z21002	Z21003		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-11 (0-5CM)**	**MM-11 (0-2CM)**	**MM-11 (2-5CM)**	**MM-12 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.16	0.23	0.17	0.26	0.01	1539279

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21004	Z21005	Z21006	Z21007		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-13 (0-5CM)**	**MM-14 (0-5CM)**	**MM-15 (0-5CM)**	**MM-16 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.15	0.31	0.38	0.24	0.01	1539279

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861150
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Z21008	Z21009		Z21010	Z21011		
Sampling Date		2008/06/02	2008/06/02		2008/06/02	2008/06/02		
COC Number		B 39881	B 39881		B 39881	B 39881		
Registration #								
	Units	**MM-17 (0-5CM)**	**MM-18 (0-5CM)**	**QC Batch**	**MM-19 (0-5CM)**	**MM-20 (0-5CM)**	**RDL**	**QC Batch**

Metals								
Mercury (Hg)	mg/kg	0.22	0.22	1539279	0.28	0.33	0.01	1539280

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21012	Z21013	Z21014	Z21014		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-21 (0-5CM)**	**MM-22 (0-5CM)**	**MM-23 (0-5CM)**	**MM-23 (0-5CM) Lab-Dup**	**RDL**	**QC Batch**

Metals							
Mercury (Hg)	mg/kg	0.25	0.29	0.17	0.15	0.01	1539280

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21015	Z21016	Z21017	Z21018		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-23 (0-3CM)**	**MM-23 (3-5CM)**	**MM-24 (0-5CM)**	**MM-25 (0-5CM)**	**RDL**	**QC Batch**

Metals							
Mercury (Hg)	mg/kg	0.32	0.13	0.16	0.24	0.01	1539280

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861150
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Z21019	Z21020	Z21021	Z21022		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-26 (0-5CM)**	**MM-26 (0-2CM)**	**MM-26 (2-5CM)**	**MM-27 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.12	0.20	0.02	0.21	0.01	1539280

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21023	Z21024	Z21025	Z21026		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-28 (0-5CM)**	**MM-28 (0-3CM)**	**MM-28 (3-5CM)**	**MM-29 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.15	0.44	0.19	0.32	0.01	1539280

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21027	Z21028	Z21029		Z21030		
Sampling Date		2008/06/02	2008/06/02	2008/06/02		2008/06/02		
COC Number		B 39881	B 39881	B 39881		B 39881		
Registration #								
	Units	**MM-30 (0-5CM)**	**MM-31 (0-5CM)**	**MM-32 (0-5CM)**	**QC Batch**	**MM-35 (0-5CM)**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/kg	0.31	0.13	0.46	1539280	0.20	0.01	1539282

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Z21031	Z21032	Z21033	Z21034		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/11		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-36 (0-5CM)**	**MM-56 (0-5CM)**	**MM-57 (0-5CM)**	**MM-58 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.70	0.16	0.15	0.38	0.01	1539282

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21035	Z21035	Z21036	Z21037		
Sampling Date		2008/06/11	2008/06/11	2008/06/11	2008/06/11		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-59 (2-5CM)**	**MM-59 (2-5CM) Lab-Dup**	**MM-60 (0-5CM)**	**MM-61 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.17	0.16	0.37	0.40	0.01	1539282

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21038	Z21039	Z21040	Z21041		
Sampling Date		2008/06/11	2008/06/11	2008/06/11	2008/06/11		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-62 (0-5CM)**	**MM-63 (0-5CM)**	**MM-64 (0-5CM)**	**MM-64 (0-2CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.33	0.28	0.22	0.27	0.01	1539282

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861150
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Z21042		
Sampling Date		2008/06/11		
COC Number		B 39881		
Registration #				
	Units	**MM-64 (2-5CM)**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/kg	0.16	0.01	1539282

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z20996	Z20997	Z20998	Z20999		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-9 (0-5CM)**	**MM-10 (0-5CM)**	**MM-10 (0-1.5CM)**	**MM-10 (1.5-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	340	45	11	67	2	1537371

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21000	Z21001	Z21002	Z21003		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-11 (0-5CM)**	**MM-11 (0-2CM)**	**MM-11 (2-5CM)**	**MM-12 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	130	10	150	12	2	1537371

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21004	Z21005	Z21006	Z21007		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-13 (0-5CM)**	**MM-14 (0-5CM)**	**MM-15 (0-5CM)**	**MM-16 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	9	25	55	12	2	1538268

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861150
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21008	Z21009	Z21010	Z21011		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-17 (0-5CM)**	**MM-18 (0-5CM)**	**MM-19 (0-5CM)**	**MM-20 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	14	18	26	23	2	1538268

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21012	Z21013	Z21014	Z21015		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-21 (0-5CM)**	**MM-22 (0-5CM)**	**MM-23 (0-5CM)**	**MM-23 (0-3CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	20	43	98	110	2	1538268

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21016	Z21016	Z21017	Z21018		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-23 (3-5CM)**	**MM-23 (3-5CM) Lab-Dup**	**MM-24 (0-5CM)**	**MM-25 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	64	67	98	160	2	1538268

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861150
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21019		Z21020	Z21021		
Sampling Date		2008/06/02		2008/06/02	2008/06/02		
COC Number		B 39881		B 39881	B 39881		
Registration #							
	Units	**MM-26 (0-5CM)**	**QC Batch**	**MM-26 (0-2CM)**	**MM-26 (2-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	17	1538268	22	16	2	1538766

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21022	Z21023	Z21024	Z21025		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-27 (0-5CM)**	**MM-28 (0-5CM)**	**MM-28 (0-3CM)**	**MM-28 (3-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	50	2100	1100	2200	2	1538766

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21025	Z21026	Z21027	Z21028		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-28 (3-5CM) Lab-Dup**	**MM-29 (0-5CM)**	**MM-30 (0-5CM)**	**MM-31 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	2100	77	31	40	2	1538766

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861150
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21029	Z21030	Z21031	Z21032		
Sampling Date		2008/06/02	2008/06/02	2008/06/02	2008/06/02		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-32 (0-5CM)**	**MM-35 (0-5CM)**	**MM-36 (0-5CM)**	**MM-56 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	270	610	580	16	2	1538766

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21033	Z21034	Z21035	Z21036		
Sampling Date		2008/06/02	2008/06/11	2008/06/11	2008/06/11		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-57 (0-5CM)**	**MM-58 (0-5CM)**	**MM-59 (2-5CM)**	**MM-60 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	140	51	110	48	2	1538766

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z21037	Z21038	Z21039	Z21040		
Sampling Date		2008/06/11	2008/06/11	2008/06/11	2008/06/11		
COC Number		B 39881	B 39881	B 39881	B 39881		
Registration #							
	Units	**MM-61 (0-5CM)**	**MM-62 (0-5CM)**	**MM-63 (0-5CM)**	**MM-64 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	37	25	17	110	2	1538766

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A861150
Report Date: 2008/06/18

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINES

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Z21041	Z21042		
Sampling Date		2008/06/11	2008/06/11		
COC Number		B 39881	B 39881		
Registration #					
	Units	**MM-64 (0-2CM)**	**MM-64 (2-5CM)**	**RDL**	**QC Batch**
Metals					
Available Arsenic (As)	mg/kg	32	120	2	1538767

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name: MONTAGUE MINES

Quality Assurance Report

Maxxam Job Number: DA861150

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1536810 CAC	QC STANDARD	Organic Carbon (TOC)	2008/06/13		94	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/06/13	ND, RDL=0.2		g/kg	
	RPD	Organic Carbon (TOC)	2008/06/13	1.5		%	35
1537371 MPT	QC STANDARD	Available Arsenic (As)	2008/06/13		112	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/06/13		99	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/06/13	ND, RDL=2		mg/kg	
1538215 CAC	QC STANDARD	Organic Carbon (TOC)	2008/06/16		94	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/06/16	ND, RDL=0.2		g/kg	
	RPD [Z21003-01]	Organic Carbon (TOC)	2008/06/16	1.8		%	35
1538268 MPT	MATRIX SPIKE [Z21016-01]	Available Arsenic (As)	2008/06/13		NC	%	75 - 125
	QC STANDARD	Available Arsenic (As)	2008/06/13		113	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/06/13		95	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/06/13	ND, RDL=2		mg/kg	
	RPD [Z21016-01]	Available Arsenic (As)	2008/06/13	5.2		%	35
1538397 CAC	QC STANDARD	Organic Carbon (TOC)	2008/06/17		97	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/06/17	ND, RDL=0.2		g/kg	
1538766 DLB	MATRIX SPIKE [Z21025-01]	Available Arsenic (As)	2008/06/16		NC	%	75 - 125
	QC STANDARD	Available Arsenic (As)	2008/06/16		104	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/06/16		93	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/06/16	ND, RDL=2		mg/kg	
	RPD [Z21025-01]	Available Arsenic (As)	2008/06/16	4.3		%	35
1538767 DLB	QC STANDARD	Available Arsenic (As)	2008/06/17		105	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/06/16		85	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/06/17	ND, RDL=2		mg/kg	
1539215 CAC	QC STANDARD	Organic Carbon (TOC)	2008/06/18		100	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/06/18	ND, RDL=0.2		g/kg	
	RPD [Z21023-01]	Organic Carbon (TOC)	2008/06/18	10.8		%	35
1539279 SSI	MATRIX SPIKE	Mercury (Hg)	2008/06/17		111	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/06/17		93	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/06/17		100	%	75 - 125
	Method Blank	Mercury (Hg)	2008/06/17	ND, RDL=0.01		mg/kg	
	RPD	Mercury (Hg)	2008/06/17	3.6		%	35
1539280 SSI	MATRIX SPIKE [Z21014-01]	Mercury (Hg)	2008/06/17		NC	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/06/17		96	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/06/17		102	%	75 - 125
	Method Blank	Mercury (Hg)	2008/06/17	ND, RDL=0.01		mg/kg	
	RPD [Z21014-01]	Mercury (Hg)	2008/06/17	14.4		%	35
1539282 SSI	MATRIX SPIKE [Z21035-01]	Mercury (Hg)	2008/06/17		91	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/06/17		99	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/06/17		102	%	75 - 125
	Method Blank	Mercury (Hg)	2008/06/17	ND, RDL=0.01		mg/kg	
	RPD [Z21035-01]	Mercury (Hg)	2008/06/17	6.1		%	35

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Your Project #: 7442
Your C.O.C. #: B 53301

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/06/05
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A850952
Received: 2008/05/20, 17:41

Sample Matrix: Soil
Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury (CVAA)	1	N/A	2008/05/26	ATL SOP 00026 R3	Based on EPA245.5
Mercury (CVAA)	20	N/A	2008/05/28	ATL SOP 00026 R3	Based on EPA245.5
Metals Solid Avail. MS - N-per, <150 um	21	N/A	2008/06/02	ATL SOP 00024 R3	Based on EPA6020A
Metals Solid Avail. MS - N-per	21	N/A	2008/05/26	ATL SOP 00024 R3	Based on EPA6020A
Total Organic Carbon in Soil (<150 um)	4	N/A	2008/05/23	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil (<150 um)	17	N/A	2008/06/02	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	4	N/A	2008/05/23	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	14	N/A	2008/05/30	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	3	N/A	2008/06/02	ATL SOP 00044 R2	LECO 203-601-224

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY, Project Manager
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A850952
Report Date: 2008/06/05

Maritime Testing (1985) Limited
Client Project #: 7442

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y72464		Y72484		
Sampling Date		2008/05/15		2008/05/15		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-2 (0-5 CM)**	**RDL**	**MM -2 (0-3 CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	33	0.6	170	2	1519149
< 150 um Organic Carbon (TOC)	g/kg	70	1	250	3	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72485		Y72519		
Sampling Date		2008/05/15		2008/05/15		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-2 (3-5 CM)**	**RDL**	**MM -3 (0-5 CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	15	0.3	180	2	1525320
< 150 um Organic Carbon (TOC)	g/kg	13	0.3	190	5	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72520	Y72541		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 53301	B 53301		
Registration #					
	Units	**MM-5 (0-5 CM)**	**MM-7 (0-5 CM)**	**RDL**	**QC Batch**
Inorganics					
Organic Carbon (TOC)	g/kg	61	53	1	1525320
< 150 um Organic Carbon (TOC)	g/kg	49	53	3	1519547

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y72548		Y72552		
Sampling Date		2008/05/15		2008/05/15		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-7 (0-3 CM)**	**RDL**	**MM-7 (3-5 CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	130	2	33	0.9	1525320
< 150 um Organic Carbon (TOC)	g/kg	120	3	32	1	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72553		Y72554		
Sampling Date		2008/05/15		2008/05/15		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-42 (0-5 CM)**	**RDL**	**MM-38 (0-5 CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	110	2	67	5	1526928
< 150 um Organic Carbon (TOC)	g/kg	110	2	57	2	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72564		Y72572		
Sampling Date		2008/05/15		2008/05/15		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-40 (0-5 CM)**	**RDL**	**MM-44 (0-5 CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	73	1	110	2	1519149
< 150 um Organic Carbon (TOC)	g/kg	75	2	94	2	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A850952
Report Date: 2008/06/05

Maritime Testing (1985) Limited
Client Project #: 7442

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y72573	Y72573		Y72574		
Sampling Date		2008/05/15	2008/05/15		2008/05/15		
COC Number		B 53301	B 53301		B 53301		
Registration #							
	Units	**MM-48 (0-5 CM)**	**MM-48 (0-5 CM) Lab-Dup**	**RDL**	**MM-43 (0-5 CM)**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	70		1	94	2	1525320
< 150 um Organic Carbon (TOC)	g/kg	66	66	2	52	1	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72576		Y72585	Y72585		
Sampling Date		2008/05/20		2008/05/20	2008/05/20		
COC Number		B 53301		B 53301	B 53301		
Registration #							
	Units	**MM-1 (0-5 CM)**	**RDL**	**MM-1 (0-3.5 CM)**	**MM-1 (0-3.5 CM) Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	70	0.7	280		1	1525320
< 150 um Organic Carbon (TOC)	g/kg	46	1	150	150	2	1519547

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72590		Y72592		
Sampling Date		2008/05/20		2008/05/20		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-1 (3.5-5 CM)**	**RDL**	**MM-47 (0-5 CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	27	0.2	24	0.2	1525320
< 150 um Organic Carbon (TOC)	g/kg	22	0.8	18	0.9	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y72593		Y72594		
Sampling Date		2008/05/20		2008/05/20		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-33 (0-5 CM)**	**RDL**	**MM-34 (0-5 CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	140	5	350	5	1525320
< 150 um Organic Carbon (TOC)	g/kg	95	3	290	5	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72595	Y72595		
Sampling Date		2008/05/20	2008/05/20		
COC Number		B 53301	B 53301		
Registration #					
	Units	**MM-55 (0-5 CM)**	**MM-55 (0-5 CM) Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
Organic Carbon (TOC)	g/kg	170	200	5	1526928
< 150 um Organic Carbon (TOC)	g/kg	120		3	1526925

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Y72464		Y72484	Y72485		
Sampling Date		2008/05/15		2008/05/15	2008/05/15		
COC Number		B 53301		B 53301	B 53301		
Registration #							
	Units	**MM-2 (0-5 CM)**	**QC Batch**	**MM -2 (0-3 CM)**	**MM-2 (3-5 CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.08	1520889	0.25	0.04	0.01	1523017

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72519	Y72520	Y72541	Y72548		
Sampling Date		2008/05/15	2008/05/15	2008/05/15	2008/05/15		
COC Number		B 53301	B 53301	B 53301	B 53301		
Registration #							
	Units	**MM -3 (0-5 CM)**	**MM-5 (0-5 CM)**	**MM-7 (0-5 CM)**	**MM-7 (0-3 CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	3.6	1.6	1.9	2.1	0.1	1523017

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72552		Y72553	Y72554		
Sampling Date		2008/05/15		2008/05/15	2008/05/15		
COC Number		B 53301		B 53301	B 53301		
Registration #							
	Units	**MM-7 (3-5 CM)**	**RDL**	**MM-42 (0-5 CM)**	**MM-38 (0-5 CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.47	0.01	2.1	2.4	0.1	1523017

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A850952
Report Date: 2008/06/05

Maritime Testing (1985) Limited
Client Project #: 7442

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Y72564			Y72572		
Sampling Date		2008/05/15			2008/05/15		
COC Number		B 53301			B 53301		
Registration #							
	Units	**MM-40 (0-5 CM)**	**RDL**	**QC Batch**	**MM-44 (0-5 CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.56	0.01	1523017	0.90	0.02	1523019

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72573		Y72574	Y72576	Y72585		
Sampling Date		2008/05/15		2008/05/15	2008/05/20	2008/05/20		
COC Number		B 53301		B 53301	B 53301	B 53301		
Registration #								
	Units	**MM-48 (0-5 CM)**	**RDL**	**MM-43 (0-5 CM)**	**MM-1 (0-5 CM)**	**MM-1 (0-3.5 CM)**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/kg	2.8	0.1	0.67	0.14	0.19	0.01	1523019

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72590		Y72592		Y72593		
Sampling Date		2008/05/20		2008/05/20		2008/05/20		
COC Number		B 53301		B 53301		B 53301		
Registration #								
	Units	**MM-1 (3.5-5 CM)**	**RDL**	**MM-47 (0-5 CM)**	**RDL**	**MM-33 (0-5 CM)**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/kg	0.04	0.01	25	0.5	1.1	0.02	1523019

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A850952
Report Date: 2008/06/05

Maritime Testing (1985) Limited
Client Project #: 7442

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Y72594		Y72595		
Sampling Date		2008/05/20		2008/05/20		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-34 (0-5 CM)**	**RDL**	**MM-55 (0-5 CM)**	**RDL**	**QC Batch**
Metals						
Mercury (Hg)	mg/kg	0.48	0.01	1.1	0.02	1523019

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Y72464	Y72464	Y72484		
Sampling Date		2008/05/15	2008/05/15	2008/05/15		
COC Number		B 53301	B 53301	B 53301		
Registration #						
	Units	**MM-2 (0-5 CM)**	**MM-2 (0-5 CM) Lab-Dup**	**MM -2 (0-3 CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	76		40	2	1527859
Available Arsenic (As)	mg/kg	66	66	34	2	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72485	Y72519	Y72520		
Sampling Date		2008/05/15	2008/05/15	2008/05/15		
COC Number		B 53301	B 53301	B 53301		
Registration #						
	Units	**MM-2 (3-5 CM)**	**MM -3 (0-5 CM)**	**MM-5 (0-5 CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	13	28	520	2	1527859
Available Arsenic (As)	mg/kg	24	32	320	2	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72541	Y72548	Y72552		
Sampling Date		2008/05/15	2008/05/15	2008/05/15		
COC Number		B 53301	B 53301	B 53301		
Registration #						
	Units	**MM-7 (0-5 CM)**	**MM-7 (0-3 CM)**	**MM-7 (3-5 CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	460	210	440	2	1527859
Available Arsenic (As)	mg/kg	220	290	390	2	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Y72553	Y72554	Y72554		
Sampling Date		2008/05/15	2008/05/15	2008/05/15		
COC Number		B 53301	B 53301	B 53301		
Registration #						
	Units	**MM-42 (0-5 CM)**	**MM-38 (0-5 CM)**	**MM-38 (0-5 CM) Lab-Dup**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	1000	980	1000	2	1527859
Available Arsenic (As)	mg/kg	890	780		2	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72564	Y72572	Y72573		
Sampling Date		2008/05/15	2008/05/15	2008/05/15		
COC Number		B 53301	B 53301	B 53301		
Registration #						
	Units	**MM-40 (0-5 CM)**	**MM-44 (0-5 CM)**	**MM-48 (0-5 CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	290	630	860	2	1527859
Available Arsenic (As)	mg/kg	330	640	1000	2	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72574	Y72576	Y72585		
Sampling Date		2008/05/15	2008/05/20	2008/05/20		
COC Number		B 53301	B 53301	B 53301		
Registration #						
	Units	**MM-43 (0-5 CM)**	**MM-1 (0-5 CM)**	**MM-1 (0-3.5 CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	350	10	30	2	1527859
Available Arsenic (As)	mg/kg	250	16	18	2	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Y72590	Y72592		
Sampling Date		2008/05/20	2008/05/20		
COC Number		B 53301	B 53301		
Registration #					
	Units	**MM-1 (3.5-5 CM)**	**MM-47 (0-5 CM)**	**RDL**	**QC Batch**
Metals					
available (<150 um) Arsenic (As)	mg/kg	6	54	2	1527859
Available Arsenic (As)	mg/kg	7	63	2	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72593		Y72594		
Sampling Date		2008/05/20		2008/05/20		
COC Number		B 53301		B 53301		
Registration #						
	Units	**MM-33 (0-5 CM)**	**RDL**	**MM-34 (0-5 CM)**	**RDL**	**QC Batch**
Metals						
available (<150 um) Arsenic (As)	mg/kg	12000	20	250	2	1527859
Available Arsenic (As)	mg/kg	11000	20	220	2	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72595		
Sampling Date		2008/05/20		
COC Number		B 53301		
Registration #				
	Units	**MM-55 (0-5 CM)**	**RDL**	**QC Batch**
Metals				
available (<150 um) Arsenic (As)	mg/kg	12000	20	1527859
Available Arsenic (As)	mg/kg	12000	20	1521198

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA850952

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1519149 CAC	QC STANDARD	Organic Carbon (TOC)	2008/05/23		94	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/05/23	ND, RDL=0.2		g/kg	
	RPD	Organic Carbon (TOC)	2008/05/23	0.4		%	35
1519547 CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/05/23		94	%	75 - 125
	Method Blank	< 150 um Organic Carbon (TOC)	2008/05/23	ND, RDL=0.2		g/kg	
	RPD [Y72585-02]	< 150 um Organic Carbon (TOC)	2008/05/23	0.5		%	35
1520889 SSI	MATRIX SPIKE	Mercury (Hg)	2008/05/26		114	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/05/26		103	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/05/26		104	%	75 - 125
	Method Blank	Mercury (Hg)	2008/05/26	ND, RDL=0.01		mg/kg	
	RPD	Mercury (Hg)	2008/05/26	NC		%	35
1521198 MPT	MATRIX SPIKE [Y72464-01]	Available Arsenic (As)	2008/05/26		NC	%	75 - 125
	QC STANDARD	Available Arsenic (As)	2008/05/26		108	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/05/26		96	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/05/26	ND, RDL=2		mg/kg	
	RPD [Y72464-01]	Available Arsenic (As)	2008/05/26	0.01		%	35
1523017 SSI	MATRIX SPIKE	Mercury (Hg)	2008/05/28		103	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/05/28		94	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/05/28		102	%	75 - 125
	Method Blank	Mercury (Hg)	2008/05/28	ND, RDL=0.01		mg/kg	
	RPD	Mercury (Hg)	2008/05/28	NC		%	35
1523019 SSI	MATRIX SPIKE	Mercury (Hg)	2008/05/28		105	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/05/28		96	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/05/28		104	%	75 - 125
	Method Blank	Mercury (Hg)	2008/05/28	ND, RDL=0.01		mg/kg	
	RPD	Mercury (Hg)	2008/05/28	1.2		%	35
1525320 CAC	QC STANDARD	Organic Carbon (TOC)	2008/05/30		94	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/05/30	ND, RDL=0.2		g/kg	
	RPD	Organic Carbon (TOC)	2008/05/30	NC		%	35
1526925 CAC	QC STANDARD	< 150 um Organic Carbon (TOC)	2008/06/02		94	%	75 - 125
	Method Blank	< 150 um Organic Carbon (TOC)	2008/06/02	ND, RDL=0.2		g/kg	
	RPD [Y72573-02]	< 150 um Organic Carbon (TOC)	2008/06/02	0.2		%	35
1526928 CAC	QC STANDARD	Organic Carbon (TOC)	2008/06/02		94	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/06/02	ND, RDL=0.2		g/kg	
	RPD [Y72595-01]	Organic Carbon (TOC)	2008/06/02	19.5		%	35
1527859 MPT	MATRIX SPIKE [Y72554-02]	available (<150 um) Arsenic (As)	2008/06/02		NC	%	75 - 125
	QC STANDARD	available (<150 um) Arsenic (As)	2008/06/02		104	%	75 - 125
	Spiked Blank	available (<150 um) Arsenic (As)	2008/06/02		98	%	75 - 125
	Method Blank	available (<150 um) Arsenic (As)	2008/06/02	ND, RDL=2		mg/kg	
	RPD [Y72554-02]	available (<150 um) Arsenic (As)	2008/06/02	2.8		%	35

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Your Project #: 7442E
Site:DART
Your C.O.C. #: B 14711

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/01/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A808017
Received: 2008/01/25, 8:47

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury (CVAA)	3	N/A	2008/01/31	ATL SOP 00026 R2	Based on EPA245.5
Metals Solid Avail. MS - N-per	3	N/A	2008/01/29	ATL SOP 00024 R3	Based on EPA6020A

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

KERI MACKAY, Project Manager
Email: keri.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:233

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A808017
Report Date: 2008/01/31

Maritime Testing (1985) Limited
Client Project #: 7442E
Project name: DART
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W92708			W92709	W92710		
Sampling Date		2008/01/17			2008/01/17	2008/01/17		
COC Number		B 14711			B 14711	B 14711		
Registration #								
	Units	**MW3/S2**	**RDL**	**QC Batch**	**MW3/S3**	**MW3/S4**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	1.9	0.1	1450305	0.69	0.03	0.01	1450308
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	2800	2	1449366	1900	78	2	1449366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A808017
Report Date: 2008/01/31

Maritime Testing (1985) Limited
Client Project #: 7442E
Project name: DART
Sampler Initials:

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442E
P.O. #:
Project name: DART

Quality Assurance Report

Maxxam Job Number: DA808017

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1449366 DLB	MATRIX SPIKE	Available Arsenic (As)	2008/01/29		93	%	75 - 125
	QC STANDARD	Available Arsenic (As)	2008/01/29		115	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/01/29		98	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/01/29	ND, RDL=2		mg/kg	
1450305 SSI	MATRIX SPIKE	Mercury (Hg)	2008/01/31		N/C	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/01/31		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/01/31		102	%	75 - 125
	Method Blank	Mercury (Hg)	2008/01/31	ND, RDL=0.01		mg/kg	
	RPD	Mercury (Hg)	2008/01/31	5.2		%	35
1450308 SSI	MATRIX SPIKE	Mercury (Hg)	2008/01/31		94	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/01/31		93	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/01/31		100	%	75 - 125
	Method Blank	Mercury (Hg)	2008/01/31	ND, RDL=0.01		mg/kg	
	RPD	Mercury (Hg)	2008/01/31	NC		%	35

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Your Project #: 7442 E
Site: DARTMOUTH
Your C.O.C. #: B 14710

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/01/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A808012
Received: 2008/01/25, 8:47

Sample Matrix: Soil
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury (CVAA)	12	N/A	2008/01/31	ATL SOP 00026 R2	Based on EPA245.5
Metals Solid Avail. MS - N-per	12	N/A	2008/01/29	ATL SOP 00024 R3	Based on EPA6020A

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

KERI MACKAY, Project Manager
Email: keri.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:233

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Total cover pages: 1

Maxxam Job #: A808012
Report Date: 2008/01/31

Maritime Testing (1985) Limited
Client Project #: 7442 E
Project name: DARTMOUTH
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W92753		W92780		W92781		
Sampling Date		2008/01/16		2008/01/16		2008/01/16		
COC Number		B 14710		B 14710		B 14710		
Registration #								
	Units	**MW1/S1**	**RDL**	**MW1/S2**	**RDL**	**MW1/S3**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	0.70	0.01	4.4	0.1	0.41	0.01	1450305
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	5300	2	1700	2	900	2	1448967

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W92782		W92783	W92784		
Sampling Date		2008/01/16		2008/01/16	2008/01/16		
COC Number		B 14710		B 14710	B 14710		
Registration #							
	Units	**MW1/S4**	**QC Batch**	**MW1/S5**	**MW1/S6**	**RDL**	**QC Batch**
ELEMENTS							
Mercury (Hg)	mg/kg	0.04	1450305	0.22	0.03	0.01	1450305
Elements (ICP-MS)							
Available Arsenic (As)	mg/kg	190	1448967	510	25	2	1449366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		W92785		W92786	W92787	W92788		
Sampling Date		2008/01/16		2008/01/16	2008/01/16	2008/01/16		
COC Number		B 14710		B 14710	B 14710	B 14710		
Registration #								
	Units	**MW2/S1**	**RDL**	**MW2/S2**	**MW2/S3**	**MW2/S4**	**RDL**	**QC Batch**
ELEMENTS								
Mercury (Hg)	mg/kg	3.3	0.1	0.07	0.09	0.05	0.01	1450305
Elements (ICP-MS)								
Available Arsenic (As)	mg/kg	8900	2	30	290	120	2	1449366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A808012
Report Date: 2008/01/31

Maritime Testing (1985) Limited
Client Project #: 7442 E
Project name: DARTMOUTH
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		W92789		W92790		
Sampling Date		2008/01/16		2008/01/16		
COC Number		B 14710		B 14710		
Registration #						
	Units	**MW2/S5**	**RDL**	**MW3/S1**	**RDL**	**QC Batch**
ELEMENTS						
Mercury (Hg)	mg/kg	0.05	0.01	0.96	0.05	1450305
Elements (ICP-MS)						
Available Arsenic (As)	mg/kg	76	2	2400	2	1449366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A808012
Report Date: 2008/01/31

Maritime Testing (1985) Limited
Client Project #: 7442 E
Project name: DARTMOUTH
Sampler Initials:

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442 E
P.O. #:
Project name: DARTMOUTH

Quality Assurance Report

Maxxam Job Number: DA808012

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1448967 DLB	MATRIX SPIKE	Available Arsenic (As)	2008/01/29		NC	%	75 - 125
	QC STANDARD	Available Arsenic (As)	2008/01/29		110	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/01/29		95	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/01/29	ND, RDL=2		mg/kg	
	RPD	Available Arsenic (As)	2008/01/29	25.4		%	35
1449366 DLB	MATRIX SPIKE	Available Arsenic (As)	2008/01/29		93	%	75 - 125
	QC STANDARD	Available Arsenic (As)	2008/01/29		115	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/01/29		98	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/01/29	ND, RDL=2		mg/kg	
1450305 SSI	MATRIX SPIKE	Mercury (Hg)	2008/01/31		N/C	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/01/31		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/01/31		102	%	75 - 125
	Method Blank	Mercury (Hg)	2008/01/31	ND, RDL=0.01		mg/kg	
	RPD	Mercury (Hg)	2008/01/31	5.2		%	35

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Your Project #: 7442
Site: MONTAGUE MINE
Your C.O.C. #: B 30997

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/07/10
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A872514
Received: 2008/07/07, 12:37

Sample Matrix: Soil
Samples Received: 77

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture	2	N/A	2008/07/08	ATL SOP 00001 R2	MOE Handbook 1983
Moisture	70	N/A	2008/07/09	ATL SOP 00001 R2	MOE Handbook 1983
Moisture	5	N/A	2008/07/10	ATL SOP 00001 R2	MOE Handbook 1983

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY, Project Manager
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

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Total cover pages: 1

Maxxam Job #: A872514
Report Date: 2008/07/10

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINE

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71027	Z71050		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-9(0-5CM) (P#Z21112)**	**MM-10(0-5CM) (P#Z21113)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	74	37	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71051	Z71052		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-10(0-1.5CM) (P#Z21114)**	**MM-10(1.5-5CM) (P#Z21115)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	66	29	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71053	Z71054		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-11(0-5CM) (P#Z21116)**	**MM-11(0-2CM) (P#Z21117)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	34	64	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71055	Z71056		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-11(2-5CM) (P#Z21118)**	**MM-12(0-5CM) (P#Z21119)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	34	67	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71057	Z71058		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-13(0-5CM) (P#Z21120)**	**MM-14(0-5CM) (P#Z21121)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	75	71	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71059	Z71060		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-15(0-5CM) (P#Z21122)**	**MM-16(0-5CM) (P#Z21123)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	73	79	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A872514
Report Date: 2008/07/10

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINE

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71061	Z71062		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-17(0-5CM) (P#Z21124)**	**MM-18(0-5CM) (P#Z21125)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	75	73	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71063	Z71064		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-19(0-5CM) (P#Z21126)**	**MM-20(0-5CM) (P#Z21127)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	74	74	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71065	Z71066		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-21(0-5CM) (P#Z21128)**	**MM-22(0-5CM) (P#Z21129)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	78	67	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A872514
Report Date: 2008/07/10

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINE

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71067	Z71068		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-23(0-5CM) (P#Z21130)**	**MM-23(0-3CM) (P#Z21131)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	37	64	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71069	Z71070		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-23(3-5CM) (P#Z21132)**	**MM-24(0-5CM) (P#Z21134)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	35	41	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71071	Z71072		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-25(0-5CM) (P#Z21135)**	**MM-26(0-5CM) (P#Z21136)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	50	35	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A872514
Report Date: 2008/07/10

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINE

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71073	Z71074		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-26(0-2CM) (P#Z21137)**	**MM-26(2-5CM) (P#Z21138)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	56	19	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71075	Z71076		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-27(0-5CM) (P#Z21139)**	**MM-28(0-5CM) (P#Z21140)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	74	44	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71077	Z71078		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-28(0-3CM) (P#Z21141)**	**MM-28(3-5CM) (P#Z21142)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	73	47	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71079	Z71080		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-29(0-5CM) (P#Z21143)**	**MM-30(0-5CM) (P#Z21144)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	78	69	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71081	Z71082		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-31(0-5CM) (P#Z21145)**	**MM-32(0-5CM) (P#Z21146)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	77	60	1	1555786

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71083	Z71084		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-35(0-5CM) (P#Z21147)**	**MM-36(0-5CM) (P#Z21148)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	29	53	1	1555117

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71085	Z71086		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-56(0-5CM) (P#Z21149)**	**MM-57(0-5CM) (P#Z21150)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	40	40	1	1555913

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71087	Z71088		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-58(0-5CM) (P#Z21151)**	**MM-59(2-5CM) (P#Z21152)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	57	32	1	1555913

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71089	Z71090		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-60(0-5CM) (P#Z21153)**	**MM-61(0-5CM) (P#Z21154)**	**RDL**	**QC Batch**

Inorganics					
Moisture	%	66	69	1	1555913

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71091	Z71092		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-62(0-5CM) (P#Z21155)**	**MM-63(0-5CM) (P#Z21156)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	68	69	1	1555913

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71093	Z71094		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-64(0-5CM) (P#Z21157)**	**MM-64(0-2CM) (P#Z21158)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	44	61	1	1555913

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71095	Z71096		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-64(2-5CM) (P#Z21159)**	**MM-4(0-5CM) (P#Z22334)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	35	30	1	1555913

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71097	Z71098	Z71099		
Sampling Date		2008/07/07	2008/07/07	2008/07/07		
COC Number		B 30997	B 30997	B 30997		
Registration #						
	Units	**MM-8(0-5CM) (P#Z22335)**	**MM-39(0-5CM) (P#Z22336)**	**MM-50(0-5CM) (P#Z22337)**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	35	18	42	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71100	Z71101		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-51(0-10CM) (P#Z22338)**	**MM-52(0-10CM) (P#Z22339)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	15	16	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71102	Z71103		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-53(0-10CM) (P#Z22340)**	**MM-54(0-10CM) (P#Z22341)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	16	73	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71104	Z71105	Z71106		
Sampling Date		2008/07/07	2008/07/07	2008/07/07		
COC Number		B 30997	B 30997	B 30997		
Registration #						
	Units	**MM-41(0-5CM) (P#Z22342)**	**MM-2(0-5CM) (P#Z23443)**	**MM-2(0-3CM) (P#Z23451)**	**RDL**	**QC Batch**

Inorganics						
Moisture	%	21	41	60	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71107	Z71108	Z71109		
Sampling Date		2008/07/07	2008/07/07	2008/07/07		
COC Number		B 30997	B 30997	B 30997		
Registration #						
	Units	**MM-2(3-5CM) (P#Z23452)**	**MM-3(0-5CM) (P#Z23453)**	**MM-5(0-5CM) (P#Z23454)**	**RDL**	**QC Batch**

Inorganics						
Moisture	%	25	68	36	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71110	Z71111	Z71112		
Sampling Date		2008/07/07	2008/07/07	2008/07/07		
COC Number		B 30997	B 30997	B 30997		
Registration #						
	Units	**MM-7(0-5CM) (P#Z23455)**	**MM-7(0-3CM) (P#Z23456)**	**MM-7(3-5CM) (P#Z23457)**	**RDL**	**QC Batch**

Inorganics						
Moisture	%	41	57	29	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A872514
Report Date: 2008/07/10

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINE

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71113	Z71114		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-42(0-5CM) (P#Z23458)**	**MM-38(0-5CM) (P#Z23459)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	41	38	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71115	Z71116		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-40(0-5CM) (P#Z23460)**	**MM-44(0-5CM) (P#Z23461)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	43	42	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71117	Z71118	Z71119		
Sampling Date		2008/07/07	2008/07/07	2008/07/07		
COC Number		B 30997	B 30997	B 30997		
Registration #						
	Units	**MM-48(0-5CM) (P#Z23462)**	**MM-43(0-5CM) (P#Z23463)**	**MM-1(0-5CM) (P#Z23464)**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	45	41	44	1	1555833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A872514
Report Date: 2008/07/10

Maritime Testing (1985) Limited
Client Project #: 7442
Project name: MONTAGUE MINE

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z71120		Z71121		
Sampling Date		2008/07/07		2008/07/07		
COC Number		B 30997		B 30997		
Registration #						
	Units	**MM-1(0-3.5CM) (P#Z23465)**	**QC Batch**	**MM-1(3.5-5CM) (P#Z23466)**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	65	1555833	24	1	1555923

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71122	Z71123		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-47(0-5CM) (P#Z23467)**	**MM-33(0-5CM) (P#Z23468)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	41	58	1	1555923

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z71124	Z71125		
Sampling Date		2008/07/07	2008/07/07		
COC Number		B 30997	B 30997		
Registration #					
	Units	**MM-34(0-5CM) (P#Z23469)**	**MM-55(0-5CM) (P#Z23470)**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	69	55	1	1555923

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Your Project #: 7442
Your C.O.C. #: B 53302

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/05/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A850902
Received: 2008/05/20, 17:36

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury (CVAA)	8	N/A	2008/05/22	ATL SOP 00026 R3	Based on EPA245.5
Mercury (CVAA)	1	N/A	2008/05/26	ATL SOP 00026 R3	Based on EPA245.5
Metals Solid Avail. MS - N-per	9	N/A	2008/05/22	ATL SOP 00024 R3	Based on EPA6020A
Total Organic Carbon in Soil	4	N/A	2008/05/27	ATL SOP 00044 R2	LECO 203-601-224
Total Organic Carbon in Soil	5	N/A	2008/05/29	ATL SOP 00044 R2	LECO 203-601-224

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY, Project Manager
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y72291	Y72296	Y72297		
Sampling Date		2008/05/15	2008/05/15	2008/05/15		
COC Number		B 53302	B 53302	B 53302		
Registration #						
	Units	**MM-4 (0-5CM)**	**MM-8 (0-5CM)**	**MM-39 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	3.1	18	21	0.4	1521188

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72298	Y72298		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 53302	B 53302		
Registration #					
	Units	**MM-50 (0-5CM)**	**MM-50 (0-5CM) Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
Organic Carbon (TOC)	g/kg	27	24	0.6	1521188

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72299	Y72299	Y72300	Y72301		
Sampling Date		2008/05/20	2008/05/20	2008/05/20	2008/05/20		
COC Number		B 53302	B 53302	B 53302	B 53302		
Registration #							
	Units	**MM-51 (0-10CM)**	**MM-51 (0-10CM) Lab-Dup**	**MM-52 (0-10CM)**	**MM-53 (0-10CM)**	**RDL**	**QC Batch**
Inorganics							
Organic Carbon (TOC)	g/kg	1.4	1.6	1.1	0.3	0.2	1524045

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Y72302		Y72303		
Sampling Date		2008/05/20		2008/05/15		
COC Number		B 53302		B 53302		
Registration #						
	Units	**MM-54 (0-10CM)**	**RDL**	**MM-41 (0-5CM)**	**RDL**	**QC Batch**
Inorganics						
Organic Carbon (TOC)	g/kg	70	0.5	9.0	0.3	1524045

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Y72291		Y72296	Y72296		
Sampling Date		2008/05/15		2008/05/15	2008/05/15		
COC Number		B 53302		B 53302	B 53302		
Registration #							
	Units	**MM-4 (0-5CM)**	**RDL**	**MM-8 (0-5CM)**	**MM-8 (0-5CM) Lab-Dup**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	7.6	0.1	16	17	1	1518672

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72297	Y72298		Y72299		
Sampling Date		2008/05/15	2008/05/15		2008/05/20		
COC Number		B 53302	B 53302		B 53302		
Registration #							
	Units	**MM-39 (0-5CM)**	**MM-50 (0-5CM)**	**RDL**	**MM-51 (0-10CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	3.2	4.4	0.1	0.94	0.02	1518672

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72300	Y72301		Y72302		
Sampling Date		2008/05/20	2008/05/20		2008/05/20		
COC Number		B 53302	B 53302		B 53302		
Registration #							
	Units	**MM-52 (0-10CM)**	**MM-53 (0-10CM)**	**RDL**	**MM-54 (0-10CM)**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/kg	0.58	0.30	0.01	8.1	0.2	1518672

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A850902
Report Date: 2008/05/29

Maritime Testing (1985) Limited
Client Project #: 7442

MERCURY BY COLD VAPOUR AA (SOIL)

Maxxam ID		Y72303		
Sampling Date		2008/05/15		
COC Number		B 53302		
Registration #				
	Units	**MM-41 (0-5CM)**	**RDL**	**QC Batch**

Metals				
Mercury (Hg)	mg/kg	1.2	0.04	1520889

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (SOIL)

Maxxam ID		Y72291	Y72291	Y72296	Y72297		
Sampling Date		2008/05/15	2008/05/15	2008/05/15	2008/05/15		
COC Number		B 53302	B 53302	B 53302	B 53302		
Registration #							
	Units	**MM-4 (0-5CM)**	**MM-4 (0-5CM) Lab-Dup**	**MM-8 (0-5CM)**	**MM-39 (0-5CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	3500	3500	4100	1200	2	1519217

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72298	Y72299		Y72300		
Sampling Date		2008/05/15	2008/05/20		2008/05/20		
COC Number		B 53302	B 53302		B 53302		
Registration #							
	Units	**MM-50 (0-5CM)**	**MM-51 (0-10CM)**	**RDL**	**MM-52 (0-10CM)**	**RDL**	**QC Batch**
Metals							
Available Arsenic (As)	mg/kg	2500	1800	2	17000	20	1519217

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Y72301	Y72302	Y72303		
Sampling Date		2008/05/20	2008/05/20	2008/05/15		
COC Number		B 53302	B 53302	B 53302		
Registration #						
	Units	**MM-53 (0-10CM)**	**MM-54 (0-10CM)**	**MM-41 (0-5CM)**	**RDL**	**QC Batch**
Metals						
Available Arsenic (As)	mg/kg	2600	2600	2400	2	1519217

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA850902

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1518672 SSI	MATRIX SPIKE						
	[Y72296-01]	Mercury (Hg)	2008/05/22		N/C	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/05/22		92	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/05/22		98	%	75 - 125
	Method Blank	Mercury (Hg)	2008/05/22	ND, RDL=0.01		mg/kg	
	RPD [Y72296-01]	Mercury (Hg)	2008/05/22	1.6		%	35
1519217 MPT	MATRIX SPIKE						
	[Y72291-01]	Available Arsenic (As)	2008/05/22		NC	%	75 - 125
	QC STANDARD	Available Arsenic (As)	2008/05/22		112	%	75 - 125
	Spiked Blank	Available Arsenic (As)	2008/05/22		96	%	75 - 125
	Method Blank	Available Arsenic (As)	2008/05/22	ND, RDL=2		mg/kg	
	RPD [Y72291-01]	Available Arsenic (As)	2008/05/22	0.9		%	35
1520889 SSI	MATRIX SPIKE	Mercury (Hg)	2008/05/26		114	%	75 - 125
	QC STANDARD	Mercury (Hg)	2008/05/26		103	%	75 - 125
	Spiked Blank	Mercury (Hg)	2008/05/26		104	%	75 - 125
	Method Blank	Mercury (Hg)	2008/05/26	ND, RDL=0.01		mg/kg	
	RPD	Mercury (Hg)	2008/05/26	NC		%	35
1521188 CAC	QC STANDARD	Organic Carbon (TOC)	2008/05/27		91	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/05/27	ND, RDL=0.2		g/kg	
	RPD [Y72298-01]	Organic Carbon (TOC)	2008/05/27	10.7		%	35
1524045 CAC	QC STANDARD	Organic Carbon (TOC)	2008/05/29		91	%	75 - 125
	Method Blank	Organic Carbon (TOC)	2008/05/29	ND, RDL=0.2		g/kg	
	RPD [Y72299-01]	Organic Carbon (TOC)	2008/05/29	14.6		%	35

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Maxxam
Analytics Inc
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www.maxxamanalytics.con

Your Project #: 7442
Your C.O.C. #: B 53303

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/05/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A850953
Received: 2008/05/20, 17:22

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury - Total (CVAA,LL)	1	N/A	2008/05/27	ATL SOP 00026 R3	Based on EPA245.1
Metals Water Diss. MS	1	N/A	2008/05/22	ATL SOP 00024 R3	Based on EPA6020A

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY, Project Manager
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maritime Testing (1985) Limited
Client Project #: 7442

Maxxam Job #: A850953
Report Date: 2008/05/27

MERCURY BY COLD VAPOUR AA (WATER)

Maxxam ID		Y72457		
Sampling Date		2008/05/20		
COC Number		B 53303		
Registration #				
	Units	**MW3**	**RDL**	**QC Batch**

Metals				
Total Mercury (Hg)	ug/L	0.57	0.01	1521887

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A850953
Report Date: 2008/05/27

Maritime Testing (1985) Limited
Client Project #: 7442

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		Y72457		
Sampling Date		2008/05/20		
COC Number		B 53303		
Registration #				
	Units	**MW3**	**RDL**	**QC Batch**
Metals				
Dissolved Arsenic (As)	ug/L	3100	2	1518863

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA850953

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1518863 MPT	MATRIX SPIKE	Dissolved Arsenic (As)	2008/05/22		99	%	80 - 120
	QC STANDARD	Dissolved Arsenic (As)	2008/05/22		94	%	80 - 120
	Spiked Blank	Dissolved Arsenic (As)	2008/05/22		94	%	80 - 120
	Method Blank	Dissolved Arsenic (As)	2008/05/22	ND, RDL=2		ug/L	
	RPD	Dissolved Arsenic (As)	2008/05/22	NC		%	25
1521887 SSI	MATRIX SPIKE	Total Mercury (Hg)	2008/05/27		110	%	N/A
	QC STANDARD	Total Mercury (Hg)	2008/05/27		107	%	80 - 120
	Spiked Blank	Total Mercury (Hg)	2008/05/27		106	%	80 - 120
	Method Blank	Total Mercury (Hg)	2008/05/27	ND, RDL=0.013		ug/L	
	RPD	Total Mercury (Hg)	2008/05/27	NC		%	25

ND = Not detected
N/A = Not Applicable
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Your Project #: 7442
Your C.O.C. #: B 39793

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/01/24

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A806013
Received: 2008/01/18, 13:49

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury - Total (CVAA,LL)	3	N/A	2008/01/23	ATL SOP 00026 R2	Based on EPA245.1
Metals Water Diss. MS	3	N/A	2008/01/23	ATL SOP 00024 R3	Based on EPA6020A

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

KERI MACKAY, Project Manager
Email: keri.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:233

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A806013
Report Date: 2008/01/24

Maritime Testing (1985) Limited
Client Project #: 7442
Project name:
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		W84625	W84648	W84649		
Sampling Date		2008/01/18	2008/01/18	2008/01/18		
COC Number		B 39793	B 39793	B 39793		
Registration #						
	Units	**MW1**	**MW2**	**MW3**	**RDL**	**QC Batch**
ELEMENTS						
Total Mercury (Hg)	ug/L	0.02	0.15	0.02	0.01	1445416
Elements (ICP-MS)						
Dissolved Arsenic (As)	ug/L	400	250	570	2	1445707

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

Maritime Testing (1985) Limited
Attention: Robert Bekkers
Client Project #: 7442
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA806013

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1445416 SSI	MATRIX SPIKE	Total Mercury (Hg)	2008/01/23		99	%	N/A
	QC STANDARD	Total Mercury (Hg)	2008/01/23		98	%	80 - 120
	Spiked Blank	Total Mercury (Hg)	2008/01/23		97	%	80 - 120
	Method Blank	Total Mercury (Hg)	2008/01/23	ND, RDL=0.013		ug/L	
	RPD	Total Mercury (Hg)	2008/01/23	NC		%	25
1445707 DLB	MATRIX SPIKE	Dissolved Arsenic (As)	2008/01/23		97	%	80 - 120
	QC STANDARD	Dissolved Arsenic (As)	2008/01/23		103	%	80 - 120
	Spiked Blank	Dissolved Arsenic (As)	2008/01/23		97	%	80 - 120
	Method Blank	Dissolved Arsenic (As)	2008/01/23	ND, RDL=2		ug/L	
	RPD	Dissolved Arsenic (As)	2008/01/23	NC		%	25

ND = Not detected
N/A = Not Applicable
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Your Project #: 7442
Your C.O.C. #: B 30972

Attention: Robert Bekkers
Maritime Testing (1985) Limited
900 Windmill Rd
Suite 116
Dartmouth, NS
B3B 1P7

Report Date: 2008/08/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A863251
Received: 2008/06/17, 11:09

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Metals Group IF-MS (Sub from Bedford) (1)	3	2008/06/17	2008/08/18		

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bedford to ACME Analytical Lab

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

TROY MACKAY-INACTIVE, Project Manager - Inactive
Email: troy.mackay.reports@maxxamanalytics.com
Phone# (902) 420-0203 Ext:266

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

Total cover pages: 1

RESULTS OF ANALYSES OF SOIL

Maxxam ID		Z30562	Z30563		
Sampling Date		2008/05/15	2008/05/15		
COC Number		B 30972	B 30972		
Registration #					
	Units	**MM-51 (0-10CM) (P#Y72299)**	**MM-52 (0-10CM) (P#Y72300)**	**RDL**	**QC Batch**

Subcontracted Analysis					
Subcontract Parameter	N/A	ATTACHED	ATTACHED	N/A	1539910

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		Z30564		
Sampling Date		2008/05/15		
COC Number		B 30972		
Registration #				
	Units	**MM-53 (0-10CM) (P#Y72301)**	**RDL**	**QC Batch**

Subcontracted Analysis				
Subcontract Parameter	N/A	ATTACHED	N/A	1539910

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

Results relate only to the items tested.

AcmeLabs ACME ANALYTICAL LABORATORIES LTD.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
Phone (604) 253-3158 Fax (604) 253-1716
www.acmelab.com

Client:	**Maxxam Analytics Inc.** 200 Bluewater Road Bedford NS B4B 1G9 Canada
Submitted By:	
Receiving Lab:	Canada-Vancouver
Received:	June 19, 2008
Report Date:	August 28, 2008
Page:	1 of 2

CERTIFICATE OF ANALYSIS VAN08006634.2

CLIENT JOB INFORMATION

Project:	None Given
Shipment ID:	A863251
P.O. Number	
Number of Samples:	3

SAMPLE DISPOSAL

STOR-PLP	Store After 90 days Invoice for Storage

Acme does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Method Code	Number of Samples	Code Description	Test Wgt (g)	Report Status
P200	3	Pulverize to 85% passing 200 mesh		
1FD	3	1:1:1 Aqua Regia digestion Ultratrace ICP-MS analysis	0.5	Completed
7AR	1	1:1:1 Aqua Regia digestion ICP-ES analysis	1	Completed

ADDITIONAL COMMENTS

Ver.2 to include 7AR

Invoice To:
Maxxam Analytics Inc.
200 Bluewater Road
Bedford NS B4B 1G9
Canada

CC:

BRITISH COLUMBIA CERTIFIED ASSAYER
RAYMOND CHAN

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.
All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of analysis only.

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1020 Cordova St. East Vancouver BC V6A 4A3 Canada
Phone (604) 253-3158 Fax (604) 253-1716
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Client: **Maxxam Analytics Inc.**
200 Bluewater Road
Bedford NS B4B 1G9 Canada

Project: None Given
Report Date: August 28, 2008

Page: 2 of 2 Part 1

CERTIFICATE OF ANALYSIS VAN08006634.2

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F
	Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P
	Unit	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%
	MDL	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01	0.001
Z30562-01R-MM-51	Sand	0.57	35.96	16.92	87.4	84	23.7	7.9	344	3.08	2178	0.5	1178	4.0	11.5	0.13	1.42	0.33	15	0.12	0.049
Z30563-01R-MM-52	Sand	0.84	15.90	78.04	53.7	192	17.8	2.8	200	4.91	>10000	0.5	397.4	4.6	9.1	0.18	19.11	1.43	15	0.08	0.060
Z30564-01R-MM-53	Sand	0.39	46.82	22.19	112.9	67	37.2	15.5	514	3.15	3141	0.5	61.2	4.1	25.0	0.16	2.28	0.46	15	0.59	0.054

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Client: **Maxxam Analytics Inc.**
200 Bluewater Road
Bedford NS B4B 1G9 Canada

Project: None Given
Report Date: August 28, 2008

Page: 2 of 2 Part 2

CERTIFICATE OF ANALYSIS VAN08006634.2

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	7AR
	Analyte	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga	As
	Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	%
	MDL	0.5	0.5	0.01	0.5	0.001	20	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1	0.01
Z30562-01R-MM-51	Sand	22.5	16.4	0.78	72.6	0.053	32	1.40	0.012	0.52	0.4	1.6	0.26	<0.02	1450	0.2	0.23	4.2	N.A.
Z30563-01R-MM-52	Sand	23.1	16.3	0.73	70.7	0.053	28	1.37	0.010	0.52	1.2	1.7	0.31	<0.02	821	1.1	2.44	4.5	2.10
Z30564-01R-MM-53	Sand	19.0	15.7	1.00	77.8	0.049	30	1.45	0.015	0.59	0.4	1.7	0.26	0.15	511	0.3	0.39	4.3	N.A.

AcmeLabs ACME ANALYTICAL LABORATORIES LTD.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
Phone (604) 253-3158 Fax (604) 253-1716
www.acmelab.com

Client: **Maxxam Analytics Inc.**
200 Bluewater Road
Bedford NS B4B 1G9 Canada

Project: None Given
Report Date: August 28, 2008

Page: 1 of 1 Part 1

QUALITY CONTROL REPORT VAN08006634.2

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F
	Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P
	Unit	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%
	MDL	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01	0.001
Reference Materials																					
STD DS7	Standard	18.15	92.63	61.87	371.2	752	49.2	8.3	554	2.14	51.0	3.7	50.0	3.1	63.1	6.15	4.56	3.93	77	0.80	0.082
STD DS7	Standard	19.99	105.7	68.75	412.0	1096	51.8	9.7	633	2.40	57.0	4.3	53.4	3.8	73.1	6.82	4.96	4.45	83	0.94	0.084
STD SF-3A	Standard																				
STD SF-3A	Standard																				
STD DS7 Expected		20.92	109	70.6	411	890	56	9.7	627	2.39	48.2	4.9	70	4.4	68.7	6.38	5.86	4.51	86	0.93	0.08
STD SF-3A Expected																					
BLK	Blank	<0.01	<0.01	<0.01	<0.1	<2	<0.1	<0.1	<1	<0.01	<0.1	<0.1	<0.2	<0.1	<0.5	<0.01	<0.02	<0.02	<2	<0.01	<0.001
BLK	Blank																				
Prep Wash																					
G1	Prep Blank	0.19	1.92	1.76	46.1	4	3.9	4.2	559	1.87	<0.1	2.3	0.3	3.2	43.8	0.01	<0.02	0.04	38	0.46	0.107

AcmeLabs ACME ANALYTICAL LABORATORIES LTD.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
Phone (604) 253-3158 Fax (604) 253-1716
www.acmelab.com

Client: **Maxxam Analytics Inc.**
200 Bluewater Road
Bedford NS B4B 1G9 Canada

Project: None Given
Report Date: August 28, 2008

Page: 1 of 1 Part 2

QUALITY CONTROL REPORT VAN08006634.2

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	7AR
	Analyte	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga	As
	Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	%
	MDL	0.5	0.5	0.01	0.5	0.001	20	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1	0.01
Reference Materials																			
STD DS7	Standard	12.4	149.0	0.91	424.0	0.094	331	0.94	0.084	0.44	3.4	2.4	3.84	0.19	181	3.7	1.21	4.7	
STD DS7	Standard	13.6	181.9	1.06	448.2	0.109	80	1.00	0.091	0.49	3.4	2.6	4.26	0.20	206	4.1	1.31	5.0	
STD SF-3A	Standard																		<0.01
STD SF-3A	Standard																		<0.01
STD DS7 Expected		12.7	163	1.05	370.3	0.124	38.6	0.959	0.073	0.44	3.8	2.5	4.19	0.21	200	3.5	1.08	4.6	
STD SF-3A Expected																			0.0046
BLK	Blank	<0.5	<0.5	<0.01	<0.5	<0.001	264	<0.01	<0.001	<0.01	<0.1	<0.1	<0.02	<0.02	<5	<0.1	<0.02	<0.1	
BLK	Blank																		<0.01
Prep Wash																			
G1	Prep Blank	6.3	6.8	0.62	302.1	0.117	37	0.93	0.054	0.61	<0.1	2.0	0.41	<0.02	<5	<0.1	<0.02	4.9	N.A.

AcmeLabs ACME ANALYTICAL LABORATORIES LTD.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
Phone (604) 253-3158 Fax (604) 253-1716

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Client: **Maxxam Analytics Inc.**
200 Bluewater Road
Bedford NS B4B 1G9 Canada

Project: None Given
Report Date: August 28, 2008

Page: 2 of 2 Part 2

CERTIFICATE OF ANALYSIS VAN08006634.2

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	7AR
	Analyte	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga	As
	Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	%
	MDL	0.5	0.5	0.01	0.5	0.001	20	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1	0.01
Z30562-01R-MM-51	Sand	22.5	16.4	0.78	72.6	0.053	32	1.40	0.012	0.52	0.4	1.6	0.26	<0.02	1450	0.2	0.23	4.2	N.A.
Z30563-01R-MM-52	Sand	23.1	16.3	0.73	70.7	0.053	28	1.37	0.010	0.52	1.2	1.7	0.31	<0.02	821	1.1	2.44	4.5	2.10
Z30564-01R-MM-53	Sand	19.0	15.7	1.00	77.8	0.049	30	1.45	0.015	0.59	0.4	1.7	0.26	0.15	511	0.3	0.39	4.3	N.A.

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.

AcmeLabs ACME ANALYTICAL LABORATORIES LTD.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
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Client: **Maxxam Analytics Inc.**
200 Bluewater Road
Bedford NS B4B 1G9 Canada

Project: None Given
Report Date: August 28, 2008

Page: 1 of 1 Part 1

QUALITY CONTROL REPORT VAN08006634.2

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F
	Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P
	Unit	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%
	MDL	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01	0.001
Reference Materials																					
STD DS7	Standard	18.15	92.63	61.87	371.2	752	49.2	8.3	554	2.14	51.0	3.7	50.0	3.1	63.1	6.15	4.56	3.93	77	0.80	0.082
STD DS7	Standard	19.99	105.7	68.75	412.0	1096	51.8	9.7	633	2.40	57.0	4.3	53.4	3.8	73.1	6.82	4.96	4.45	83	0.94	0.084
STD SF-3A	Standard																				
STD SF-3A	Standard																				
STD DS7 Expected		20.92	109	70.6	411	890	56	9.7	627	2.39	48.2	4.9	70	4.4	68.7	6.38	5.86	4.51	86	0.93	0.08
STD SF-3A Expected																					
BLK	Blank	<0.01	<0.01	<0.01	<0.1	<2	<0.1	<0.1	<1	<0.01	<0.1	<0.1	<0.2	<0.1	<0.5	<0.01	<0.02	<0.02	<2	<0.01	<0.001
BLK	Blank																				
Prep Wash																					
G1	Prep Blank	0.19	1.92	1.76	46.1	4	3.9	4.2	559	1.87	<0.1	2.3	0.3	3.2	43.8	0.01	<0.02	0.04	38	0.46	0.107

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Project: None Given
Report Date: August 28, 2008

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QUALITY CONTROL REPORT VAN08006634.2

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	7AR
	Analyte	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga	As
	Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	%
	MDL	0.5	0.5	0.01	0.5	0.001	20	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1	0.01
Reference Materials																			
STD DS7	Standard	12.4	149.0	0.91	424.0	0.094	331	0.94	0.084	0.44	3.4	2.4	3.84	0.19	181	3.7	1.21	4.7	
STD DS7	Standard	13.6	181.9	1.06	448.2	0.109	80	1.00	0.091	0.49	3.4	2.6	4.26	0.20	206	4.1	1.31	5.0	
STD SF-3A	Standard																		<0.01
STD SF-3A	Standard																		<0.01
STD DS7 Expected		12.7	163	1.05	370.3	0.124	38.6	0.959	0.073	0.44	3.8	2.5	4.19	0.21	200	3.5	1.08	4.6	
STD SF-3A Expected																			0.0046
BLK	Blank	<0.5	<0.5	<0.01	<0.5	<0.001	264	<0.01	<0.001	<0.01	<0.1	<0.1	<0.02	<0.02	<5	<0.1	<0.02	<0.1	
BLK	Blank																		<0.01
Prep Wash																			
G1	Prep Blank	6.3	6.8	0.62	302.1	0.117	37	0.93	0.054	0.61	<0.1	2.0	0.41	<0.02	<5	<0.1	<0.02	4.9	N.A.

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.

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Project: None Given
Report Date: July 11, 2008

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CERTIFICATE OF ANALYSIS

VAN08006634.1

		Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F
		Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P
		Unit	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%
		MDL	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01	0.001
Z30562-01R-MM-S1	Sand		0.57	35.96	16.92	87.4	84	23.7	7.9	344	3.08	2178	0.5	1178	4.0	11.5	0.13	1.42	0.33	15	0.12	0.049
Z30563-01R-MM-S2	Sand		0.84	15.80	78.04	53.7	192	17.6	2.8	200	4.91	>10000	0.5	397.4	4.6	9.1	0.18	19.11	1.43	15	0.08	0.060
Z30564-01R-MM-S3	Sand		0.38	46.82	22.19	112.9	67	37.2	15.5	514	3.15	3141	0.5	61.2	4.1	25.0	0.16	2.28	0.46	15	0.59	0.054

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CERTIFICATE OF ANALYSIS

VAN08006634.1

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F
	Analyte	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga
	Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm
	MDL	0.5	0.5	0.01	0.5	0.001	20	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1
Z30562-01R-MM-51	Sand	22.5	16.4	0.78	72.6	0.053	32	1.40	0.012	0.52	0.4	1.8	0.26	<0.02	1450	0.2	0.23	4.2
Z30563-01R-MM-52	Sand	23.1	18.3	0.73	70.7	0.053	28	1.37	0.010	0.52	1.2	1.7	0.31	<0.02	821	1.1	2.44	4.5
Z30564-01R-MM-53	Sand	19.0	15.7	1.00	77.8	0.049	30	1.45	0.016	0.59	0.4	1.7	0.26	0.15	511	0.3	0.39	4.3

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QUALITY CONTROL REPORT

VAN08006634.1

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F
	Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P
	Unit	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%
	MDL	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01	0.001
Reference Materials																					
STD DS7	Standard	18.15	92.63	61.87	371.2	752	49.2	8.3	554	2.14	51.0	3.7	50.0	3.1	63.1	6.15	4.56	3.93	77	0.80	0.082
STD DS7	Standard	18.98	105.7	68.75	412.0	1086	51.8	9.7	683	2.40	57.0	4.3	63.4	3.8	73.1	6.82	4.86	4.45	83	0.84	0.084
STD DS7 Expected		20.92	109	70.6	411	890	56	9.7	627	2.39	48.2	4.8	70	4.4	68.7	6.38	5.86	4.51	86	0.93	0.08
BLK	Blank	<0.01	<0.01	<0.01	<0.1	<2	<0.1	<0.1	<1	<0.01	<0.1	<0.1	<0.2	<0.1	<0.5	<0.01	<0.02	<0.02	<2	<0.01	<0.001
Prep Wash																					
G1	Prep Blank	0.19	1.92	1.76	46.1	4	3.9	4.2	559	1.87	<0.1	2.3	0.3	3.2	43.8	0.01	<0.02	0.04	38	0.46	0.107

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VAN08006634.1

QUALITY CONTROL REPORT

	Method	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F	1F
	Analyte	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga
	Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm
	MDL	0.5	0.5	0.01	0.5	0.001	20	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1
Reference Materials																		
STD DS7	Standard	12.4	149.0	0.91	424.0	0.094	331	0.94	0.084	0.44	3.4	2.4	3.84	0.19	181	3.7	1.21	4.7
STD DS7	Standard	13.6	181.8	1.06	448.2	0.108	80	1.00	0.091	0.49	3.4	2.6	4.26	0.20	206	4.1	1.31	5.0
STD DS7 Expected		12.7	163	1.05	370.3	0.124	38.6	0.958	0.073	0.44	3.8	2.5	4.19	0.21	200	3.5	1.08	4.6
BLK	Blank	<0.5	<0.5	<0.01	<0.5	<0.001	264	<0.01	<0.001	<0.01	<0.1	<0.1	<0.02	<0.02	<5	<0.1	<0.02	<0.1
Prep Wash																		
G1	Prep Blank	6.3	6.8	0.62	302.1	0.117	37	0.98	0.054	0.61	<0.1	2.0	0.41	<0.02	<5	<0.1	<0.02	4.9

Sieve Analysis

Laboratory ID: Z21112-01 **Client ID:** MM-9 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.99		
0.15	*2.74*			2.88	*-1*	63.9
Pan				0.65	*2.74*	11.8

Total Sediment Weight = 5.52

Laboratory ID: Z21113-01 **Client ID:** MM-10 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			2.45		
0.15	*2.74*			10.31	*-1*	84.1
Pan				2.66	*2.74*	17.3

Total Sediment Weight = 15.42

Laboratory ID: Z21114-01 **Client ID:** MM-10 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.06		
0.15	*2.74*			2.07	*-1*	98.6
Pan				2.06	*2.74*	49.2

Total Sediment Weight = 4.19

Laboratory ID: Z21115-01 **Client ID:** MM-10 (1.5-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.19		
0.15	*2.74*			5.87	*-1*	98.2
Pan				4.24	*2.74*	41.2

Total Sediment Weight = 10.3

Laboratory ID: Z21116-01 **Client ID:** MM-11 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			2.75		
0.15	*2.74*			5.19	*-1*	73.4
Pan				2.41	*2.74*	23.3

Total Sediment Weight = 10.35

Sieve Analysis

Laboratory ID: Z21117-01 **Client ID:** MM-11 (0-2CM)

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*			0.1		
0.15	*2.74*			6.09	*-1*	98.7
Pan				1.71	*2.74*	21.6

Total Sediment Weight = 7.9

Laboratory ID: Z21118-01 **Client ID:** MM-11 (2-5CM)

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*			5.29		
0.15	*2.74*			8.19	*-1*	67.9
Pan				2.98	*2.74*	18.1

Total Sediment Weight = 16.46

Laboratory ID: Z21119-01 **Client ID:** MM-12 (0-5CM)

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*			0.01		
0.15	*2.74*			2.17	*-1*	99.7
Pan				0.97	*2.74*	30.8

Total Sediment Weight = 3.15

Laboratory ID: Z21120-01 **Client ID:** MM-13 (0-5CM)

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*			0.11		
0.15	*2.74*			2.58	*-1*	96.9
Pan				0.9	*2.74*	25.1

Total Sediment Weight = 3.59

Laboratory ID: Z21121-01 **Client ID:** MM-14 (0-5CM)

Sieve Size		Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing	
mm	PHI				PHI	%
2	*-1*			0.21		
0.15	*2.74*			3.06	*-1*	95.0
Pan				0.96	*2.74*	22.7

Total Sediment Weight = 4.23

Sieve Analysis

Laboratory ID: Z21122-01 **Client ID:** MM-15 (0-5CM)

Sieve Size mm	PHI	Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing PHI	%
2	-1			0.05		
0.15	2.74			2.21	-1	98.5
Pan				0.97	2.74	30.0

Total Sediment Weight = 3.23

Laboratory ID: Z21123-01 **Client ID:** MM-16 (0-5CM)

Sieve Size mm	PHI	Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing PHI	%
2	-1			0.25		
0.15	2.74			1.74	-1	89.9
Pan				0.49	2.74	19.8

Total Sediment Weight = 2.48

Laboratory ID: Z21124-01 **Client ID:** MM-17 (0-5CM)

Sieve Size mm	PHI	Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing PHI	%
2	-1			0.21		
0.15	2.74			3.16	-1	96.0
Pan				1.91	2.74	36.2

Total Sediment Weight = 5.28

Laboratory ID: Z21125-01 **Client ID:** MM-18 (0-5CM)

Sieve Size mm	PHI	Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing PHI	%
2	-1			0.22		
0.15	2.74			4.02	-1	96.3
Pan				1.65	2.74	28.0

Total Sediment Weight = 5.89

Laboratory ID: Z21125-01 DUP **Client ID:** MM-18 (0-5CM)

Sieve Size mm	PHI	Beaker Weight (grams)	Beaker + Sediment (grams)	Sediment Weight (grams)	Passing PHI	%
2	-1			0.23		
0.15	2.74			3	-1	95.1
Pan				1.48	2.74	31.4

Total Sediment Weight = 4.71

Sieve Analysis

Laboratory ID: Z21126-01 **Client ID:** MM-19 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.2		
0.15	*2.74*			2.63	*-1*	94.9
Pan				1.13	*2.74*	28.5

Total Sediment Weight = 3.96

Laboratory ID: Z21127-01 **Client ID:** MM-20 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.42		
0.15	*2.74*			3.25	*-1*	91.2
Pan				1.1	*2.74*	23.1

Total Sediment Weight = 4.77

Laboratory ID: Z21128-01 **Client ID:** MM-21 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.44		
0.15	*2.74*			4.22	*-1*	81.3
Pan				2.06	*2.74*	26.7

Total Sediment Weight = 7.72

Laboratory ID: Z21129-01 **Client ID:** MM-22 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.41		
0.15	*2.74*			3.97	*-1*	92.5
Pan				1.1	*2.74*	20.1

Total Sediment Weight = 5.48

Laboratory ID: Z21130-01 **Client ID:** MM-23 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.78		
0.15	*2.74*			4.78	*-1*	91.8
Pan				3.99	*2.74*	41.8

Total Sediment Weight = 9.55

Sieve Analysis

Laboratory ID: Z21131-01 **Client ID:** MM-23 (0-3CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.26		
0.15	*2.74*			3.01	*-1*	95.2
Pan				2.15	*2.74*	39.7

Total Sediment Weight = 5.42

Laboratory ID: Z21132-01 **Client ID:** MM-23 (3-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.13		
0.15	*2.74*			9.56	*-1*	93.1
Pan				5.64	*2.74*	34.5

Total Sediment Weight = 16.33

Laboratory ID: Z21134-01 **Client ID:** MM-24 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			2.15		
0.15	*2.74*			6.04	*-1*	84.5
Pan				5.72	*2.74*	41.1

Total Sediment Weight = 13.91

Laboratory ID: Z21135-01 **Client ID:** MM-25 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.16		
0.15	*2.74*			8.5	*-1*	98.9
Pan				5.68	*2.74*	39.6

Total Sediment Weight = 14.34

Laboratory ID: Z21136-01 **Client ID:** MM-26 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.79		
0.15	*2.74*			8.7	*-1*	94.5
Pan				4.98	*2.74*	34.4

Total Sediment Weight = 14.47

Sieve Analysis

Laboratory ID: Z21137-01 **Client ID:** MM-26 (0-2CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight		Passing
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.11		
0.15	*2.74*			4.22	*-1*	98.4
Pan				2.6	*2.74*	37.5

Total Sediment Weight = 6.93

Laboratory ID: Z21138-01 **Client ID:** MM-26 (2-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight		Passing
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.99		
0.15	*2.74*			9.45	*-1*	93.7
Pan				5.26	*2.74*	33.5

Total Sediment Weight = 15.7

Laboratory ID: Z21139-01 **Client ID:** MM-27 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight		Passing
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.18		
0.15	*2.74*			3.58	*-1*	96.4
Pan				1.3	*2.74*	25.7

Total Sediment Weight = 5.06

Laboratory ID: Z21140-01 **Client ID:** MM-28 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight		Passing
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.87		
0.15	*2.74*			5.76	*-1*	90.2
Pan				2.26	*2.74*	25.4

Total Sediment Weight = 8.89

Laboratory ID: Z21141-01 **Client ID:** MM-28 (0-3CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight		Passing
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.13		
0.15	*2.74*			1.91	*-1*	96.4
Pan				1.62	*2.74*	44.3

Total Sediment Weight = 3.66

Sieve Analysis

Laboratory ID: Z21142-01 **Client ID:** MM-28 (3-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			2.36		
0.15	*2.74*			4.44	*-1*	74.1
Pan				2.32	*2.74*	25.4

Total Sediment Weight = 9.12

Laboratory ID: Z21143-01 **Client ID:** MM-29 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.42		
0.15	*2.74*			1.62	*-1*	84.6
Pan				0.69	*2.74*	25.3

Total Sediment Weight = 2.73

Laboratory ID: Z21144-01 **Client ID:** MM-30 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.14		
0.15	*2.74*			1.67	*-1*	96.0
Pan				1.71	*2.74*	48.6

Total Sediment Weight = 3.52

Laboratory ID: Z21145-01 **Client ID:** MM-31 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0		
0.15	*2.74*			1.63	*-1*	100.0
Pan				0.93	*2.74*	36.3

Total Sediment Weight = 2.56

Laboratory ID: Z21146-01 **Client ID:** MM-32 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.18		
0.15	*2.74*			2.17	*-1*	95.8
Pan				1.94	*2.74*	45.2

Total Sediment Weight = 4.29

Sieve Analysis

Laboratory ID: Z21147-01 **Client ID:** MM-35 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.2		
0.15	*2.74*			6.85	*-1*	93.5
Pan				10.51	*2.74*	56.6

Total Sediment Weight = 18.56

Laboratory ID: Z21148-01 **Client ID:** MM-36 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			3.38		
0.15	*2.74*			2.6	*-1*	61.4
Pan				2.78	*2.74*	31.7

Total Sediment Weight = 8.76

Laboratory ID: Z21149-01 **Client ID:** MM-56 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			4.26		
0.15	*2.74*			2.86	*-1*	63.5
Pan				4.54	*2.74*	38.9

Total Sediment Weight = 11.66

Laboratory ID: Z21150-01 **Client ID:** MM-57 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.91		
0.15	*2.74*			5.62	*-1*	92.2
Pan				5.19	*2.74*	44.3

Total Sediment Weight = 11.72

Laboratory ID: Z21151-01 **Client ID:** MM-58 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			1.84		
0.15	*2.74*			3.16	*-1*	69.0
Pan				0.94	*2.74*	15.8

Total Sediment Weight = 5.94

Sieve Analysis

Laboratory ID: Z21152-01 **Client ID:** MM-59 (2-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			2.26		
0.15	*2.74*			4.83	*-1*	82.1
Pan				5.54	*2.74*	43.9

Total Sediment Weight = 12.63

Laboratory ID: Z21152-01 DUP **Client ID:** MM-59 (2-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			2.37		
0.15	*2.74*			4.78	*-1*	83.1
Pan				6.85	*2.74*	48.9

Total Sediment Weight = 14

Laboratory ID: Z21153-01 **Client ID:** MM-60 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.4		
0.15	*2.74*			3.78	*-1*	91.8
Pan				0.7	*2.74*	14.3

Total Sediment Weight = 4.88

Laboratory ID: Z21154-01 **Client ID:** MM-61(0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.12		
0.15	*2.74*			2.07	*-1*	97.1
Pan				1.94	*2.74*	47.0

Total Sediment Weight = 4.13

Laboratory ID: Z21155-01 **Client ID:** MM-62 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.18		
0.15	*2.74*			2.7	*-1*	95.4
Pan				1.07	*2.74*	27.1

Total Sediment Weight = 3.95

Sieve Analysis

Laboratory ID: Z21156-01 **Client ID:** MM-63 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.05		
0.15	*2.74*			2.33	*-1*	98.4
Pan				0.76	*2.74*	24.2

Total Sediment Weight = 3.14

Laboratory ID: Z21157-01 **Client ID:** MM-64 (0-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.57		
0.15	*2.74*			3.5	*-1*	91.4
Pan				2.52	*2.74*	38.2

Total Sediment Weight = 6.59

Laboratory ID: Z21158-01 **Client ID:** MM-64 (0-2CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			0.02		
0.15	*2.74*			0.92	*-1*	99.1
Pan				1.25	*2.74*	57.1

Total Sediment Weight = 2.19

Laboratory ID: Z21159-01 **Client ID:** MM-64 (2-5CM)

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*			2.45		
0.15	*2.74*			5.14	*-1*	79.7
Pan				4.5	*2.74*	37.2

Total Sediment Weight = 12.09

Laboratory ID: **Client ID:**

Sieve Size		Beaker Weight	Beaker + Sediment	Sediment Weight	Passing	
mm	PHI	(grams)	(grams)	(grams)	PHI	%
2	*-1*					
0.15	*2.74*				*-1*	#DIV/0!
Pan					*2.74*	#DIV/0!

Total Sediment Weight = 0

JMS WIF 172/173

Maxxam Analytics Inc

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: Clientservicesbedford@maxxamanalytics.com

CHAIN OF CUSTODY RECORD

B 14710

INVOICE INFORMATION:
Company Name: Maritime Testing (1985) Ltd.
Contact Name: Robert Berkeres
Address: Ste 116, 900 Windmill Rd,
Dart Postal Code B3B 1P7
Email: rberkleres@maritimetesting.ca
Ph: 468-6486 x 115 Fax: 468-4919

REPORT INFORMATION (if differs from invoice):
Company Name: Same
Contact Name:
Address:
Email:
Ph: Fax:

PO #:
Project Name / #: 7442 E
Location: Dartmouth
Quotation#: 07-362 KG
Sampled By: RB
Site Task #:

MAXXAM JOB NUMBER: A808012
Client Code: 41009
ENTERED BY, Init: KG
Labeled by, Init:
Location / Bin #:
Lab Use only

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater
Potable/NonPotable/Tissue/Soil/Sludge/Metal

DUE DATE: ☒ STANDARD ☐ 10 day

RUSH Due Date:
For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.
Client will be contacted if Rush date cannot be met.

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury: Mercury is not included in soil or water metals scan	Metals Soil: Available Metals Digest Default Method (HNO₃/H₂O₂)	Metals Soil: Total Digest - for sediments (HNO₃/HF/HClO₄)	Metals Soil: Tin (required for CCME soils)	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	TPH MUST (BTEX, C_6-C_{32})	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C_6-C_{32}	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
MW1/S1	Soil	Jan16/08	1x60/1x250							X						W92753							As (<2mm fraction)
MW1/S2	"									X						80							As
MW1/S3	"									X						81							As
MW1/S4	"									X						82							As
1F to2 MW1/S5	"		1x250							X						83							As
MW1/S6	"		1x60/1x250							X						84							As
MW2/S1	"									X						85							As
MW2/S2	"									X						86							As
MW2/S3	"									X						87							As
MW2/S4	"									X						88							As
1F MW2/S5	"									X						89							As
13 MW3/S1	"	Jan 17/08								X						90							As

2008 JAN 25 AM 9:08

25 JAN '08 AM 8:47

RELINQUISHED BY: (Signature/Print) Robert Berkeres
DATE / TIME: JAN 25/08
Received & Temp check by: Temp 1: 9.2°C Temp 2: 9.8°C Temp 3: 9.4°C
INTEGRITY Init: JMS Yes [✓ No]

Page 1 of 2

JMS

Maxxam Analytics Inc

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: Clientservicesbedford@maxxamanalytics.com

CHAIN OF CUSTODY RECORD

B 14711

INVOICE INFORMATION:

Company Name: MTL
Contact Name: ROBERT BEKKERS
Address: Ste 116 900 WINDMILL Rd
DART. NS Postal Code B3B 1P7
Email: rbekkers@maritimetesting.ca
Ph: 468-6486 x118 Fax: 468-4919

REPORT INFORMATION (if differs from invoice):

Company Name: Same
Contact Name:
Address:
Email:
Ph: Fax:

PO #:
Project Name / #: 7442E
Location: DART.
Quotation#: 07-362 KG
Sampled By: RB
Site Task #:

MAXXAM JOB NUMBER: A808017
Client Code: 41009
ENTERED BY, Init: mc
Labeled by, Init:
Location / Bin #:
Lab Use only

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

DUE DATE: ☒ STANDARD ☐ 10 day

RUSH Due Date:

For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.

Client will be contacted if Rush date cannot be met.

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water		Mercury	Metals Soil					TPH MUST (BTEX, C_6-C_{32})	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C_6-C_{32}	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
								Total Digest (Default Method)	Dissolved	Mercury is not included in soil or water metals scan	Available Metals Digest Default Method (HNO_3/H_2O_2)	Total Digest - for sediments (HNO_3/HF/$HClO_4$)	Tin (required for CCME soils)	Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Hot Water soluble Boron (required for CCME Agricultural)								
MW3/S2	SOIL	Jan 17/08	1x60, 1x250							X	W927					08							As (<2mm fraction)
WT MW3/S3	"	Jan 17/08	1x60, 1x250							X						09							As
73 MW3/S4	"	Jan 17/08	1x250							X						10							As ↓

2008 JAN 25 AM 9:08

25 JAN '08 AM 8:47

RELINQUISHED BY: (Signature/Print) ROBERT BEKKERS

DATE / TIME: JAN 25/08

Received & Temp check by:

Temp 1: 9.2°C Temp 2: 9.8°C Temp 3: 9.4°C

INTEGRITY Init: JMS Yes [✓ No]

WIF156/157 **CHAIN OF CUSTODY RECORD**

B 39881

Maxxam Analytics Inc

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: clientservicesbedford@maxxamanalytics.com

INVOICE INFORMATION:
Company Name: MTL
Contact Name: Rob Bekkers
Address:
Postal Code
Email: rbekkers@maritimetesting.ca
Ph:
Fax:

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name:
Address:
Email:
Ph:
Fax:

Project #: 7442
PO # & Phase #:
Proj Name/Location: Montague Mines
Site #:
Task #:
Quotation #: 07-362-KG
Sampled By: RB/RP

MAXXAM JOB NUMBER: Lab Use only
A8G1150(2mm)
A8G1171(150µm)
Client Code: 41009
ENTERED BY, Init: RC
Labeled by, Init:
Scanned by, Init:
Location/ Bin #:

DUE DATE: ☒ STANDARD ☐ 10 day

RUSH Due Date:
For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.
Client will be contacted if Rush date cannot be met.

Specify Guideline Requirements:
cc: rpellerin@maritimetesting.ca

*Specify Matrix: Surface/Soil/Ground/Tapwater/Sewage/Effluent/Seawater
Potable/NonPotable/Tissue/Soil/Sludge/Metal

Analysis columns: Field Filtered & Preserved; Lab Filtration Required; RCAp-30 Choose Total or Diss Metals; RCAp-MS Choose Total or Diss Metals; Metals Water: Total Digest (Default Method), Dissolved; Mercury (Mercury is not included in soil or water metals scan); Metals Soil: Available Metals Digest Default Method (HNO₃/H₂O₂), Hot Water soluble Boron (required for CCME Agricultural), Tin (required for CCME soils), Selenium (low level) (Req'd for CCME Residential, Parkland, Agricultural), Total Digest - for sediments (HNO₃/HF/HClO₄); Organics: TPH MUST (BTEX, C₆-C₃₂), Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C₆-C₃₂, NB Potable Water BTEX, VPH, Low Level TEH, TPH Fractionation, PAH's, PCB's, VOC's EPA 624,8260; Other Analysis or Comments/Hazards

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Lab No.	Mercury / Available Metals Digest	Organics	Other Analysis or Comments/Hazards
MM-9 (0-5cm)	Soil	June 2/08	1x500mL	221112	✓ ✓ (As ONLY)	220996	Hg/As/TOC on 2mm fraction
MM-10 (0-5cm)	↓	↓	↓	13	↓ ↓	97	As/TOC on 150µm fraction
MM-10 (0-1.5cm)				14		98	
MM-10 (1.5-5cm)				15		99	
MM-11 (0-5cm)				16		1000	
MM-11 (0-2cm)				17		01	
MM-11 (2-5cm)				18		02	
MM-12 (0-5cm)				19		03	
MM-13 (0-5cm)				20		04	
MM-14 (0-5cm)				21		05	
MM-15 (0-5cm)				22		06	
MM-16 (0-5cm)				23		07	↓

2008 JUN 11 PM 3:02

11 JUN '08 PM12:50

RELINQUISHED BY: (Signature/Print)

Received & Temp check by: Initial RBD Temp 1 <2 Temp 2 <2 Temp 3 4.4

Time Stamped ☑ Matrix added ☑ Bottle types added ☐ Hold Time Checked ☑ Storage Bin assigned ☐ BCO moved to Freezer ☐

Bottle checked for Date/Time sampled if they are not on COC ☐ If Rush, availability note added ☐

INTEGRITY Yes [✓ No] Init: JLS

ATL FCD 00149 / Revision 5

WIF157/158

CHAIN OF CUSTODY RECORD

B 39882

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: clientservicesbedford@maxxamanalytics.com

ORMATION:
Name:
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name:
Address:
Email:
Ph: Fax:

Project #:
PO # & Phase #:
Proj Name/Location:
Site #:
Task #:
Quotation #:
Sampled By:

MAXXAM JOB NUMBER: Lab Use only
Client Code:
ENTERED BY, Init:
Labeled by, Init: Scanned by, Init:
Location/ Bin #:

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

DUE DATE: ☑ STANDARD ☐ 10 day

RUSH Due Date:

For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.

Client will be contacted if Rush date cannot be met.

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury: Mercury is not included in soil or water metals scan	Metals Soil: Available Metals Digest Default Method (HNO₃/H₂O₂)	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Metals Soil: Tin (required for CCME soils)	Metals Soil: Selenium low level Req'd for CCME Residential, Parkland, Agricultural	Metals Soil: Total Digest - for sediments (HNO₃/HF/HCLO₄)	Organics: TPH MUST (BTEX, C_6-C_{32})	Organics: Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C_6-C_{32}	Organics: NB Potable Water BTEX, VPH, Low Level TEH	Organics: TPH Fractionation	Organics: PAH's	Organics: PCB's	Organics: VOC's EPA 624,8260	Other Analysis or Comments/Hazards
MM -17 (0-5cm)	Soil	June 2/08	1c 500ml					24124										221008					
MM -18 (0-5cm)								25										09					
MM - 19 (0-5cm)								26										10					
MM - 20 (0-5cm)								27										11					
MM - 21 (0-5cm)								28										12					
MM - 22 (0-5cm)								29										13					
MM - 23 (0-5cm)								30										14					
MM - 23 (0-3cm)								31										15					
MM - 23 (3-5cm)								32										16					
MM - 24 (0-5cm)							34	~~33~~	33									17					
MM - 25 (0-5cm)							35	34	74									18					
MM - 26 (0-5cm)							36	~~35~~										19					

2008 JUN 11 PM 3:01

11 JUN '08 PM12:50

RELINQUISHED BY: (Signature/Print)

Received & Temp check by: Temp 1 Temp 2 Temp 3
Initial
22244

Time Stamped ☐
Matrix added ☐
Bottle types added ☐

Hold Time Checked ☐
Storage Bin assigned ☐
BOD moved to Freezer ☐

Bottle checked for Date/Time sampled if they are not on COC ☐
If Rush, availability note added ☐

INTEGRITY
Yes No
Init:

WIF159/160

CHAIN OF CUSTODY RECORD

B 39883

…am
…nalytics inc

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: clientservicesbedford@maxxamanalytics.com

…NFORMATION:
…pany Name:
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name:
Address:
Email:
Ph: Fax:

Project #:
PO # & Phase #:
Proj Name/Location:
Site #:
Task #:
Quotation #:
Sampled By:

MAXXAM JOB NUMBER: Lab Use only
Client Code:
ENTERED BY, Init:
Labeled by, Init: Scanned by, Init:
Location/ Bin #:

DUE DATE: ☑ STANDARD ☐ 10 day

RUSH Due Date:

For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.

Client will be contacted if Rush date cannot be met.

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury: Mercury is not included in soil or water metals scan	Metals Soil: Available Metals Digest Default Method (HNO3/H2O2)	Hot Water soluble Boron (required for CCME agricultural)	Tin (required for CCME soils)	Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Total Digest - for sediments (HNO3/HF/HClO4)	Organics: TPH MUST (BTEX, C6-C32)	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C6-C32	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
MM-26 (0-2cm)	Soil	June 2/08	1x500ml					221136	37										221020				
MM-26 (2-5cm)								37	38										21				
MM-27 (0-5cm)								38	39										22				
MM-28 (0-5cm)								39	40										23				
MM-28 (0-3cm)								40	41										24				
MM-28 (3-5cm)								41	42										25				
MM-29 (0-5cm)								42	43										26				
MM-30 (0-5cm)								43	44										27				
MM-31 (0-5cm)								44	45										28				
MM-32 (0-5cm)								45	46										29				
MM-35 (0-5cm)								46	47										30				
MM-36 (0-5cm)								47	48										31				

2008 JUN 11 PM 3:02
11 JUN 08 [illegible]

RELINQUISHED BY: (Signature/Print)

Received & Temp check by: Initial
Temp 1 2 Temp 2 2 Temp 3 4.4

Time Stamped ☐
Matrix added ☐
Bottle types added ☐
Hold Time Checked ☐
Storage Bin assigned ☐
BOD moved to Freezer ☐
Bottle checked for Date/Time sampled if they are not on COC ☐
If Rush, availability note added ☐
INTEGRITY Yes No
Init:

Page of

ATL FCD 00143 / Revision 5

WIF160/161

CHAIN OF CUSTODY RECORD

B 39884

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: clientservicesbedford@maxxamanalytics.com

INFORMATION:
mpany Name:
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name:
Address:
Email:
Ph: Fax:

Project #:
PO # & Phase #:
Proj Name/Location:
Site #:
Task #:
Quotation #:
Sampled By:

MAXXAM JOB NUMBER: Lab Use only
Client Code:
ENTERED BY, Init:
Labeled by, Init: Scanned by, Init:
Location/ Bin #:

DUE DATE: ☑ STANDARD ☐ 10 day

RUSH Due Date:
For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.
Client will be contacted if Rush date cannot be met.

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

Sample Identification		Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury: Mercury is not included in soil or water metals scan	Metals Soil: Available Metals Digest Default Method (HNO₃/H₂O₂)	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Metals Soil: Tin (required for CCME soils)	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parkland, Agricultural	Metals Soil: Total Digest - for sediments (HNO₃/HF/HClO₄)	Organics: TPH MUST (BTEX, C_6-C_{32})	Organics: Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C_6-C_{32}	Organics: NB Potable Water BTEX, VPH, Low Level TEH	Organics: TPH Fractionation	Organics: PAH's	Organics: PCB's	Organics: VOC's EPA 624,8260	Other Analysis or Comments/Hazards
MM-56	(0-5 cm)	Soil	June 2/08	1 x 500 ml						221448	49									221032				
MM-57	(0-5 cm)	"	"	"						49	50									33				
MM-58	(0-5 cm)	"	June 11/08	"						50	51									34				
MM-59	(2-5 cm)									51	52									35				
MM-60	(0-5 cm)									52	53									36				
MM-61	(0-5 cm)									53	54									37				
MM-62	(0-5 cm)									54	55									38				
MM-63	(0-5 cm)									55	56									39				
MM-64	(0-5 cm)									56	57									40				
MM-64	(0-2 cm)									57	58									41				
MM-64	(2-5 cm)									58	59									42				

WIF 160 (MM-56 to MM-59)
WIF 161 (MM-60 to MM-64)

11 JUN '08 PM12:50

2008 JUN 11 PM 3:02

RELINQUISHED BY: (Signature/Print)

Received & Temp check by: Temp 1 Temp 2 Temp 3
JRD
Initial
24.4

☑ Time Stamped
☐ Matrix added
☐ Bottle types added

☑ Hold Time Checked
☐ Storage Bin assigned
☐ BOD moved to Freezer

☐ Bottle checked for Date/Time sampled if they are not on COC
☐ If Rush, availability rate added

INTEGRITY
Yes
Init: JN

WIF ~~Rep~~ 521, 522, 523, 524
5.

MM

Maxxam Analytics Inc

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www.maxxamanalytics.com E-mail: clientservicesbedford@maxxamanalytics.com

CHAIN OF CUSTODY RECORD

B 53301

INVOICE INFORMATION:
Company Name: MTL
Contact Name: Robert Bekkers
Address:
Postal Code
Email: rbekkers@maritimetesting.ca
Ph: Fax:

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name:
Address:
Email:
Ph: Fax:

Project #: 7442
PO # & Phase #:
Proj Name/Location:
Site #:
Task #:
Quotation #: 07-362KG
Sampled By: RB/RP

MAXXAM JOB NUMBER: A850952
Client Code: 41009
ENTERED BY, Init: TS
Labeled by, Init:
Location/ Bin #:
Lab Use only

Specify Guideline Requirements:
cc: rpellerin@maritimetesting.ca

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

DUE DATE: ☒ STANDARD ☐ 10 day
RUSH Due Date:
Extra cost for rush. Rush analysis should be scheduled prior to sample submission.
Client will be contacted if Rush date cannot be met.

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Circle Total or Diss Metals	RCAp-MS Circle Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury (Mercury is not included in soil or water metals scan)	Metals Soil: Available Metals Digest Default Method (HNO_3/H_2O_2)	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Metals Soil: Tin (required for CCME soils)	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Total Digest - for ocean sediments ($HNO_3/HF/HClO_4$)	Organics: TPH MUST (BTEX, C_6-C_{32})	Organics: Soil Potable, TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C_6-C_{32}	Organics: NB Potable Water BTEX, VPH, Low Level TEH	Organics: TPH Fractionation	Organics: PAH's	Organics: PCB's	Organics: VOC's EPA 624,8260	Other Analysis or Comments/Hazards
MM-2 (0-5 cm)	Soil	15 May 08	1x500							X	X		Y72464										{Mercury, Arsenic,
MM-2 (0-3 cm)													489										2mm Fraction {TOC,
MM-2 (3-5 cm)													485										
521 MM-3 (0-5cm)													519										
MM-5 (0-5cm)													520										150µm Fraction {Arsenic, TOC.
MM-7 (0-5 cm)													541										20 MAY '08 PM 5:41
MM-7 (0-3 cm)													Y72548										
522 MM-7 (3-5 cm)													552										
MM-42 (0-5 cm)													553										
MM-38 (0-5 cm)													554										

2008 MAY 21 AM 8:56

RELINQUISHED BY:
Signature
Date: MAY 20/08
Print: ROBERT BEKKERS
Time: [illegible]

Received by & Temp check by: ARSENIC ONLY
Signature
Print

Temp 1: <2
Temp 2: <2
Temp 3: <2

Hold Time Checked ☑
Matrix added ☑
Bottle types added ☑
BOD moved to Freezer ☑
Time Stamped ☑
Storage Bin assigned ☑
If no date sampled, check bottle ☑
COC client signed ☑

Rush availability note added to COC ☐
INTEGRITY Yes [✓ No]
Init: DS.

KEENVROCOC Bedford 02/08

Page 1 of 2

ATL FCD 00149 / Revision 6

RINS M. Ah R T M

xxam Analytics Inc

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: clientservicesbedford@maxxamanalytics.com

CHAIN OF CUSTODY RECORD

B 39880

INVOICE INFORMATION:
Company Name: MTL
Contact Name: R Beller
Address: 900 Windmill Rd
Suite 116 Dartmouth Postal Code B3B 1P7
Email: rbeller@ [illegible]
Ph: 468-6486 Fax: 468-4919

REPORT INFORMATION (If differs from invoice):
Company Name: SAME
Contact Name:
Address:
Email:
Ph: Fax:

Project #: 7442
PO # & Phase #:
Proj Name/Location:
Site #:
Task #:
Quotation #: 07-362KG
Sampled By: RG/RP

MAXXAM JOB NUMBER: Lab Use only
Client Code:
ENTERED BY, Init:
Labeled by, Init: Scanned by, Init:
Location/ Bin #:

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

DUE DATE: ☒ STANDARD ☐ 10 day
RUSH Due Date:
For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.
Client will be contacted if Rush date cannot be met.

	Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Total Digest (Default Method)	Dissolved	Mercury is not included in soil or water metals scan	Available Metals Digest Default Method (HNO_3/H_2O_2)	Hot Water soluble Boron (required for CCME Agricultural)	Tin (required for CCME soils)	Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Total Digest - for sediments ($HNO_3/HF/HCLO_4$)	TPH MUST (BTEX, C_6-C_{32})	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C_6-C_{32}	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
									Metals Water		Mercury	Metals Soil					Organics							
522	MM - 40 (0-5cm)	Soil	15 May	1x500							X	X				472564								Hg/As/TOC on 2mm fraction
	MM - 44 (0-5cm)	↓	↓	↓							↓	↓				572								
523	MM - 48 (0-5cm)															~~553~~ to 573								
	MM - 43 (0-5cm)															574								
	MM - 1 (0-5cm)		20 May													576								As/TOC on 150µm fraction
	MM - 1 (0-3.5cm)		↓													585								
	MM-1 (3.5-5cm)															590								
	MM - 47 (0-5cm)															592								20 MAY '08 5:42
524	~~MM~~ MM-33 (0-5cm)															593								
	MM-34 (0-5cm)															594								
	MM-55 (0-5cm)	↓	↓	↓							↓	↓				595								2008 MAY 21 AM 8:56

ARSENIC ONLY

RELINQUISHED BY: (Signature/Print) R Bell ROBERT BELLER

Received & Temp check by: Temp 1 Temp 2 Temp 3
Initial B. [illegible]

Time Stamped ☐ Matrix added ☐ Bottle types added ☐
Hold Time Checked ☐ Storage Bin assigned ☐ BOD moved to Freezer ☐
Bottle checked for Date/Time sampled if they are not on COC ☐
If Rush, availability note added ☐
INTEGRITY Yes No Init: ______

KEENVROCOC Bedford 05/07

Page 2 of 2

Ah B T

ATL FCD 00149 / Revision 5

WIF 520

CHAIN OF CUSTODY RECORD

Maxxam Analytics Inc

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: clientservicesbedford@maxxamanalytics.com

B 53302

INVOICE INFORMATION:
Company Name: MTR
Contact Name: R. Bekkers
Address: Suite 116 900 Windmill Rd.
Dart NS Postal Code B3B 1P7
Email: rbekkers@ maritimetesting.ca
Ph: 468-6486 Fax: 468-4919

REPORT INFORMATION (if differs from invoice):
Company Name: Same
Contact Name:
Address:
Email:
Ph: Fax:

Project #: 7742
PO # & Phase #:
Proj Name/Location:
Site #:
Task #:
Quotation #: 07-362KG
Sampled By: RB/RP

MAXXAM JOB NUMBER: A850902
Lab Use only
Client Code: 41009
ENTERED BY, Init: BC
Labeled by, Init:
Location/ Bin #:

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

DUE DATE: ☒ STANDARD ☐ 10 day

RUSH Due Date:

Extra cost for rush. Rush analysis should be scheduled prior to sample submission.

Client will be contacted if Rush date cannot be met.

								Metals Water			Metals Soil					Organics							
Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Circle Total or Diss Metals	RCAp-MS Circle Total or Diss Metals	Total Digest (Default Method)	Dissolved	Mercury (Mercury is not included in soil or water metals scan)	Available Metals Digest Default Method (HNO₃/H₂O₂)	Hot Water soluble Boron (required for CCME Agricultural)	Tin (required for CCME soils)	Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Total Digest - for ocean sediments (HNO₃/HF/HClO₄)	TPH MUST (BTEX, C₆-C₃₂)	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C₆-C₃₂	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
MM-4 (0-5cm)	TAILINGS	MAY 15/08	1×500							X	X				77294								ARSENIC + MERCURY
MM-8 (0-5cm)	↓	↓	↓							↓	↓				96								(on 2mm
MM-39 (0-5cm)															97								fraction)
MM-50 (0-5cm)															98								
MM-51 (0-10cm)		MAY 20/08													99								
MM-52 (0-10cm)															300								
MM-53 (0-10cm)		↓													01								
MM-54 (0-10cm)															02								
MM-41 (0-5cm)		MAY 15/08	1×500												03								
										ARSENIC ONLY													

2008 MAY 21 AM 8:57

RELINQUISHED BY:
Signature Robert Bekkers
Print ROBERT BEKKERS
Date MAY 20/08
Time 5:30pm

Received by & Temp check by:
Signature B/Jessica MacQueen
Print

Temp 1 <2
Temp 2 <2
Temp 3 <2

Hold Time Checked ☑
Matrix added ☑
Bottle types added ☑
BOD moved to Freezer ☑
Time Stamped ☑
Storage Bin assigned ☑
If no date sampled, check bottle ☑
COC client signed ☑

Rush availability note added to COC ☐

INTEGRITY
Yes No

Init:

KEENVROCOC Bedford 02/08

Page ____ of ____

ATL FCD 00149 / Revision 8

BIN: AF

Maxxam Analytics Inc

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
www.maxxamanalytics.com E-mail: clientservicesbedford@maxxamanalytics.com

CHAIN OF CUSTODY RECORD

B 30972

INVOICE INFORMATION:

Company Name: Maritime Testing Ltd
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

REPORT INFORMATION (if differs from invoice):

Company Name:
Contact Name:
Address:
Email:
Ph: Fax:

Project #/Name: 7442
Phase #:
PO #:
Location:
Site Task #:
Quotation #: A80115
Sampled By:

MAXXAM JOB NUMBER: A861395 A863751
Client Code: 41009
ENTERED BY, Init: BC / MC
Labeled by, Init:
Scanned by, Init:
Location/ Bin #:
Lab Use only

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

DUE DATE: ☐ STANDARD ☐ 10 day

RUSH Due Date:

For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.

Client will be contacted if Rush date cannot be met.

								Metals Water			Metals Soil					Organics							
Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Total Digest (Default Method)	Dissolved	Mercury (Mercury is not included in soil or water metals scan)	Available Metals Digest Default Method (HNO3/H2O)	Hot Water soluble Boron (required for CCME Agricultural)	Tin (required for CCME soils)	Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Total Digest - for sediments (HNO3/HF/HCLO4)	TPH MUST (BTEX, C6-C32)	Soil (Potable), TPH MUST, NB Fuel Oil Spill Policy Low Level BTEX & C6-C32	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
MM-4 (0-5CM)	Soil	May 15	34	(Y72291)						WIF 520													As + TOC on 150µm
MM-8 (0-5CM)	Soil	May 15	35	(Y72296)						"													
MM-39 (0-5CM)	Soil	May 15	36	(Y72297)						"													
MM-50 (0-5CM)	"	"	37	(Y72298)						"													
MM-51 (0-10CM)	"	"	38	(Y72299)						"	Agra Project Group IF-MS												Z305 02
MM 52 (0-10CM)	"	"	39	(Y72300)						"	sub to ACME lab												03
MM 53 (0-10CM)	"	"	40	(Y72301)						"	see notes for details												04
MM-54 (0-10CM)	"	"	41	(Y72302)						"													
MM-41 (0-5CM)	"	"	42	(Y72303)						"													

2008 JUN 12 AM11:09

RELINQUISHED BY: (Signature/Print)
DATE / TIME
Received & Temp check by: JLS Temp 1 Temp 2 Temp 3
INTEGRITY Init: JLS Yes [✓ No]

Page ✓ of

Intrinsik Environmental Sciences Inc.
Sovereign Place
5121 Sackville Street, Suite 506
Halifax, NS
B3J 1K1
Phone: 902-429-0278
Fax: 902-429-0279

April 28, 2009

Ian MacCallum
Nova Scotia Department of Transportation
and Public Works, Environmental Services
J.W. Johnston Building, 1st Floor
1672 Granville St. Halifax
Nova Scotia,   B3J 2N2

Re: Toxicological Advice – Gold Mine Tailings, Montague Mines and Goldenville

Dear Mr. McCallum:

To complete our existing contract related to provision of toxicological advice associated with mine tailings in both the Montague Mines and Goldenville areas, this letter serves to respond to the two questions we were asked to address under our contract:

1) Whether sampling should continue on to private lands to ensure complete delineation of contamination sourced from tailings which may represent a human health risk, and if so, where sampling should focus; and,
2) Whether human health risk assessment (HHRA) will be of value for identifying cost-effective risk management and/or remediation options to ensure human health risks arising from the contaminated tailings are acceptable, and/or for establishing site-specific target levels for remediation and/or risk management.

A number of specific documents were provided for our review, and a reference list is appended to this letter. All data necessary to conduct this review was received as of April 7, 2009. Our opinion is based on the review of these documents.

This opinion letter has been formulated by several senior toxicologists at Intrinsik Environmental Sciences Inc., all of whom have extensive experience in the fields of arsenic toxicology and risk assessment. The individuals involved include Dr. Don Davies (who holds the DABT designation – Diplomate of the American Board of Toxicology), Elliot Sigal, Rob Willis and myself.

Each site is discussed separately. Mercury was not found to be elevated in soils at either site, and therefore no further study of mercury is recommended for human health risk assessment purposes. The focus of this letter is on arsenic.

Goldenville, Nova Scotia

QUESTION 1: Whether sampling should continue on to private lands to ensure complete delineation of contamination sourced from tailings which may represent a human health risk, and if so, where sampling should focus.

ANSWER:

We would strongly advise the Province to sample private lands to determine the nature and extent of any arsenic contamination originating from the tailings. In light of measured arsenic concentrations near private lands, there is a need to proceed with this sampling promptly (particularly related to drinking water, if well water is being or could be consumed).

Sampling efforts should focus the following:
- yard soils and garden soils (if present) from residential properties adjacent to, or near the tailings areas, in the top 0 – 5 cm of soils (i.e, the “public health” layer, where exposure potential is highest);
- drinking water, as this is a potentially important pathway of exposure if residents consume well water;
- indoor house dust (via gravimetric vacuum sampling);
- bioaccessibility testing of yard soil; and,
- air monitoring or modeling to predict air concentrations.

These data, if collected in the spring/early summer of 2009, can be used to determine if other supplemental risk management measures (in addition to those previously indicated to the residents) are necessary during the overall assessment timeframe.

QUESTION 2: Whether human health risk assessment (HHRA) will be of value for identifying cost-effective risk management and/or remediation options to ensure human health risks arising from the contaminated tailings are acceptable and/or for establishing site-specific target levels for remediation and/or risk management .

ANSWER:

A HHRA will be required, to assist in developing site-specific risk management and/or remediation options to reduce exposure levels to tailings dusts within the residential area, and the tailings area itself. The data may indicate a need for supplementary risk management of private lands to reduce exposure levels, prior to conducting a HHRA.

While studies have indicated that the bioaccessibility of the arsenic in tailings is generally low, measured soil arsenic concentrations near private properties are markedly elevated when compared to generic soil quality guidelines and typical background arsenic concentrations in the area, therefore, exposure levels could still be elevated. As a result, nearby residents in Goldenville should be provided with additional, supplementary information on avoidance of the tailings area, and how best to reduce their exposure to arsenic in dusts and soils. There are a number of steps individuals can take to do this, including the following:

- wash your hands and face after working or playing outdoors, and before eating;
- avoid playing in bare soil areas;
- clean your house regularly using a damp mop;
- avoid bringing dirt inside by removing outdoor shoes;
- brush pets outside, to reduce dusts they can bring into the home;
- thoroughly wash vegetables and peel root crops before eating.

For additional steps, we have attached fact sheets from Ontario and ATSDR related to arsenic exposures. It may also be helpful for residents to speak directly with a Department of Health representative, to have their questions answered. If nearby residents are concerned about their health, they should see their family physician. A family physician can make recommendations related to medical tests that can be done to measure arsenic in urine, in order to determine if individuals have been exposed to elevated levels of arsenic.

For the tailings area, a site-specific target level (SSTL) for arsenic in soil should be developed for determining the outer boundaries of the tailings area that require risk management or remediation. A SSTL can be developed using a HHRA approach or a modified soil quality guideline approach, and would consider intermittent exposure to the tailings, and dusts, and would utilize the data on tailings area soil chemistry, background soil concentrations and bioaccessibility. In our opinion, a SSTL is needed irrespective of whether or not the residential properties require risk assessment or risk management.

Montague Mines, Nova Scotia

QUESTION 1: Whether sampling should continue on to private lands to ensure complete delineation of contamination sourced from tailings which may represent a human health risk, and if so, where sampling should focus.

We would strongly advise the Province to sample private lands to determine the nature and extent of any arsenic contamination originating from the tailings. This sampling program is less urgent than that proposed for Goldenville, as the measured arsenic concentrations near the private properties in Montague Mines are generally more similar to, or less than those occurring naturally (in background) in this area for arsenic, with some exceptions. Due to thick forest cover, there is generally a lower exposure potential. We recommend that this sampling be conducted during the summer of 2009, and should focus on the following:

- yard soils and garden soils (if present) from residential properties adjacent to, or near the tailings areas, in the top 0 – 5 cm of soils (i.e, the “public health” layer, where exposure potential is highest);
- drinking water, as this is a potentially important pathway of exposure if residents are consuming well water;
- indoor house dust (via gravimetric vacuum sampling);
- bioaccessibility testing of yard soils

We understand that additional outdoor air testing is proposed for Montague Mines, which will be helpful in evaluating this exposure pathway.

These data, if collected in the summer of 2009, can be used to determine if any additional risk management measures (in addition to those previously indicated to the residents) are necessary during the overall assessment timeframe.

QUESTION 2: Whether human health risk assessment (HHRA) will be of value for identifying cost-effective risk management and/or remediation options to ensure human health risks arising from the contaminated tailings are acceptable and/or for establishing site-specific target levels for remediation and/or risk management .

ANSWER:

The recommended data collection (see response to Question 1) will provide information which can be used to determine if a HHRA will be of value in identifying whether or not residential properties require risk management or remediation. For example, if residential soil, air and drinking water concentrations are less than or equal to relevant soil quality, air quality, and drinking water quality guidelines, and/or background concentrations, then there would be little benefit in proceeding with a HHRA of residential areas. In contrast, if the sampling data suggests a need for further study (i.e, exceedances over soil, air and drinking water quality guidelines and/or background concentrations), then HHRA would be of benefit. The HHRA of residential properties would be used to determine whether or not elevated levels of risk are indicated, to help determine what exposure pathways are most predominant (e.g., ingestion of soils, drinking water consumption, inhalation of air, etc.), and subsequently, to assist in determining the areal extent and nature of remediation or risk management (if any), which may be necessary to reduce exposure and risk levels.

For the tailings area, a site-specific target level (SSTL) for arsenic in soil should be developed for determining the outer boundaries of the tailings areas that require risk management or remediation. A SSTL can be developed using a HHRA approach or a modified soil quality guideline approach and would consider intermittent exposure to the tailings and dusts, and would utilize the data on tailings area soil chemistry, background soil concentrations and bioaccessibility. In our opinion, a SSTL is needed irrespective of whether or not the residential properties require risk assessment.

Additional Guidance:

In our opinion, it is important that the residents of both communities be informed of the results of studies conducted to date and the need for further study, and that they be informed that soils adjacent to the specific tailings areas contain elevated levels of arsenic (particularly the Goldenville area). Residents were provided specific advice previously by the Province to avoid the tailings areas, test their drinking water, and reduce their exposures through hand washing, etc., and these communications should be reiterated, on both sites. For Goldenville, consideration should be given to provide additional advice related to minimizing exposure to the soils near the tailings, in addition to avoidance of the tailings areas. Signage related to the hazards that the tailings pose should be re-posted, as several signs have been vandalized.

In addition, plans should be made to reduce dust generation or dusting events at both of these sites as soon as possible, as this will reduce potential exposure levels. This should include additional signage (or other approaches) to reduce or prevent dirt biking or ATV riding in either the Montague or Goldenville area, due to the dust generation caused by these activities.

Sampling priority should be given to the Goldenville site, due to the higher concentrations reported.

Please do not hesitate to call if you have any questions, or need to discuss these recommendations further.

Yours Sincerely,
INTRINSIK ENVIRONMENTAL SCIENCES INC.

Christine Moore

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Cc: D. Hemsworth, Department of Environment;
Elliot Sigal; Dr. Don Davies; Intrinsik Environmental Sciences Inc.

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GEOLOGICAL SURVEY OF CANADA
OPEN FILE 7150

Environmental geochemistry of tailings, sediments and surface waters collected from 14 historical gold mining districts in Nova Scotia

M.B. Parsons, K.W.G. LeBlanc, G.E.M Hall,
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2012

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GEOLOGICAL SURVEY OF CANADA
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Environmental geochemistry of tailings, sediments and surface waters collected from 14 historical gold mining districts in Nova Scotia

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2012

doi:10.4095/291923

Recommended citation
Parsons, M.B., LeBlanc, K.W.G., Hall, G.E.M., Sangster, A.L., Vaive, J.E., and Pelchat, P., 2012. Environmental geochemistry of tailings, sediments and surface waters collected from 14 historical gold mining districts in Nova Scotia; Geological Survey of Canada, Open File 7150. doi:10.4095/291923

ABSTRACT

From 1861 to the mid-1940s, stamp milling at orogenic lode gold mines in Nova Scotia generated more than 3,000,000 tonnes of tailings. Most of the mined gold was recovered using mercury (Hg) amalgamation, and an estimated 10–25% of the Hg used was lost to the tailings and to the atmosphere. Arsenic (As) also occurs naturally in the ore, and is present at high concentrations in the mine wastes. Tailings from these operations were generally slurried into local rivers, swamps, lakes and the ocean. Recent land-use changes (e.g. residential development, recreational activities, shellfish harvesting) in some historical mining districts are increasing the likelihood of human exposure to these tailings. This Open File Report presents the results of a multi-disciplinary investigation of the dispersion, speciation and fate of metal(loid)s in terrestrial and shallow marine environments surrounding 14 abandoned gold mines in Nova Scotia. From 2003 to 2006, samples of tailings, sediment, and water were collected at 14 former gold mines. Field studies reveal that most mine sites contain large volumes of unconfined tailings, and in several districts these have been transported significant distances (>2 km) offsite by streams and rivers. Chemical analyses of 482 tailings and sediment samples show high concentrations of As (10 mg/kg to 31 wt.%; median 2550 mg/kg) and Hg (<5 µg/kg to 350 mg/kg; median 1640 µg/kg). Arsenic is hosted in arsenopyrite and a variety of secondary phases including scorodite ($FeAsO_4 \cdot 2H_2O$), amorphous Fe arsenate, and As bound to Fe oxyhydroxides. Mercury is present in elemental form, amalgam (Au_xHg_x), and in secondary phases. Results from this study led to the formation of a Provincial-Federal Historic Gold Mines Advisory Committee in 2005, which has evaluated the ecological and human health risks associated with gold mines throughout Nova Scotia and developed recommendations for management of these tailings sites. This Open File Report provides the most comprehensive summary available of the history, distribution, and geochemistry of tailings at gold mines throughout Nova Scotia. The geographic coordinates provided for each district can be used to quickly explore the tailings deposits via most web-based mapping services. The results can be used to help minimize the environmental impacts associated with past, present, and future gold extraction and to inform land-use decisions.

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Goldenville Gold District

Goldenville was the most productive gold district in Nova Scotia and is located approximately 3.5 km southwest of Sherbrooke in Guysborough County on the eastern shore of Nova Scotia (Fig. 1; 45.122014°, -62.018956°). The geology of this district was mapped by the GSC in 1898 (Faribault 1898b) and the deposit geology and metallogeny are described in detail by Brunton (1928) and Malcolm (1929). The extensive mining activity in this area has led to surface subsidence in several locations as a result of progressive collapse in the underground workings (Hill *et al.* 1997). The environmental impacts of tailings disposal on stream waters, sediments, vegetation and benthic invertebrates in this district have previously been studied by Wong *et al.* (1999). Beauchamp *et al.* (2002) reported Hg flux measurements for the tailings deposits.

From 2004 to 2010, NRCan partnered with Queen's University, the Royal Military College, Nova Scotia Environment, and Health Canada to evaluate human health risks associated with the tailings at Goldenville. Of particular concern at this site was the annual Goldenville 4X4 Rally, which was held on the tailings from 1994 to 2005 and attracted hundreds of people from across the Atlantic Provinces each year (Fig. 26). Detailed information on the mineralogy and bioaccessibility of As in these tailings can be found in Walker *et al.* (2009), Meunier *et al.* (2010, 2011) and Corriveau *et al.* (2011a, 2011b). The Goldenville Rally was cancelled in 2006 because of uncertainties associated with exposure to the high-As tailings at this site.

Mining and milling history

Mining activity at Goldenville progressed rapidly following the discovery of gold in 1861. Some of the key historical events are summarized in Table 6—this information has been compiled from Malcolm (1929), Henderson (1935) and Moggridge Kuusisto (1978). During peak periods of production as many as 19 different companies were operating simultaneously in this district. Many stamp mills have been erected over time, crushing a total of 540,617 tonnes of ore (Table 1) and leaving large quantities of tailings on the surface. Most of the gold was recovered using stamp mills and Hg amalgamation and a six-ton cyanide batch treatment plant was erected in 1940 to treat stockpiled sulphide concentrates (Roach 1940). Tailings from these mills are located at several locations around Goldenville, but the majority were deposited in Gegogan Brook and are visible on the floodplain for at least 6 km downstream (Wong *et al.* 1999).

Distribution of As and Hg in mine tailings

Samples of near-surface tailings and weathered sulphide concentrate were collected from 35 sites at Goldenville in June 2003, December 2005, and November 2006, primarily for research on the mineralogy and bioaccessibility of As (Fig. 27). Most of the samples were taken from the area used during the Goldenville 4X4 Rally. Tailings in the racetrack area are well-oxidized and show evidence of hardpan formation in some areas (Fig. 28). As shown in Fig. 29 and Table 7, the concentrations of As in tailings are very high, especially in the scorodite-rich weathered sulphide concentrate adjacent to the former mill site (Fig. 4b). The concentrations of Hg are typical for amalgamation tailings, with the highest levels near the stamp mill (Fig. 30). Field observations show that dusty tailings from the racetrack area are occasionally transported toward the north and northeast on windy days and may impact residential properties along Goldenville Road.

a)

b)

Fig. 26. (a) Off-road vehicle races on mine tailings at the 11th Annual Goldenville 4X4 Rally, September 5, 2004. **(b)** Children playing in gold mine tailings at the Goldenville 4X4 Rally.

Table 6. Highlights of mining and milling history, Goldenville Gold District, 1861-present.

Date	Event
1861	Gold discovered in quartz boulders in a small meadow about a mile and a half west of the St. Mary's River by Nelson Nickerson of Sherbrooke
1862–1867	Vigorous prospecting and production of gold by many different companies; in 1862, the first four stamp mills were installed; in 1867, the district records its highest production of gold—9,463 oz.
1868	Five new crushers erected on-site; many companies working throughout the district; three 15-stamp crushers erected in the eastern part of the district
1869	Nineteen companies operating in the district—most of these are short-lived, and by 1872, production drops substantially
1873–1893	Mining properties worked throughout the district, in many cases by tributers (i.e. individual miners and prospectors, who worked the properties for a rental fee); lack of capital and poor mining practices hamper production at most mines; gold production decreases throughout 1880s to less than 200 oz./yr in early 1890s
1894	Improved mining and milling methods, systematic exploration based on the mapping work of E.R. Faribault (GSC), and increased investment capital generate renewed interest in mining lower-grade ores in the Goldenville district
1895–1906	Active mining by various companies, with a peak in production of 5,201 oz. in 1898; many stamp mills are operated during this period, some of which included concentrators (shaking tables, Frue vanners, or Wilfley tables) to treat the tailings from the amalgamation process. Production drops off significantly after 1906.
1909–1930	Intermittent activity by various companies (peak production of 2,215 oz. in 1915)
1935–1942	Guysborough Mines Ltd. produces 170,239 tonnes of ore at a grade of 7.12 g/t Au. Mining ceased in 1942 because of World War II.
1961–1987	Intermittent exploration (diamond drilling, geochemical & geophysical surveys), including open-pit mining of a 3,500 ton sample in 1984 for gravity concentration and a subsample for cyanidation testing.
1988–present	Surface exploration, shaft rehabilitation, and limited underground exploration.

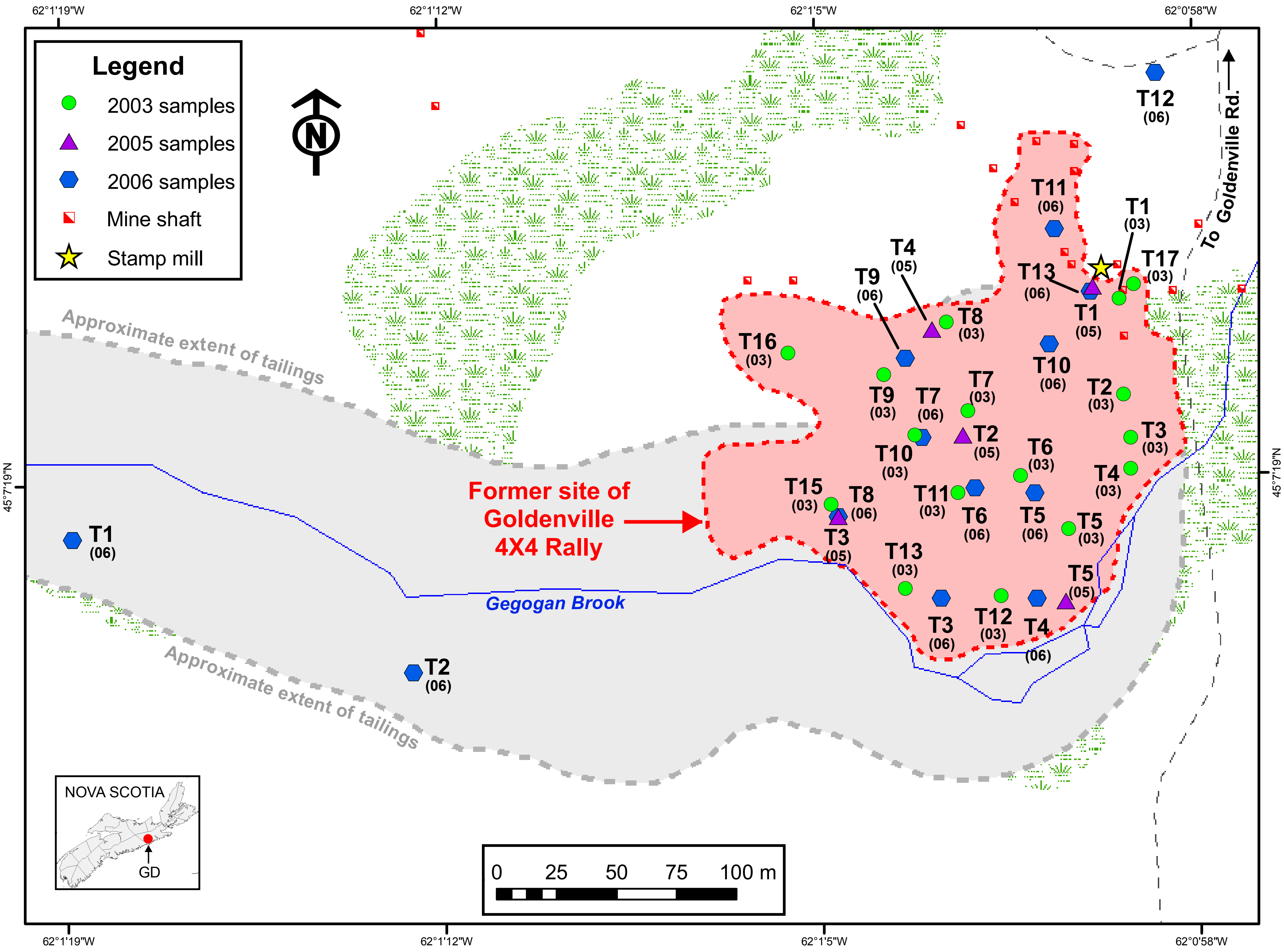

Fig. 27. Location of tailings samples, Goldenville Gold District
(geographic centre of map (decimal degrees): 45.122014°, -62.018956°)

a)

b)

Fig. 28. (a) Aerial photograph of the main mine area at Goldenville showing waste rock piles and mine tailings. Fluvial dispersion by the Gegogan River has transported tailings at least 6 km downstream of the Goldenville mines (photo credit: P.K. Smith). **(b)** Overview of tailings in main racetrack area showing As-rich hardpan underlying tailings in foreground.

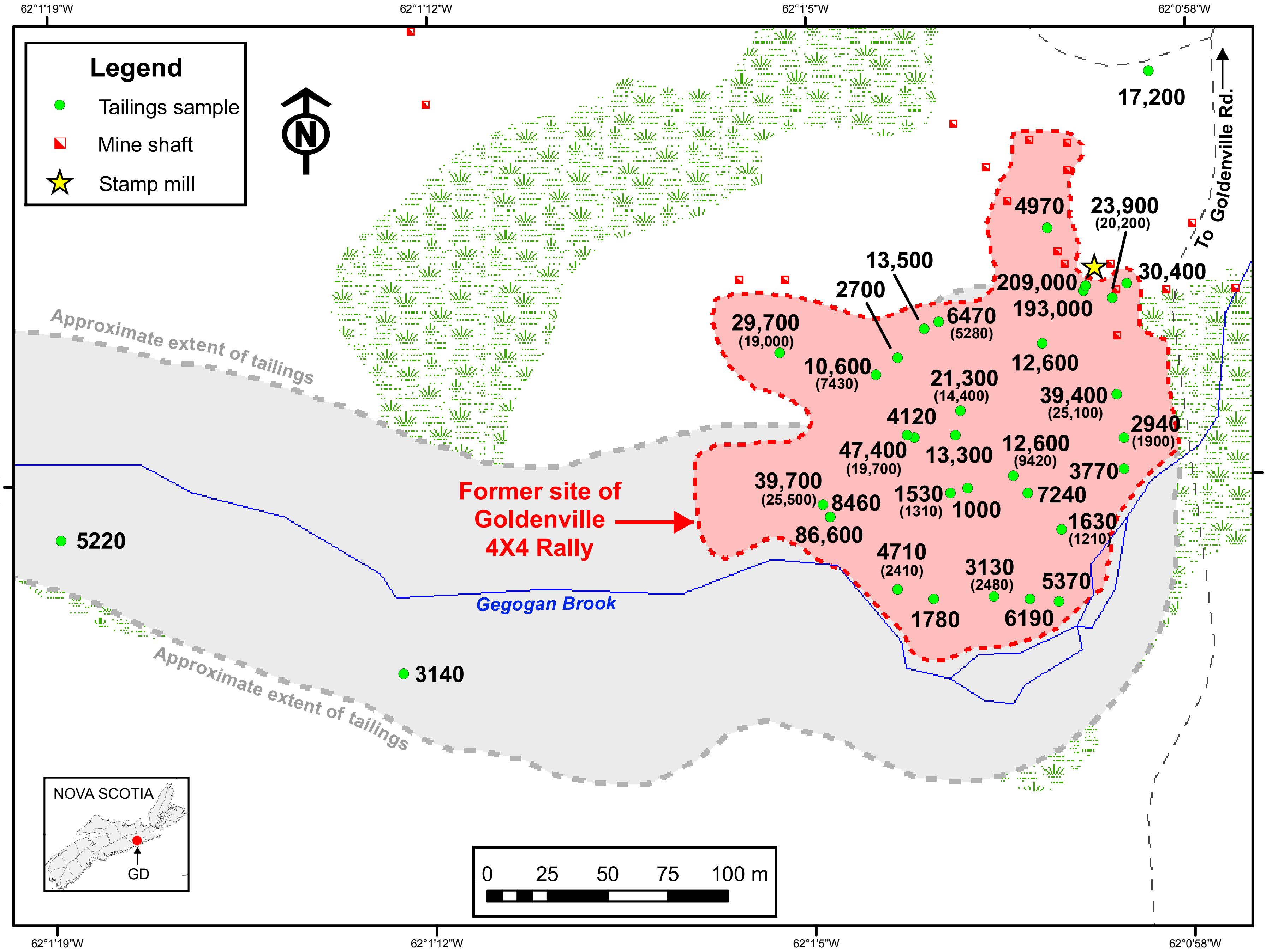

Fig. 29. As concentrations (mg/kg) in Goldenville tailings (maximum and (mean) concentrations; <2 mm size fraction).

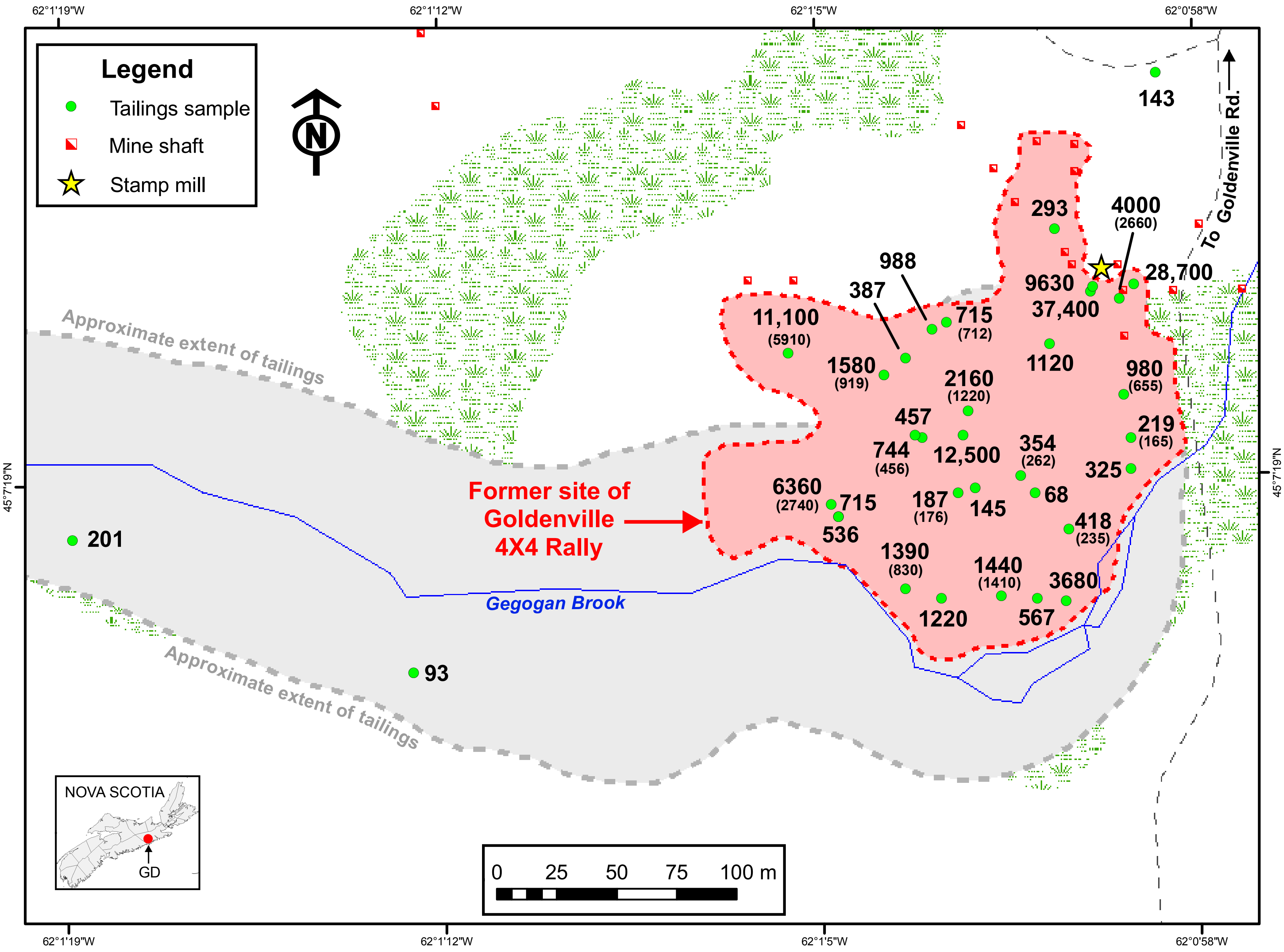

Fig. 30. Hg concentrations (μg/kg) in Goldenville tailings (maximum and (mean) concentrations; <2 mm size fraction).

Table 7. As and Hg concentrations in tailings, Goldenville Gold District [a]

Sample Site	Tailings Depth (cm)	Northing (20T, NAD 83)	Easting (20T, NAD 83)	Date	As (mg/kg)	Hg (µg/kg)
T1	2	4997047	0577356	9-Jun-03	21500	1640
T1	10	4997047	0577356	9-Jun-03	15000	2330
T1	13	4997047	0577356	9-Jun-03	23900	4010
T2	1	4997007	0577358	9-Jun-03	29200	897
T2	3.5	4997007	0577358	9-Jun-03	39400	980
T2	8	4997007	0577358	9-Jun-03	6630	88
T3	1	4996989	0577361	9-Jun-03	2940	111
T3	21	4996989	0577361	9-Jun-03	858	219
T4	1	4996976	0577361	9-Jun-03	3770	325
T5	1	4996951	0577335	9-Jun-03	796	52
T5	8	4996951	0577335	9-Jun-03	1630	418
T6	1	4996973	0577315	9-Jun-03	12600	354
T6	17	4996973	0577315	9-Jun-03	6240	171
T7	1	4997000	0577293	9-Jun-03	21300	2170
T7	14	4997000	0577293	9-Jun-03	7420	271
T8	1	4997037	0577284	9-Jun-03	4090	715
T8	15	4997037	0577284	9-Jun-03	6470	709
T9	1	4997015	0577258	9-Jun-03	10600	259
T9	13	4997015	0577258	9-Jun-03	4300	1580
T10	1	4996990	0577271	9-Jun-03	9220	744
T10	8	4996990	0577271	9-Jun-03	2610	294
T10	20	4996990	0577271	9-Jun-03	47400	330
T11	1	4996966	0577289	9-Jun-03	1090	166
T11	10	4996966	0577289	9-Jun-03	1530	187
T12	1	4996923	0577307	9-Jun-03	2850	1440
T12	5	4996923	0577307	9-Jun-03	3130	1430
T12	19	4996923	0577307	9-Jun-03	1480	1360
T13	1	4996926	0577267	9-Jun-03	1850	168
T13	6	4996926	0577267	9-Jun-03	4710	932
T13	8	4996926	0577267	9-Jun-03	686	1390
T15	1	4996961	0577236	9-Jun-03	39700	1700
T15	5	4996961	0577236	9-Jun-03	3690	165
T15	8	4996961	0577236	9-Jun-03	33300	6360
T16	4	4997024	0577218	9-Jun-03	8260	686
T16	8	4997024	0577218	9-Jun-03	29700	11100
T17	1	4997053	0577362	9-Jun-03	30400	28700

[a] Samples from 2005 and 2006 were taken from a single depth and are not included in this table.

Montague Gold District

The Montague gold district is located in the community of Montague Gold Mines near the urban core of Halifax Regional Municipality (Fig. 1; 44.714949°, -63.521709°). The geology of this district was mapped by the GSC in 1902 (Faribault 1902b) and the character of the gold deposits is described in detail by Malcolm (1929). The environmental impacts of tailings disposal on stream waters, sediments, vegetation, fish and aquatic organisms in this district have previously been studied by EPS (1978), Brooks *et al.* (1981, 1982), and Dale and Freedman (1982).

From 2004 to 2010, NRCan partnered with Queen's University, the Royal Military College, Nova Scotia Environment, and Health Canada to evaluate human health risks associated with the tailings at Montague. The tailings at this site are located very close to residential properties and are frequently used for racing off-road vehicles (Fig. 54). Details on the mineralogy and bioaccessibility of As in these tailings can be found in Walker *et al.* (2009), Meunier *et al.* (2010, 2011), Corriveau *et al.* (2011a, 2011b), and DeSisto *et al.* (2011). Other studies have examined the bioaccumulation of As in terrestrial invertebrates (Moriarty *et al.* 2009) and small mammals (Saunders *et al.* 2010, 2011) living near the tailings at Montague. An Environmental Site Assessment was carried out at Montague in 2007-2008 to assess human health risks associated with the tailings and long-term management options are presently under investigation.

Mining and milling history

Gold was discovered at Montague in 1862 and the first on-site stamp mill was constructed in 1865. Mining was carried out continuously from 1865 to 1928, then intermittently until 1940, and ore was milled on-site using a variety of 5- to 15-stamp mills and Hg amalgamation (Malcolm 1929). In 1938, a six-ton batch treatment cyanide plant was installed at Montague for the treatment of concentrates from the active stamp mills, as well as stockpiled concentrate (Roach 1940). Most of the tailings from these mills were discharged directly into Mitchell Brook, which originates in Lake Loon and drains into Lake Charles (Fig. 55). Previous studies have shown that tailings are present in the various wetland areas along Mitchell Brook, and a layer of fine tailings was found in a sediment core from Lake Charles, approximately 2.5 km downstream of the Montague stamp mills (EPS 1978; Mudroch and Clair 1985). Tailings were also deposited in a wetland along Birch Cove Brook, which drains eastward toward Lake Major (Faribault 1902). Since the 1980s, several companies have investigated the feasibility of extracting gold from the tailings (Jacques Whitford and Associates, Ltd. 1984; Mills 1997).

Distribution of As and Hg in mine tailings

Samples of near-surface tailings and broken-up hardpan material were collected from 31 sites at Montague between 2003 and 2007 (Fig. 55). Tailings in the racetrack area are well-oxidized near the surface and are partially overlain by hardpan (Fig. 56). As shown in Fig. 57 and Table 11, the concentrations of As in the tailings are very high (up to 4.1 wt.%), especially in the broken-up scorodite-rich hardpan in the racetrack area (DeSisto *et al.* 2011). The concentrations of Hg are also high reflecting the long history of Hg amalgamation in this district (Fig. 58). Field observations show that dusty tailings from this site are occasionally transported toward the east and southeast on windy days and may impact residential properties along Montague Mines Road.

a)

b)

Fig. 54. (a) Off-road vehicle jumps constructed from mine tailings in the Montague Gold District. **(b)** Children racing dirt bikes on dusty tailings near a high-volume particulate sampler at Montague Gold Mines, September 2004 (photo by Madeleine Corriveau, Queen's University).

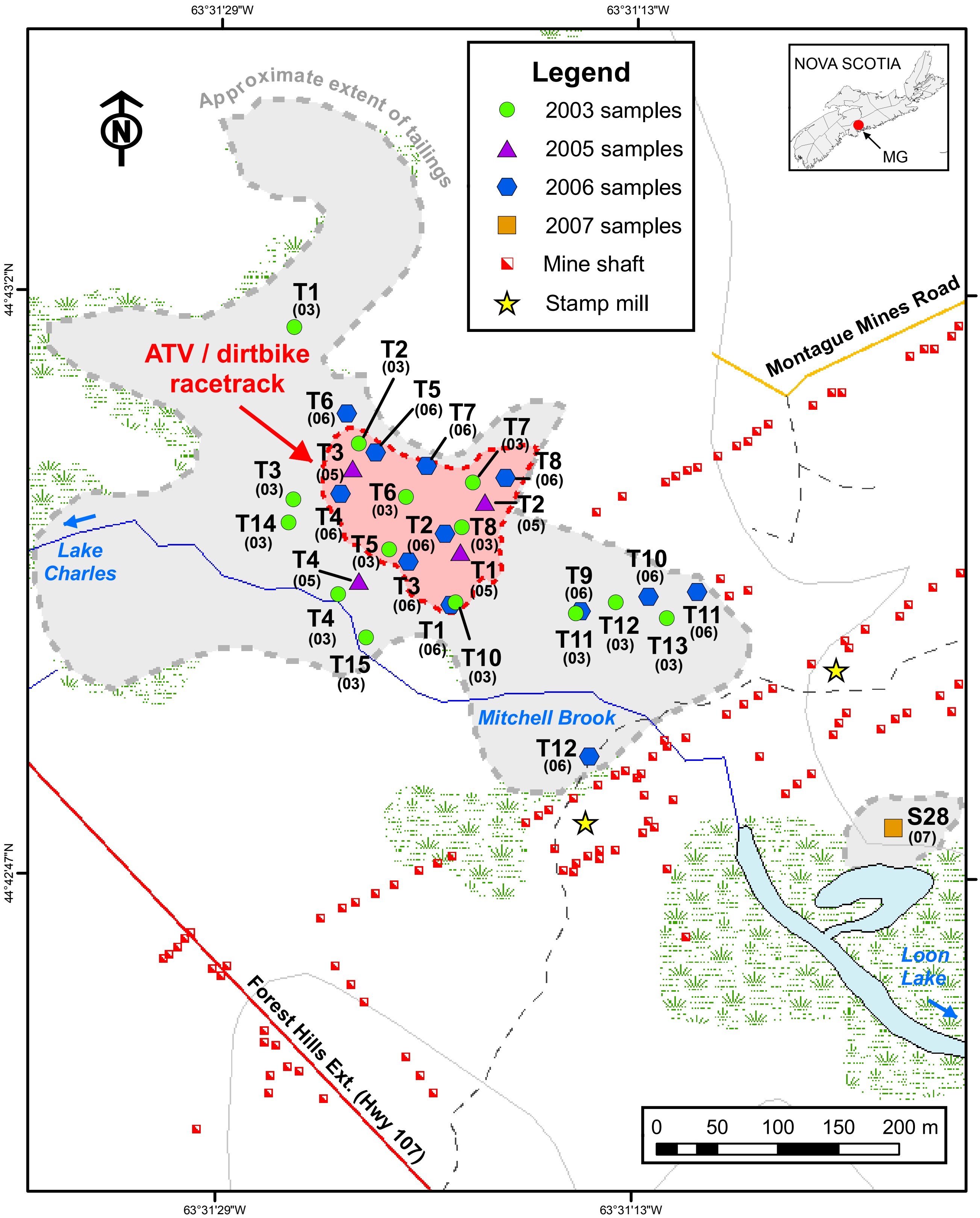

Fig. 55. Location of tailings samples, Montague Gold District (geographic centre of map (decimal degrees): 44.714949°, -63.521709°)

a)

b)

Fig. 56. (a) Tailings in racetrack area at Montague showing As-rich hardpan underlying tailings in foreground. Layers of arsenopyrite are present in contact with this hardpan, suggesting that it formed from oxidation of sulphide concentrates that were dumped on top of the tailings. **(b)** Cross-section through the tailings showing layers of hydrous ferric oxide near the surface.

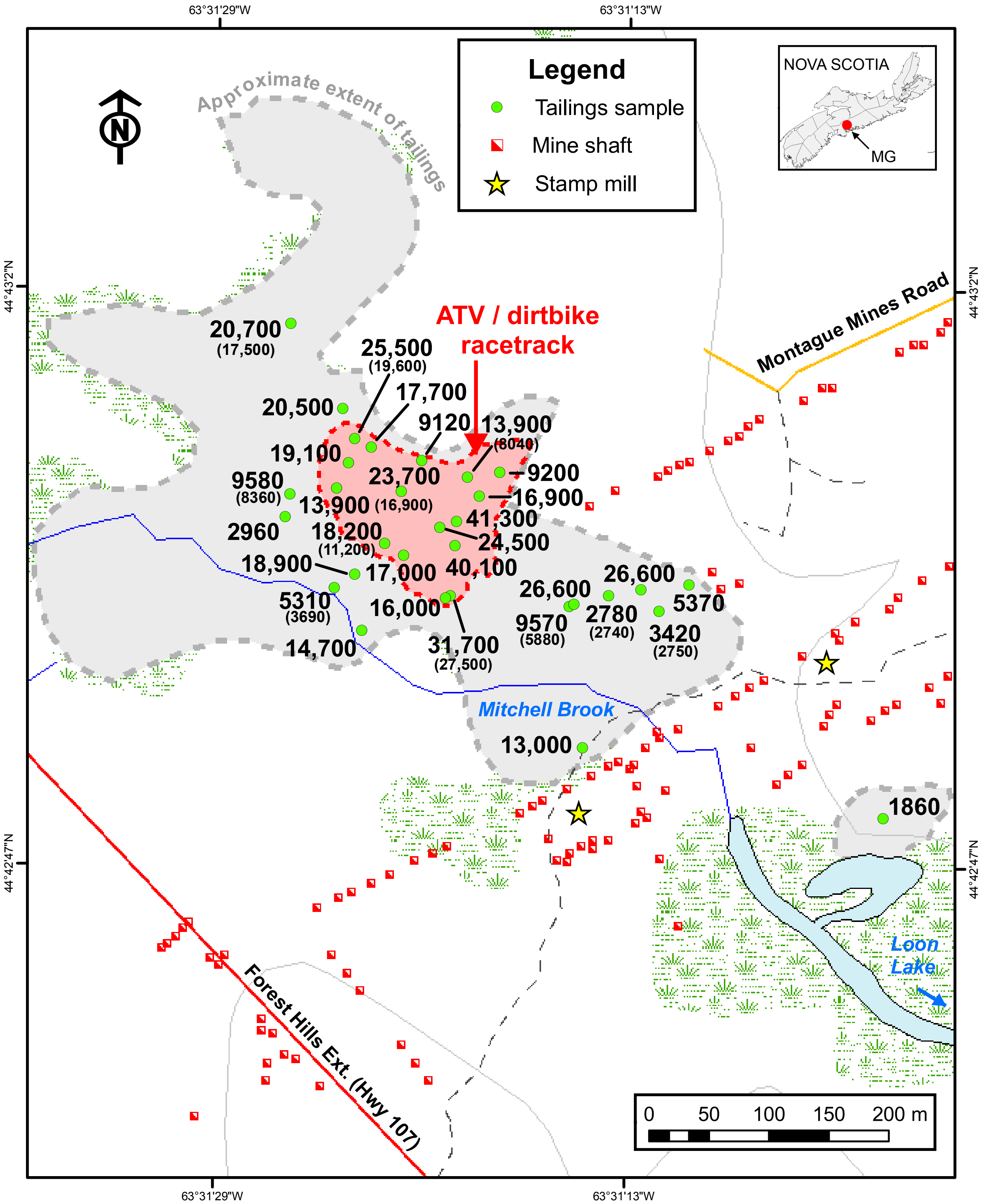

Fig. 57. As concentrations (mg/kg) in Montague tailings (maximum and (mean) concentrations; <2 mm size fraction)

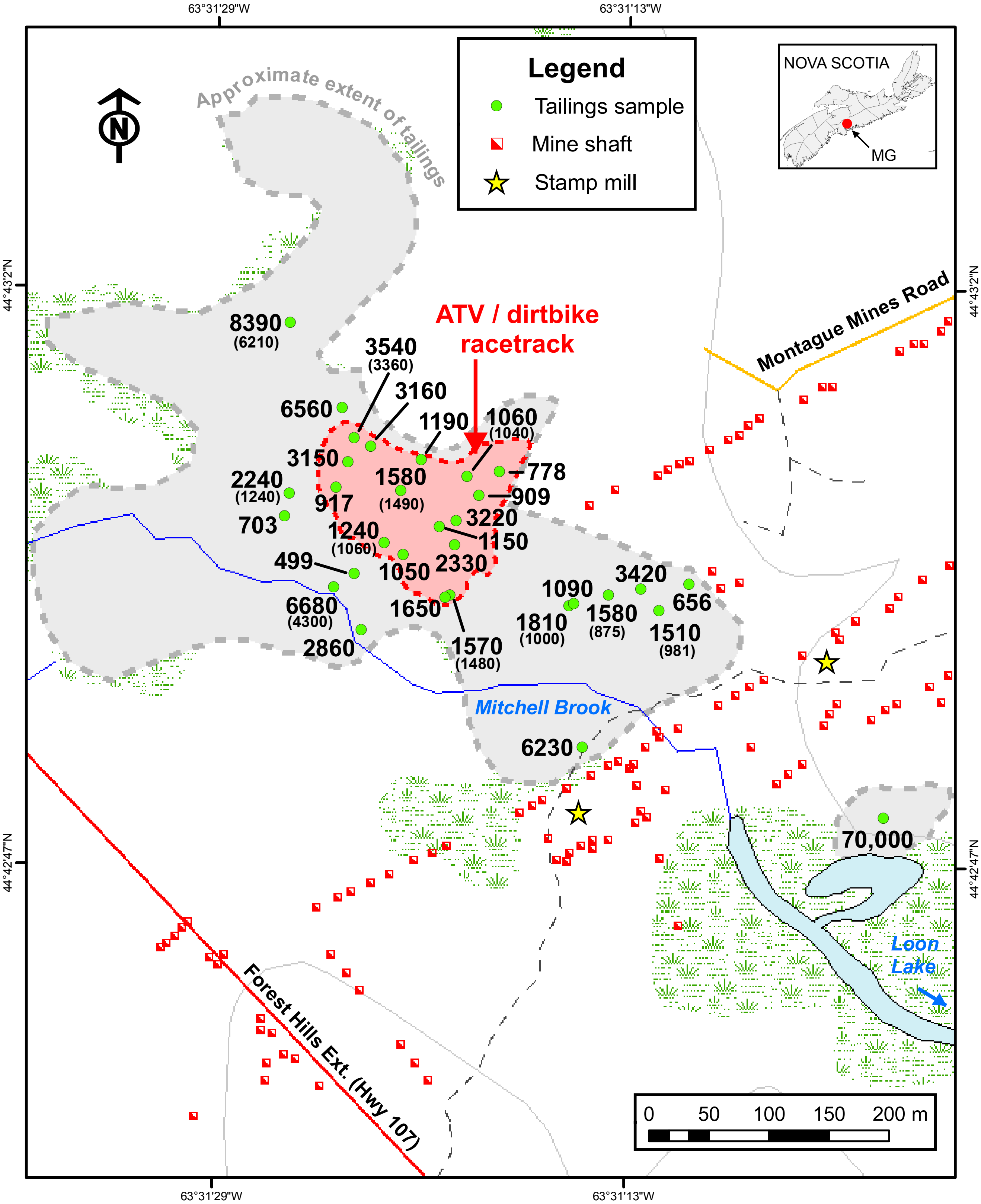

Fig. 58. Hg concentrations (µg/kg) in Montague tailings (maximum and (mean) concentrations; <2 mm size fraction)

Table 11. As and Hg concentrations in tailings, Montague Gold District [a]

Sample Site	Tailings Depth (cm)	Northing (20T, NAD 83)	Easting (20T, NAD 83)	Date	As (mg/kg)	Hg (µg/kg)
T1	2.5	4951651	0458511	11-Jun-03	20700	4030
T1	10	4951651	0458511	11-Jun-03	14300	8390
T2	1	4951555	0458564	11-Jun-03	25500	3540
T2	5	4951555	0458564	11-Jun-03	13700	3180
T3	0	4951509	0458510	11-Jun-03	7130	245
T3	25	4951509	0458510	11-Jun-03	9580	2240
T4	7.5	4951431	0458547	11-Jun-03	5310	6680
T4	20	4951431	0458547	11-Jun-03	2060	1920
T5	1	4951468	0458589	11-Jun-03	18200	1240
T5	6	4951468	0458589	11-Jun-03	4280	873
T6	0	4951511	0458603	11-Jun-03	20700	1390
T6	4	4951511	0458603	11-Jun-03	23700	1590
T6	10	4951511	0458603	11-Jun-03	6230	1500
T7	5	4951523	0458658	11-Jun-03	13900	1060
T7	15	4951523	0458658	11-Jun-03	2140	1030
T8	2.5	4951486	0458649	11-Jun-03	41300	3220
T10	5	4951424	0458644	11-Jun-03	31700	1390
T10	15	4951424	0458644	11-Jun-03	23200	1570
T11	6	4951415	0458743	11-Jun-03	9570	454
T11	15	4951415	0458743	11-Jun-03	2370	746
T11	25	4951415	0458743	11-Jun-03	5700	1810
T12	2.5	4951424	0458776	11-Jun-03	2690	166
T12	25	4951424	0458776	11-Jun-03	2780	1580
T13	0	4951411	0458818	11-Jun-03	1720	450
T13	15	4951411	0458818	11-Jun-03	3420	1510
T14	10	4951490	0458506	8-May-03	2960	703
T15	5	4951395	0458570	8-May-03	14700	2860

[a] Samples from 2005-2007 were taken from a single depth and are not included in this table.

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Gold District	Sample Site	Tailings Depth (cm)	Site description	Easting (20T, NAD 83)	Northing (20T, NAD 83)	Date	Subsample ID	GSCA Lab ID #	Tailings description
Goldenville Gold District (GD)									
GD	T1	2	Surface of wind-blown ATV tracks	0577356	4997047	9-Jun-03	GD-03-1A	20030101	coarse, brownish sand
GD	T1	10		0577356	4997047	9-Jun-03	GD-03-1B	20030102	grey, iridescent lenses (2 cm thick), coarse brn sand
GD	T1	13		0577356	4997047	9-Jun-03	GD-03-1C	20030103	reddish-brown oxic layer
GD	T2	1	Hardpan crust S of stamp mill foundation	0577358	4997007	9-Jun-03	GD-03-2A	20030104	loose beige-green sand
GD	T2	3.5		0577358	4997007	9-Jun-03	GD-03-2B	20030105	3cm thick hard pan, beige-green
GD	T2	8		0577358	4997007	9-Jun-03	GD-03-2C	20030106	rusty brown sand lens
GD	T3	1	Pit at edge of tailings field near Gegogan Brook	0577361	4996989	9-Jun-03	GD-03-3A	20030107	coarse, brownish material
GD	T3	21		0577361	4996989	9-Jun-03	GD-03-3B	20030108	coarse, brownish-grey material
GD	T4	1	Tailings in brook immediately below waste rock road	0577361	4996976	9-Jun-03	GD-03-4A	20030109	sediment from slime pool
GD	T5	1	Coarse surface tails with thick grey lenses	0577335	4996951	9-Jun-03	GD-03-5A	20030110	brown-beige layer
GD	T5	8		0577335	4996951	9-Jun-03	GD-03-5B	20030111	2cm thick grey lens
GD	T6	1	Raised area near bales of hay	0577315	4996973	9-Jun-03	GD-03-6A	20030112	grey and brown coarse sand
GD	T6	17		0577315	4996973	9-Jun-03	GD-03-6B	20030113	oxidized reddish brown layer
GD	T7	1	Racetrack	0577293	4997000	9-Jun-03	GD-03-7A	20030114	beige-brown coarse sand
GD	T7	14		0577293	4997000	9-Jun-03	GD-03-7B	20030115	reddish-brown oxidized layer
GD	T8	1	Near beer shack and 4x4 Rally sign	0577284	4997037	9-Jun-03	GD-03-8A	20030116	brown-grey coarse sand
GD	T8	15		0577284	4997037	9-Jun-03	GD-03-8B	20030117	quartz-rich grey layer mixed with brown sand
GD	T9	1	Between shack and water pit	0577258	4997015	9-Jun-03	GD-03-9A	20030118	coarse brown sand
GD	T9	13		0577258	4997015	9-Jun-03	GD-03-9B	20030119	2 cm thick grey lens
GD	T10	1	Middle of racetrack	0577271	4996990	9-Jun-03	GD-03-10A	20030120	coarse brown sand
GD	T10	8		0577271	4996990	9-Jun-03	GD-03-10B	20030121	reddish-brown layer
GD	T10	20		0577271	4996990	9-Jun-03	GD-03-10C	20030122	brown-yellow hard pan
GD	T11	1	Middle of racing circle in a low dip	0577289	4996966	9-Jun-03	GD-03-11A	20030123	moist muck
GD	T11	10		0577289	4996966	9-Jun-03	GD-03-11B	20030124	reddish-brown lens
GD	T12	1	Edge of racetrack near stream and wetland	0577307	4996923	9-Jun-03	GD-03-12A	20030125	mucky, grey clay-like material
GD	T12	5		0577307	4996923	9-Jun-03	GD-03-12B	20030126	reddish-brown muck
GD	T12	19		0577307	4996923	9-Jun-03	GD-03-12C	20030127	grey clay-like material

Gold District	Sample Site	Tailings Depth (cm)	Site description	Easting (20T, NAD 83)	Northing (20T, NAD 83)	Date	Subsample ID	GSCA Lab ID #	Tailings description
GD	T13	1	Shallow hole at edge of racetrack near stream and wetland	0577267	4996926	9-Jun-03	GD-03-13A	20030128	coarse brown-beige sand
GD	T13	6		0577267	4996926	9-Jun-03	GD-03-13B	20030129	reddish-brown oxidized layer
GD	T13	8		0577267	4996926	9-Jun-03	GD-03-13C	20030130	grey, hard clay-like lens
GD	T15	1	Harpan near end of racetrack	0577236	4996961	9-Jun-03	GD-03-15A	20030131	colourful hard pan, reddish-brown surf w/ grn-yellow
GD	T15	5		0577236	4996961	9-Jun-03	GD-03-15B	20030132	grey-purple occurring in lenses
GD	T15	8		0577236	4996961	9-Jun-03	GD-03-15C	20030133	yellow-green pieces
GD	T16	4	Behind water pit	0577218	4997024	9-Jun-03	GD-03-16A	20030134	coarse beige-brown sand
GD	T16	8		0577218	4997024	9-Jun-03	GD-03-16B	20030135	yellow-green tails near hard pan
GD	T17	1	Oxidized sulphide concentrate near mill foundation surrounded by plastic bags	0577362	4997053	9-Jun-03	GD-03-17A	20030136	grey-green fine-grained fluffy material
GD	T1	0-5	Mint-green residue on surface immediately NW of the Stuart Shaft between stamp mill foundation and race track.	0577345	4997052	9-Dec-05	GD05-T01	-	mint-green, very fine grained with bits of wood and plastic
GD	T2	0-5	Centre of racetrack, ~2/3 of the way towards finish line.	0577291	4996990	9-Dec-05	GD05-T02	-	dark brown tails with abundant chips of hardpan on the surface
GD	T3	0-5	Broken-up hardpan at the end of racetrack.	0577239	4996956	9-Dec-05	GD05-T03	-	olive-green to light grey tails with abundant hardpan. Overlies solid hardpan that is ~20 cm thick.
GD	T4	0-5	At the margin of the tails on the northwest side of raceway (~25 m to north) and ~15 m before the beer shack	0577278	4997034	9-Dec-05	GD05-T04	-	light grey, sandy wind-blown tailings overlying brown to light yellow hardpan
GD	T5	0-5	Raised knoll adjacent to Gegogan Brook, ~100 m south of stamp mill foundation.	0577334	4996921	9-Dec-05	GD05-T05	-	greenish, very fine grained green to yellow tails on top of very fine grained grey, clay-rich tails
GD	T1	0-5	Along edge of Gegogan Brook, middle of ATV track	0576920	4996946	23-Nov-06	GD-06-T1	-	dark-grey/brown tails with rusty lenses, silty sand, well saturated; likely higher organic matter
GD	T2	0-5	Along edge of Gegogan Brook, middle of ATV track	0577062	4996891	23-Nov-06	GD-06-T2	-	sandier tails, minor rusty material (coarse sand), medium grey/brown, reasonably well-drained
GD	T3	0-5	South side of main tails area, north of brook & south of tires	0577282	4996922	23-Nov-06	GD-06-T3	-	olive-green top cm underlying medium grey unoxidized tails
GD	T4	0-5	N of stream; S edge of main tails; tires to W; South edge of parking lot during 4X4 Rally	0577322	4996922	23-Nov-06	GD-06-T4	-	surface silty sand underlying finer clay, medium grey; olive green top 3cm
GD	T5	0-10	Small hill in center of parking lot area, some ATV & dirt bike tracks	0577321	4996966	23-Nov-06	GD-06-T5	-	sandy, roots in tailings, small pieces of hardpan, top cm looks winnowed
GD	T6	0-10	Northern edge of parking lot, south of tires western end; fluvial erosion	0577296	4996968	23-Nov-06	GD-06-T6	-	homogeneous sandy in top 10cm; brownish grey; thin medium grey silty lenses
GD	T7	0-10	Tailings near west end of race track	0577274	4996989	23-Nov-06	GD-06-T7	-	sandy, greyish brown, well drained, top 0.5cm winnowed, minor scorodite chunks
GD	T8	0-10	Far end of race track (west) entrance of ATV trails along Gegogan Brook	0577239	4996956	23-Nov-06	GD-06-T8	-	scorodite chunks in hardpan; mostly sandy; well drained; brownish grey
GD	T9	0-10	Tailings in front of beer shack	0577267	4997022	23-Nov-06	GD-06-T9	-	well homogenized, silty medium grey lenses & minor rusty lense, grey-brown sandy tails
GD	T10	0-10	East end of race track	0577327	4997028	23-Nov-06	GD-06-T10	-	scorodite hardpan at 10 cm, lens of rusty material at 5 cm (iron staining), brown-grey sandy
GD	T11	0-5	Wind-blown tailings accumulation near stamp-mill foundation	0577329	4997076	23-Nov-06	GD-06-T11	-	surface veneer of small slate pebbles, wind blown, small bit of moss, homogeneous greenish-grey, sandy, top winnowed, minor root material
GD	T12	0-5	Mix of tailings and gravel on entrance road to mine site	0577371	4997141	23-Nov-06	GD-06-T12	-	green-grey, sandy with rocks
GD	T13	0-5	Light-green mill residue on surface near mill foundation	0577344	4997050	23-Nov-06	GD-06-T13	-	scorodite-rich, powdery, light pistachio-green varies to grey, slight sulfur odor

Gold District	Sample Site	Tailings Depth (cm)	Site description	Easting (20T, NAD 83)	Northing (20T, NAD 83)	Date	Subsample ID	GSCA Lab ID #	Tailings description
Montague Gold District (MG)									
MG	T1	2.5	Bog N of main tails areasfilled with quartzite boulders and thin tailings; many dead tree roots, horsetails	0458511	4951651	11-Jun-03	MG-03-1A	20030137	fine grey sand intermixed with organics
MG	T1	10		0458511	4951651	11-Jun-03	MG-03-1B	20030138	grey fine clay-like tailings
MG	T2	1	Northern edge of ATV racecourse on tailings with pylons; standing surface waters over brown, clay-rich tails	0458564	4951555	11-Jun-03	MG-03-2A	20030139	brown fine material
MG	T2	5		0458564	4951555	11-Jun-03	MG-03-2B	20030140	grey, clay-like
MG	T3	0	Disturbed, sandy tails on N edge of racetrack area	0458510	4951509	11-Jun-03	MG-03-3A	20030141	brown coarse sand
MG	T3	25		0458510	4951509	11-Jun-03	MG-03-3B	20030142	grey coarse tailings
MG	T4	7.5	Overgrown tailings in wetland adjacent to Mitchell Brook	0458547	4951431	11-Jun-03	MG-03-4A	20030143	below organic layer >5cm, many rootlets, dk brown
MG	T4	20		0458547	4951431	11-Jun-03	MG-03-4B	20030144	wet, coarse grey layer
MG	T5	1	2nd transect over tails; ripped up racetrack area; puddle in hole filled with red mucky water	0458589	4951468	11-Jun-03	MG-03-5A	20030145	loose crumbly dk brn bits then reddish thin layer
MG	T5	6		0458589	4951468	11-Jun-03	MG-03-5B	20030146	coarse grey material
MG	T6	0	Centre of racetrack near sedge islands	0458603	4951511	11-Jun-03	MG-03-6A	20030147	coarse dark brown bits
MG	T6	4		0458603	4951511	11-Jun-03	MG-03-6B	20030148	reddish brown, almost burgandy-rusty color
MG	T6	10		0458603	4951511	11-Jun-03	MG-03-6C	20030149	coarse, grey clay-like material
MG	T7	5	NE edge of racetrack behind ATV jumps with pylons, uniform, med grey tails with no obvious oxidation	0458658	4951523	11-Jun-03	MG-03-7A	20030150	brown with coarse bits graduating to greenish-brn
MG	T7	15		0458658	4951523	11-Jun-03	MG-03-7B	20030151	coarse grey layer
MG	T8	2.5	Hardpan area not far from jumps	0458649	4951486	11-Jun-03	MG-03-8A	20030152	coarse beige-brown hardpan + tails over solid hardpan
MG	T10	5	Dry deep rutted turn of racetrack behind hardpan brook	0458644	4951424	11-Jun-03	MG-03-10A	20030153	dry coarse beige-brown
MG	T10	15		0458644	4951424	11-Jun-03	MG-03-10B	20030154	dark brown material
MG	T11	6	Older tailings south of racetrack, closer to stamp mill sites	0458743	4951415	11-Jun-03	MG-03-11A	20030155	coarse brown material
MG	T11	15		0458743	4951415	11-Jun-03	MG-03-11B	20030156	coarse grey material
MG	T11	25		0458743	4951415	11-Jun-03	MG-03-11C	20030157	grey-green clay-like, fine
MG	T12	2.5	Middle of older tailings, surface is windblown	0458776	4951424	11-Jun-03	MG-03-12A	20030158	beige-brown, coarse windblown tailings
MG	T12	25		0458776	4951424	11-Jun-03	MG-03-12B	20030159	reddish coarse layer
MG	T13	0	Edge of older tailings near edge of sedges	0458818	4951411	11-Jun-03	MG-03-13A	20030160	moist brown coarse layers
MG	T13	15		0458818	4951411	11-Jun-03	MG-03-13B	20030161	coarse dark browm material
MG	T14	10	Disturbed, sandy tails on N edge of racetrack area	0458506	4951490	8-May-03	MG 03 T14A	195981	brown sandy-silty tails
MG	T15	5	Tailings along bank of Mitchell Brook	0458570	4951395	8-May-03	MG 03 T15B	195988	grey sandy tails along streambanks
MG	T1	0-6	Surface tailings that have been disturbed by ATV activity. Sample site is underlain by hardpan material.	0458648	4951466	25-Nov-05	MG05-T01	-	Medium brown tailings with abundant chunks of yellow-green hardpan between 1 mm and 1cm in size
MG	T2	0-5	Surface tailings in middle of ATV / dirtbike racetrack. Sample site is underlain by hardpan material.	0458668	4951507	25-Nov-05	MG05-T02	-	Light brown, medium grained tails with no larger hardpan chunks. The underlying hardpan layer is similar to that of site MG05-T1 but has additional reddish material.
MG	T3	0-15	Sample from the NW corner of the tailings area. These are much finer grained and there is no hardpan developed.	0458559	4951535	25-Nov-05	MG05-T03	-	Sample consists of ~30 cm of alternating brown, red and reddish-brown tails with variable amounts of clay size material and fine grained silt. This material sits on medium grey unoxidized tailings.
MG	T4	15-20	SW corner of the tailings area located ~20 m inside the grassed-over, wetland area alongside Mitchell Brook. Surface is waterlogged.	0458564	4951442	25-Nov-05	MG05-T04	-	15 cm of organic-rich dark-brown organic-rich sediments overlying fine grained silty light grey tails. Sample represents the transition from overlying organics to underlying silty tails.
MG	T1	0-10	Bank for ATV's in south corner of main tails area (in ATV track)	0458640	4951422	3-Nov-06	MG-06-T1	-	olive-green sandy tails, scorodite nearby but not obvious in sample
MG	T2	0-10	Sandy, scorodite-rich tails in hardpan area (~5-10cm of re-worked tails over hardpan)	0458635	4951481	3-Nov-06	MG-06-T2	-	olive-green tails, some coarse chunks
MG	T3	0-10	Top of large tails mound in middle of ATV track	0458605	4951458	3-Nov-06	MG-06-T3	-	sandy, grey-green tails
MG	T4	0-10	Small ATV bank on north side of main tails	0458549	4951514	3-Nov-06	MG-06-T4	-	tails are brown, slightly finer grained, no obvious hardpan
MG	T5	0-10	"New" jump/bank in NE corner of tails	0458578	4951548	3-Nov-06	MG-06-T5	-	grey, unoxidized tails mixed with brown oxic tails, no obvious hardpan, tails seem to be quite fine-grained
MG	T6	0-10	Fine-grained tails in NE corner of tails	0458554	4951580	3-Nov-06	MG-06-T6	-	clay-rich surface in ATV track leading to rock-filled tails area
MG	T7	0-10	Large double-jump with culvert on east edge of main tails near woods	0458620	4951537	3-Nov-06	MG-06-T7	-	olive-green, sandy tails, no hardpan
MG	T8	0-10	Large bank on SE corner of main tails	0458685	4951527	3-Nov-06	MG-06-T8	-	olive-green/brown sandy tails
MG	T9	0-10	Middle of access track on "old" tails	0458747	4951417	3-Nov-06	MG-06-T9	-	dark brown sandy tails
MG	T10	0-10	In center of well-used ATV access track	0458803	4951429	3-Nov-06	MG-06-T10	-	light brown/grey tails with rusty blebs, appears to be some hardpan on surface
MG	T11	0-10	Path leading onto private property, tails visible leading through woods on property, crown boundary line clearly blazed	0458843	4951433	3-Nov-06	MG-06-T11	-	dark brown, sandy tails
MG	T12	0-5	Middle of road near mill foundation	0458754	4951297	3-Nov-06	MG-06-T12	-	light brown tails with dark grey & rusty brown lenses, sample seems heavy, possible sulfides?
MG	T13	0-5	Junction of roads leading past main mill site	0458884	4951363	3-Nov-06	MG-06-T13	-	light-grey, sandy tails, no obvious hardpan/ rusty lenses
MG	T14	0-5	Main access road to mine, ~ 25m away from parking area, on edge of puddle	0458897	4951417	3-Nov-06	MG-06-T14	-	sample is a mix of sandy tails(?) & fine gravel (slate & quartz)
MG	S28	0-5	Overgrown tailings deposit in woods SE of main tailings area and due east of bog along Mitchell Brook	0459005	4951238	27-Aug-07	MG07-S28	20070193	Dark grey sandy tailings buried below spruce needles - appear to have run westward from old stamp mill on hill above wetland.

Gold District	Sample Site	Tailings Depth (cm)	Site description	Easting (20T, NAD 83)	Northing (20T, NAD 83)	Date	Subsample ID	GSCA Lab ID #	Tailings description

Gold District	Sample Site	Tailings Depth (cm)	Total carbon LECO (% dry wt.)	Organic carbon LECO (% dry wt.)	Inorganic carbon LECO (% dry wt.)	Ag ICP-MS (µg/kg) DL = 2	Al ICP-MS (% dry wt.) 0.01	As ICP-MS (mg/kg) 0.1	Au ICP-MS (µg/kg) 0.2	B ICP-MS (mg/kg) 1	Ba ICP-MS (mg/kg) 0.5	Be ICP-MS (mg/kg) 0.1	Bi ICP-MS (mg/kg) 0.02	Ca ICP-MS (% dry wt.) 0.01	Cd ICP-MS (mg/kg) 0.01	Ce ICP-MS (mg/kg) 0.1	Co ICP-MS (mg/kg) 0.1	Cr ICP-MS (mg/kg) 0.5	Cs ICP-MS (mg/kg) 0.02	Cu ICP-MS (mg/kg) 0.01
Goldenville Gold District (GD)																				
GD	T1	2	0.21	0.21	0.00	356	0.53	21527	747	< 1	18.2	na	1.16	0.07	0.08	na	3.4	8.0	na	12.74
GD	T1	10	0.28	0.22	0.06	408	1.10	15031	387	1	37.2	na	1.27	0.08	0.12	na	4.4	16.4	na	12.67
GD	T1	13	0.45	0.30	0.15	562	0.65	23917	1155	< 1	45.6	na	2.18	0.12	0.09	na	7.6	11.5	na	14.86
GD	T2	1	0.09	0.09	0.00	591	0.44	29196	518	< 1	13.0	na	2.39	0.07	0.09	na	1.6	7.8	na	6.82
GD	T2	3.5	0.12	0.07	0.05	530	0.42	39382	744	< 1	14.7	na	2.08	0.02	0.15	na	1.6	6.8	na	15.18
GD	T2	8	0.04	0.03	0.01	68	0.56	6630	15	< 1	12.0	na	0.27	0.07	0.08	na	1.8	8.8	na	4.02
GD	T3	1	0.20	0.19	0.01	73	0.57	2942	182	< 1	19.5	na	0.31	0.13	0.10	na	4.9	8.3	na	17.38
GD	T3	21	0.09	0.07	0.02	72	0.69	858	20	< 1	17.3	na	0.25	0.20	0.15	na	7.5	10.3	na	29.80
GD	T4	1	0.58	0.50	0.08	74	0.53	3766	116	< 1	16.3	na	0.26	0.10	0.09	na	2.5	6.8	na	10.18
GD	T5	1	0.17	0.06	0.11	21	0.56	796	9	< 1	13.2	na	0.13	0.40	0.05	na	4.0	8.3	na	8.88
GD	T5	8	0.27	0.16	0.11	109	0.99	1630	84	< 1	24.2	na	0.37	0.61	0.26	na	12.3	14.2	na	34.52
GD	T6	1	0.16	0.16	0.00	180	0.91	12600	344	< 1	21.1	na	0.62	0.20	0.28	na	7.1	11.2	na	16.32
GD	T6	17	0.06	0.06	0.00	103	0.66	6239	813	< 1	13.3	na	0.31	0.11	0.04	na	3.2	8.5	na	8.90
GD	T7	1	0.13	0.12	0.01	430	0.53	21299	315	< 1	15.4	na	1.90	0.07	0.10	na	3.9	8.6	na	10.56
GD	T7	14	0.07	0.07	0.00	110	0.58	7424	134	< 1	15.8	na	0.40	0.09	0.02	na	1.5	7.8	na	4.33
GD	T8	1	0.13	0.13	0.00	182	1.13	4087	231	< 1	22.0	na	0.54	0.16	0.17	na	25.7	14.2	na	37.43
GD	T8	15	0.15	0.14	0.01	409	0.58	6469	1976	< 1	13.8	na	0.97	0.09	0.17	na	17.9	8.4	na	14.52
GD	T9	1	0.16	0.14	0.02	202	0.66	10558	803	1	14.6	na	0.72	0.11	0.08	na	5.1	9.2	na	13.85
GD	T9	13	0.21	0.20	0.01	190	1.34	4302	259	1	36.7	na	0.76	0.13	0.41	na	16.8	18.8	na	6.46
GD	T10	1	0.12	0.12	0.00	119	0.59	9217	113	< 1	12.8	na	0.49	0.07	0.06	na	2.4	7.1	na	8.13
GD	T10	8	0.07	0.07	0.00	96	0.66	2609	68	< 1	16.7	na	0.33	0.09	0.09	na	9.0	8.9	na	9.90
GD	T10	20	0.09	0.07	0.02	271	0.45	47414	1252	< 1	18.0	na	0.85	0.01	0.21	na	2.5	11.7	na	12.24
GD	T11	1	0.19	0.08	0.11	56	0.64	1090	61	< 1	16.3	na	0.20	0.49	0.13	na	8.1	9.5	na	25.96
GD	T11	10	0.13	0.06	0.07	84	0.66	1530	51	< 1	17.7	na	0.21	0.28	0.09	na	22.7	10.1	na	22.13
GD	T12	1	0.43	0.13	0.30	135	1.36	2846	379	< 1	33.7	na	0.43	0.94	0.11	na	9.2	16.6	na	27.27
GD	T12	5	0.16	0.12	0.04	143	1.29	3134	170	1	40.9	na	0.46	0.32	0.15	na	10.5	17.4	na	30.98
GD	T12	19	0.40	0.17	0.23	107	1.52	1475	117	1	45.4	na	0.37	0.74	0.10	na	9.5	21.2	na	21.77

Gold District	Sample Site	Tailings Depth (cm)	Total carbon LECO (% dry wt.)	Organic carbon LECO (% dry wt.)	Inorganic carbon LECO (% dry wt.)	Ag ICP-MS (µg/kg) DL = 2	Al ICP-MS (% dry wt.) 0.01	As ICP-MS (mg/kg) 0.1	Au ICP-MS (µg/kg) 0.2	B ICP-MS (mg/kg) 1	Ba ICP-MS (mg/kg) 0.5	Be ICP-MS (mg/kg) 0.1	Bi ICP-MS (mg/kg) 0.02	Ca ICP-MS (% dry wt.) 0.01	Cd ICP-MS (mg/kg) 0.01	Ce ICP-MS (mg/kg) 0.1	Co ICP-MS (mg/kg) 0.1	Cr ICP-MS (mg/kg) 0.5	Cs ICP-MS (mg/kg) 0.02	Cu ICP-MS (mg/kg) 0.01
GD	T13	1	0.55	0.37	0.18	51	0.67	1846	238	< 1	16.9	na	0.18	0.68	0.10	na	5.3	8.0	na	17.66
GD	T13	6	0.36	0.25	0.11	141	1.18	4712	260	< 1	37.7	na	0.43	0.74	0.23	na	12.1	15.1	na	32.80
GD	T13	8	0.46	0.20	0.26	110	1.49	686	164	1	49.0	na	0.36	0.74	0.11	na	7.6	19.7	na	22.67
GD	T15	1	0.14	0.14	0.00	231	0.31	39662	322	< 1	11.2	na	1.27	0.03	0.04	na	2.0	4.2	na	12.06
GD	T15	5	0.13	0.13	0.00	53	0.06	3689	171	< 1	3.9	na	0.25	<0.01	<0.01	na	0.5	0.5	na	2.23
GD	T15	8	0.45	0.25	0.20	4263	0.07	33264	16990	< 1	16.0	na	21.69	0.01	0.12	na	8.1	5.0	na	76.22
GD	T16	4	0.19	0.15	0.04	125	0.72	8256	118	1	17.5	na	0.53	0.11	0.12	na	6.7	10.0	na	9.08
GD	T16	8	1.02	0.62	0.40	4774	0.04	29678	9414	< 1	6.8	na	15.05	<0.01	0.16	na	19.1	7.6	na	138.33
GD	T17	1	0.95	0.74	0.21	7314	0.02	30430	5509	< 1	13.7	na	21.54	<0.01	0.29	na	4.1	5.0	na	136.85
GD	T1	0-5	0.20	0.17	0.03	8085	0.04	193200	7609	<1	8.7	<0.1	19.25	<0.01	0.41	5.3	5.4	4.3	0.18	198.39
GD	T2	0-5	0.15	0.14	0.01	217	0.64	13300	177	<1	12.2	<0.1	0.75	0.08	0.13	20.1	3.1	7.8	0.77	11.52
GD	T3	0-5	0.12	0.12	0.00	2151	0.15	86600	3441	<1	16.5	<0.1	7.24	0.01	0.07	14.5	21.2	5.2	0.43	49.87
GD	T4	0-5	0.12	0.11	0.01	219	0.64	13500	114	<1	11.3	0.1	0.80	0.10	0.10	18.6	4.1	8.3	0.75	7.35
GD	T5	0-5	0.29	0.11	0.18	107	0.97	5373	315	<1	18.2	<0.1	0.34	0.73	0.20	48.3	7.7	10.5	1.19	27.91
GD	T1	0-5	0.17	0.15	0.02	74	0.68	5222	172	<1	13.0	0.1	0.37	0.12	0.17	27.1	3.5	9.9	0.82	11.37
GD	T2	0-5	0.18	0.18	0.00	47	0.60	3144	21	<1	11.7	0.1	0.25	0.08	0.11	21.2	2.7	9.0	0.82	7.55
GD	T3	0-5	0.41	0.16	0.25	123	1.33	1776	160	1	34.2	0.3	0.41	1.02	0.15	59.9	9.5	18.6	1.10	29.29
GD	T4	0-5	0.17	0.13	0.04	92	0.97	6186	187	1	95.6	0.2	0.32	0.39	0.19	48.5	7.4	10.8	1.28	24.74
GD	T5	0-10	0.08	0.08	0.00	61	0.46	7239	41	1	9.9	0.1	0.21	0.05	0.07	11.5	1.1	6.1	0.65	2.21
GD	T6	0-10	0.16	0.06	0.10	76	0.63	1007	93	2	12.8	0.1	0.21	0.34	0.17	26.9	6.9	8.3	0.79	26.81
GD	T7	0-10	0.08	0.07	0.01	127	0.61	4120	56	<1	14.3	0.1	0.45	0.09	0.21	26.3	8.6	8.3	0.88	19.48
GD	T8	0-10	0.14	0.12	0.02	186	0.65	8461	175	<1	15.3	0.1	0.77	0.10	0.13	28.3	4.8	9.9	0.91	12.20
GD	T9	0-10	0.13	0.12	0.01	149	0.67	2698	101	1	12.4	0.2	0.46	0.09	0.15	29.7	10.4	9.1	0.79	23.38
GD	T10	0-10	0.09	0.07	0.02	306	0.63	12600	598	<1	15.9	0.1	1.09	0.08	0.17	27.9	10.2	9.2	0.82	16.92
GD	T11	0-5	0.12	0.11	0.01	86	0.44	4967	41	<1	11.9	0.1	0.38	0.06	0.05	13.5	2.5	6.9	0.59	6.73
GD	T12	0-5	0.58	0.51	0.07	224	1.36	17200	457	2	61.5	0.3	0.65	0.11	0.17	24.4	4.6	24.9	3.10	11.68
GD	T13	0-5	0.10	0.10	0.00	5161	0.01	209000	5574	<1	6.8	<0.1	15.12	<0.01	0.22	4.9	10.9	2.8	0.10	176.20

Gold District	Sample Site	Tailings Depth (cm)	Total carbon LECO (% dry wt.)	Organic carbon LECO (% dry wt.)	Inorganic carbon LECO (% dry wt.)	Ag ICP-MS (µg/kg) DL = 2	Al ICP-MS (% dry wt.) 0.01	As ICP-MS (mg/kg) 0.1	Au ICP-MS (µg/kg) 0.2	B ICP-MS (mg/kg) 1	Ba ICP-MS (mg/kg) 0.5	Be ICP-MS (mg/kg) 0.1	Bi ICP-MS (mg/kg) 0.02	Ca ICP-MS (% dry wt.) 0.01	Cd ICP-MS (mg/kg) 0.01	Ce ICP-MS (mg/kg) 0.1	Co ICP-MS (mg/kg) 0.1	Cr ICP-MS (mg/kg) 0.5	Cs ICP-MS (mg/kg) 0.02	Cu ICP-MS (mg/kg) 0.01
Montague Gold District (MG)																				
MG	T1	2.5	1.22	1.22	0.00	351	1.29	20720	516	5	145.6	na	2.34	0.54	0.80	na	37.4	16.1	na	100.18
MG	T1	10	0.46	0.23	0.23	236	1.54	14299	227	1	53.4	na	1.74	0.56	0.31	na	25.4	19.5	na	83.34
MG	T2	1	0.80	0.68	0.12	377	1.42	25482	763	2	98.4	na	2.18	0.64	0.73	na	33.8	18.0	na	124.54
MG	T2	5	0.51	0.26	0.25	278	1.44	13674	423	1	35.7	na	1.43	0.55	0.46	na	22.1	17.3	na	95.07
MG	T3	0	0.12	0.09	0.03	36	0.94	7130	62	1	37.7	na	0.56	0.13	0.19	na	4.3	10.5	na	38.54
MG	T3	25	0.49	0.16	0.33	138	1.04	9580	174	1	23.3	na	0.90	0.51	0.49	na	18.8	12.3	na	75.62
MG	T4	7.5	15.55	15.55	0.00	334	2.64	5312	793	3	116.4	na	1.31	0.38	1.05	na	75.6	21.8	na	74.50
MG	T4	20	0.39	0.35	0.04	69	1.14	2061	227	2	26.5	na	0.38	0.11	0.24	na	8.6	13.4	na	40.79
MG	T5	1	0.29	0.22	0.07	147	1.10	18168	275	1	41.0	na	1.05	0.28	0.31	na	21.0	13.1	na	75.27
MG	T5	6	0.36	0.05	0.31	80	1.05	4282	156	2	23.0	na	0.56	0.53	0.14	na	12.1	12.3	na	48.05
MG	T6	0	0.24	0.16	0.08	174	1.08	20707	335	1	29.5	na	1.13	0.34	0.34	na	22.7	13.3	na	109.26
MG	T6	4	0.23	0.10	0.13	185	0.94	23682	225	1	28.4	na	1.16	0.53	0.17	na	24.2	11.5	na	43.88
MG	T6	10	0.38	0.11	0.27	113	1.03	6229	109	1	22.6	na	0.66	0.48	0.24	na	17.3	12.3	na	55.10
MG	T7	5	0.23	0.12	0.11	135	1.08	13946	319	1	24.9	na	0.83	0.31	0.22	na	17.4	13.1	na	76.37
MG	T7	15	0.41	0.04	0.37	49	1.13	2139	62	1	26.0	na	0.31	0.71	0.12	na	8.0	13.5	na	30.66
MG	T8	2.5	0.12	0.10	0.02	719	0.70	41299	1378	1	22.3	na	4.50	0.05	0.19	na	2.3	10.9	na	33.59
MG	T10	5	0.09	0.08	0.01	258	1.01	31652	411	1	31.9	na	1.69	0.08	0.23	na	3.3	13.6	na	31.23
MG	T10	15	0.06	0.06	0.00	228	1.00	23249	334	1	25.6	na	1.60	0.09	0.21	na	3.4	13.2	na	18.62
MG	T11	6	0.11	0.11	0.00	85	1.24	9574	244	1	30.9	na	0.56	0.13	0.16	na	9.7	14.6	na	30.41
MG	T11	15	0.17	0.07	0.10	61	1.23	2373	167	2	32.0	na	0.42	0.34	0.14	na	16.0	14.7	na	45.28
MG	T11	25	0.10	0.09	0.01	116	1.83	5704	314	1	60.2	na	0.71	0.30	0.22	na	23.1	22.8	na	74.87
MG	T12	2.5	0.06	0.06	0.00	103	1.17	2691	1012	1	27.8	na	0.25	0.11	0.09	na	7.6	13.8	na	25.18
MG	T12	25	0.05	0.04	0.01	138	1.21	2783	1256	2	33.7	na	0.47	0.14	0.34	na	18.3	15.7	na	105.97
MG	T13	0	0.11	0.05	0.06	34	1.04	1719	278	1	24.0	na	0.25	0.19	0.08	na	9.8	12.3	na	36.25
MG	T13	15	0.13	0.12	0.01	101	1.19	3422	244	2	32.8	na	0.65	0.14	0.22	na	10.9	14.4	na	79.63
MG	T14	10	0.11	0.08	0.03	83	1.14	2958	232	1	29.4	na	0.61	0.14	0.14	na	8.2	14.0	na	59.41
MG	T15	5	0.74	0.74	0.00	251	1.22	14737	409	2	44.1	na	1.57	0.65	0.46	na	23.4	15.0	na	94.72
MG	T1	0-6	0.07	0.06	0.01	465	0.71	40100	2342	3	22.2	<0.1	2.69	0.05	0.14	25.2	1.9	9.5	2.53	34.30
MG	T2	0-5	0.09	0.06	0.03	186	1.13	16900	322	1	29.6	0.3	1.17	0.09	0.16	30.5	6.7	11.7	3.31	51.91
MG	T3	0-15	0.55	0.06	0.49	404	1.27	19100	673	5	97.6	0.3	1.94	0.42	0.69	38.4	21.4	13.3	3.05	120.37
MG	T4	15-20	0.16	0.15	0.01	367	0.64	18900	1283	<1	13.2	<0.1	1.32	0.06	0.08	15.2	3.4	8.4	0.91	10.69
MG	T1	0-10	0.12	0.12	0.00	289	1.12	16000	589	1	35.7	0.2	2.09	0.09	0.36	45.1	3.9	13.8	2.87	59.76
MG	T2	0-10	0.07	0.07	0.00	210	0.69	24500	472	<1	20.5	0.2	1.32	0.03	0.07	23.1	1.1	8.8	2.58	7.98
MG	T3	0-10	0.08	0.08	0.00	145	1.07	17000	224	<1	27.7	0.2	1.08	0.08	0.25	29.8	4.4	11.8	3.14	27.09
MG	T4	0-10	0.18	0.18	0.00	133	1.04	13900	349	1	41.6	0.3	0.95	0.28	0.34	26.5	9.4	10.6	2.60	82.09
MG	T5	0-10	0.43	0.33	0.10	307	1.37	17700	618	1	61.2	0.3	1.89	0.41	0.65	35.4	25.3	14.2	3.41	110.55
MG	T6	0-10	2.66	2.46	0.20	670	1.62	20500	749	2	171.0	0.7	4.13	0.40	1.63	47.6	80.4	16.2	3.54	153.34
MG	T7	0-10	0.23	0.23	0.00	123	1.15	9117	207	<1	26.5	0.2	0.84	0.33	0.25	28.1	14.3	12.6	3.02	67.49
MG	T8	0-10	0.16	0.08	0.08	110	1.12	9199	296	<1	24.8	0.1	0.70	0.25	0.18	27.9	10.3	12.0	2.80	56.91
MG	T9	0-10	0.14	0.13	0.01	204	1.08	26600	567	<1	28.2	0.2	1.71	0.08	0.16	40.3	4.4	12.6	3.49	14.51
MG	T10	0-10	0.08	0.07	0.01	141	1.04	26600	235	<1	25.7	0.1	1.13	0.08	0.06	32.0	3.8	12.0	3.22	11.95
MG	T11	0-10	0.63	0.63	0.00	106	1.13	5365	248	<1	27.0	0.3	0.80	0.13	0.17	39.4	10.6	13.1	3.34	45.34
MG	T12	0-5	0.44	0.37	0.07	336	0.67	13000	2710	<1	24.7	0.1	1.59	0.04	0.25	29.7	2.2	10.0	1.96	37.51
MG	T13	0-5	0.09	0.08	0.01	160	1.08	1028	136	<1	22.8	0.2	0.86	0.14	0.38	39.4	8.5	11.2	2.90	101.37
MG	T14	0-5	0.35	0.35	0.00	25	0.84	1001	45	<1	20.7	0.2	0.17	0.12	0.10	30.0	5.2	11.7	1.97	27.61
MG	S28	0-5	1.72	1.12	0.60	914	0.34	1860	3496	<20	5.7	na	3.99	0.02	0.13	na	1.1	2.4	na	32.46

Gold District	Sample Site	Tailings Depth (cm)	Total carbon LECO (% dry wt.)	Organic carbon LECO (% dry wt.)	Inorganic carbon LECO (% dry wt.)	Ag ICP-MS (µg/kg) DL = 2	Al ICP-MS (% dry wt.) 0.01	As ICP-MS (mg/kg) 0.1	Au ICP-MS (µg/kg) 0.2	B ICP-MS (mg/kg) 1	Ba ICP-MS (mg/kg) 0.5	Be ICP-MS (mg/kg) 0.1	Bi ICP-MS (mg/kg) 0.02	Ca ICP-MS (% dry wt.) 0.01	Cd ICP-MS (mg/kg) 0.01	Ce ICP-MS (mg/kg) 0.1	Co ICP-MS (mg/kg) 0.1	Cr ICP-MS (mg/kg) 0.5	Cs ICP-MS (mg/kg) 0.02	Cu ICP-MS (mg/kg) 0.01
Statistics		**Min.**	0.04	0.03	0.00	21	0.01	686	8.5	< 1	3.9	<0.1	0.13	<0.01	<0.01	4.9	0.5	0.5	0.10	2.21
		Max.	15.55	15.55	0.60	8085	2.64	209000	16990	5	171.0	0.7	21.69	1.02	1.63	59.9	80.4	24.9	3.54	198.39
		Mean	0.44	0.37	0.08	504	0.89	16637	901	1	29.9	0.2	1.91	0.25	0.22	28.9	11.0	11.5	1.85	43.09
		Median	0.17	0.12	0.02	144	0.96	8789	268	1	22.9	0.2	0.76	0.13	0.16	28.0	7.7	11.4	1.62	28.60
		n	100	100	100	100	100	100	100	47	100	29	100	95	99	36	100	100	36	100
		Std Dev	1.56	1.56	0.12	1311	0.43	29468	2181	1	26.8	0.1	4.00	0.23	0.22	12.1	12.3	4.4	1.15	40.86
		95th pctl	0.95	0.74	0.31	2257	1.49	40160	3597	3	95.7	0.3	7.63	0.73	0.65	48.4	25.4	19.5	3.43	125.16
		90th pctl	0.58	0.50	0.25	565	1.36	30552	1438	2	49.4	0.3	2.42	0.63	0.41	46.4	22.7	17.3	3.33	101.83
		75th pctl	0.39	0.20	0.11	293	1.14	19450	603	2	33.7	0.3	1.47	0.39	0.24	36.2	12.8	13.9	3.03	59.50
		50th pctl	0.17	0.12	0.02	144	0.96	8789	268	1	22.9	0.2	0.76	0.13	0.16	28.0	7.7	11.4	1.62	28.60
		25th pctl	0.12	0.08	0.00	100	0.63	3142	159	1	15.2	0.1	0.38	0.08	0.10	22.6	3.9	8.4	0.81	12.56

Notes: na = not analyzed; DL = detection limit

Gold District	Sample Site	Tailings Depth (cm)	Fe ICP-MS (% dry wt.) 0.01	Ga ICP-MS (mg/kg) 0.1	Ge ICP-MS (mg/kg) 0.1	Hf ICP-MS (mg/kg) 0.02	Hg ICP-MS (µg/kg) 5	In ICP-MS (mg/kg) 0.02	K ICP-MS (% dry wt.) 0.01	La ICP-MS (mg/kg) 0.5	Li ICP-MS (mg/kg) 0.1	Mg ICP-MS (% dry wt.) 0.01	Mn ICP-MS (mg/kg) 1	Mo ICP-MS (mg/kg) 0.01	Na ICP-MS (% dry wt.) 0.001	Nb ICP-MS (mg/kg) 0.02	Ni ICP-MS (mg/kg) 0.1	P ICP-MS (% dry wt.) 0.001	Pb ICP-MS (mg/kg) 0.01	Rb ICP-MS (mg/kg) 0.1
Goldenville Gold District (GD)																				
GD	T1	2	3.12	1.7	na	na	1637	na	0.09	7.4	na	0.39	184	0.87	0.002	na	8.3	0.047	94.50	na
GD	T1	10	3.67	3.5	na	na	2332	na	0.17	16.3	na	0.77	346	2.53	0.002	na	12.5	0.048	96.99	na
GD	T1	13	4.12	2.2	na	na	4008	na	0.10	16.3	na	0.47	286	2.00	0.002	na	10.7	0.074	201.29	na
GD	T2	1	3.79	1.6	na	na	897	na	0.08	5.8	na	0.34	112	1.09	0.001	na	9.1	0.055	173.82	na
GD	T2	3.5	4.26	1.5	na	na	980	na	0.07	5.6	na	0.33	101	1.08	0.001	na	9.3	0.039	176.85	na
GD	T2	8	2.29	1.7	na	na	88	na	0.09	6.2	na	0.40	114	0.66	0.001	na	9.0	0.040	28.02	na
GD	T3	1	1.66	1.7	na	na	111	na	0.08	12.0	na	0.42	275	0.51	0.002	na	12.4	0.051	28.90	na
GD	T3	21	1.76	2.1	na	na	219	na	0.14	14.7	na	0.50	487	0.33	0.001	na	20.4	0.052	19.15	na
GD	T4	1	2.06	1.6	na	na	325	na	0.07	9.4	na	0.39	145	0.38	0.002	na	8.1	0.042	28.11	na
GD	T5	1	1.30	1.8	na	na	52	na	0.11	11.4	na	0.41	301	0.62	0.001	na	12.2	0.036	11.07	na
GD	T5	8	2.25	3.0	na	na	418	na	0.19	24.9	na	0.69	474	0.80	0.002	na	42.4	0.071	27.95	na
GD	T6	1	3.40	2.8	na	na	354	na	0.15	22.6	na	0.70	395	0.44	0.002	na	16.2	0.055	33.70	na
GD	T6	17	2.38	1.9	na	na	171	na	0.11	12.5	na	0.48	191	0.40	0.001	na	10.8	0.058	25.81	na
GD	T7	1	3.16	1.9	na	na	2165	na	0.10	7.6	na	0.39	157	0.90	0.001	na	10.0	0.047	95.09	na
GD	T7	14	2.55	2.0	na	na	271	na	0.12	3.6	na	0.42	128	2.17	0.001	na	6.6	0.068	22.87	na
GD	T8	1	2.79	3.2	na	na	715	na	0.14	25.6	na	0.75	596	0.54	0.003	na	28.5	0.063	42.01	na
GD	T8	15	1.91	1.7	na	na	709	na	0.10	20.6	na	0.45	424	0.26	0.001	na	10.7	0.043	59.00	na
GD	T9	1	2.52	2.0	na	na	259	na	0.10	9.8	na	0.47	212	0.47	0.002	na	11.3	0.053	42.97	na
GD	T9	13	2.99	4.1	na	na	1579	na	0.19	18.2	na	0.88	462	0.74	0.003	na	15.7	0.062	61.16	na
GD	T10	1	2.16	1.5	na	na	744	na	0.08	7.5	na	0.42	174	0.56	0.001	na	7.1	0.040	34.17	na
GD	T10	8	1.93	2.0	na	na	294	na	0.12	9.3	na	0.46	222	0.87	0.001	na	11.9	0.050	25.31	na
GD	T10	20	4.82	1.5	na	na	330	na	0.06	8.2	na	0.33	140	2.38	0.001	na	11.7	0.037	51.20	na
GD	T11	1	1.57	1.9	na	na	166	na	0.11	15.3	na	0.46	510	1.09	0.002	na	24.5	0.044	16.05	na
GD	T11	10	1.93	2.0	na	na	187	na	0.11	15.9	na	0.48	566	0.57	0.001	na	47.4	0.049	14.66	na
GD	T12	1	2.68	3.8	na	na	1443	na	0.21	30.2	na	0.91	533	4.28	0.006	na	21.9	0.062	28.31	na
GD	T12	5	3.39	3.7	na	na	1430	na	0.19	31.4	na	0.84	956	3.04	0.005	na	24.6	0.066	30.66	na
GD	T12	19	2.96	4.1	na	na	1357	na	0.20	35.8	na	0.96	682	1.20	0.006	na	26.9	0.053	26.32	na

Gold District	Sample Site	Tailings Depth (cm)	Fe ICP-MS (% dry wt.) 0.01	Ga ICP-MS (mg/kg) 0.1	Ge ICP-MS (mg/kg) 0.1	Hf ICP-MS (mg/kg) 0.02	Hg ICP-MS (µg/kg) 5	In ICP-MS (mg/kg) 0.02	K ICP-MS (% dry wt.) 0.01	La ICP-MS (mg/kg) 0.5	Li ICP-MS (mg/kg) 0.1	Mg ICP-MS (% dry wt.) 0.01	Mn ICP-MS (mg/kg) 1	Mo ICP-MS (mg/kg) 0.01	Na ICP-MS (% dry wt.) 0.001	Nb ICP-MS (mg/kg) 0.02	Ni ICP-MS (mg/kg) 0.1	P ICP-MS (% dry wt.) 0.001	Pb ICP-MS (mg/kg) 0.01	Rb ICP-MS (mg/kg) 0.1
GD	T13	1	1.60	1.9	na	na	168	na	0.11	16.4	na	0.50	370	0.71	0.002	na	15.1	0.048	13.66	na
GD	T13	6	3.19	3.4	na	na	932	na	0.21	30.5	na	0.84	1445	2.68	0.006	na	23.5	0.078	29.84	na
GD	T13	8	2.80	4.1	na	na	1390	na	0.20	35.1	na	0.94	669	3.05	0.007	na	17.1	0.061	22.43	na
GD	T15	1	10.50	1.0	na	na	1696	na	0.05	5.9	na	0.20	107	3.88	0.001	na	4.8	0.039	53.43	na
GD	T15	5	0.37	0.1	na	na	165	na	0.02	8.4	na	0.03	13	0.96	0.002	na	0.8	0.003	5.98	na
GD	T15	8	16.26	1.0	na	na	6358	na	0.01	3.3	na	0.02	31	12.08	0.002	na	12.0	0.070	533.01	na
GD	T16	4	2.54	2.3	na	na	686	na	0.13	10.9	na	0.48	291	0.52	0.002	na	9.5	0.055	31.41	na
GD	T16	8	20.21	0.5	na	na	11137	na	0.01	3.1	na	0.01	38	7.34	0.001	na	29.6	0.029	797.20	na
GD	T17	1	17.94	0.3	na	na	28652	na	0.01	3.3	na	0.01	7	3.07	0.002	na	7.6	0.031	1796.79	na
GD	T1	0-5	18.20	0.1	0.2	1.37	48455	0.29	0.01	2.9	0.7	0.02	<1	2.68	0.002	1.33	13.9	0.051	1967.86	1.2
GD	T2	0-5	2.75	1.9	0.1	0.05	1621	<0.02	0.11	8.5	10.5	0.42	179	0.71	0.001	0.37	7.9	0.050	59.64	7.9
GD	T3	0-5	12.11	1.1	<0.1	0.18	2481	0.08	0.04	7.5	2.3	0.08	37	9.20	0.001	1.41	33.0	0.066	387.06	3.3
GD	T4	0-5	3.06	2.0	0.1	0.11	243	0.02	0.11	8.3	10.4	0.45	178	0.68	0.001	0.30	10.5	0.052	59.01	8.6
GD	T5	0-5	2.33	2.4	<0.1	0.2	494	<0.02	0.19	22.6	17.0	0.71	510	0.68	0.002	0.16	22.0	0.063	23.43	13.3
GD	T1	0-5	2.08	2.0	0.1	0.08	201	<0.02	0.12	12.7	12.2	0.50	186	0.53	0.002	0.39	11.1	0.067	28.74	7.9
GD	T2	0-5	1.62	2.0	<0.1	0.08	93	<0.02	0.10	9.9	11.8	0.44	156	0.48	0.001	0.36	8.8	0.045	24.44	7.2
GD	T3	0-5	2.64	3.9	0.1	0.54	1223	<0.02	0.25	29.0	23.6	0.93	551	4.54	0.004	0.10	24.1	0.073	29.35	16.6
GD	T4	0-5	2.38	2.7	0.1	0.33	567	<0.02	0.18	22.1	17.8	0.76	448	0.45	0.002	0.12	19.6	0.062	19.48	12.6
GD	T5	0-10	1.85	1.7	0.1	0.2	68	<0.02	0.10	5.4	8.5	0.36	110	0.25	0.001	0.18	6.6	0.051	11.51	6.5
GD	T6	0-10	1.55	1.8	<0.1	0.13	145	<0.02	0.11	12.5	12.2	0.46	357	0.64	0.002	0.10	19.7	0.046	18.49	8.1
GD	T7	0-10	1.90	2.1	0.1	0.17	457	<0.02	0.13	11.7	11.5	0.44	326	0.76	0.002	0.14	14.6	0.051	35.09	8.7
GD	T8	0-10	2.25	2.2	0.1	0.13	715	0.02	0.12	13.0	11.8	0.47	203	1.32	0.001	0.25	9.5	0.062	41.18	8.5
GD	T9	0-10	1.82	2.0	0.1	0.22	387	<0.02	0.12	13.4	12.7	0.50	419	0.31	0.001	0.12	11.6	0.045	38.88	7.8
GD	T10	0-10	2.49	2.1	<0.1	0.15	1125	0.02	0.13	11.7	12.9	0.44	243	0.89	0.001	0.22	12.9	0.049	61.35	8.6
GD	T11	0-5	1.45	1.5	<0.1	0.12	293	<0.02	0.08	5.9	9.4	0.33	123	0.42	0.001	0.21	6.4	0.037	33.25	6.3
GD	T12	0-5	4.12	5.8	0.1	0.07	143	0.04	0.62	10.9	33.9	0.83	260	0.92	0.010	0.67	11.1	0.051	158.42	47.2
GD	T13	0-5	20.91	0.1	0.2	1.72	37400	0.26	0.01	2.9	0.1	<0.01	5	2.36	0.001	0.79	22.2	0.037	1404.02	0.7

Gold District	Sample Site	Tailings Depth (cm)	Fe ICP-MS (% dry wt.) 0.01	Ga ICP-MS (mg/kg) 0.1	Ge ICP-MS (mg/kg) 0.1	Hf ICP-MS (mg/kg) 0.02	Hg ICP-MS (µg/kg) 5	In ICP-MS (mg/kg) 0.02	K ICP-MS (% dry wt.) 0.01	La ICP-MS (mg/kg) 0.5	Li ICP-MS (mg/kg) 0.1	Mg ICP-MS (% dry wt.) 0.01	Mn ICP-MS (mg/kg) 1	Mo ICP-MS (mg/kg) 0.01	Na ICP-MS (% dry wt.) 0.001	Nb ICP-MS (mg/kg) 0.02	Ni ICP-MS (mg/kg) 0.1	P ICP-MS (% dry wt.) 0.001	Pb ICP-MS (mg/kg) 0.01	Rb ICP-MS (mg/kg) 0.1
Montague Gold District (MG)																				
MG	T1	2.5	5.12	4.0	na	na	4034	na	0.26	23.4	na	0.89	2144	0.47	0.013	na	76.7	0.061	141.61	na
MG	T1	10	4.47	4.9	na	na	8392	na	0.51	14.4	na	1.21	643	0.39	0.008	na	52.6	0.079	125.90	na
MG	T2	1	5.98	4.7	na	na	3537	na	0.29	18.7	na	1.02	1653	0.46	0.008	na	53.7	0.078	131.82	na
MG	T2	5	4.49	4.6	na	na	3177	na	0.39	12.3	na	1.22	658	0.29	0.004	na	51.4	0.065	87.57	na
MG	T3	0	2.80	2.8	na	na	245	na	0.21	17.2	na	0.62	292	0.13	0.005	na	15.0	0.043	34.97	na
MG	T3	25	3.27	3.1	na	na	2243	na	0.28	11.3	na	0.92	482	0.23	0.003	na	40.0	0.046	54.22	na
MG	T4	7.5	5.22	4.4	na	na	6684	na	0.08	29.6	na	0.51	8284	4.18	0.037	na	51.6	0.121	167.93	na
MG	T4	20	2.63	3.6	na	na	1916	na	0.28	15.3	na	0.78	298	0.15	0.005	na	21.2	0.051	21.92	na
MG	T5	1	4.91	3.6	na	na	1243	na	0.31	8.8	na	0.83	582	0.26	0.006	na	50.0	0.047	60.48	na
MG	T5	6	2.79	3.2	na	na	873	na	0.32	11.3	na	0.93	479	0.13	0.003	na	28.9	0.045	26.25	na
MG	T6	0	4.56	3.4	na	na	1392	na	0.32	10.1	na	0.80	706	0.38	0.004	na	43.2	0.047	65.69	na
MG	T6	4	4.59	3.1	na	na	1585	na	0.30	7.3	na	0.76	1079	0.33	0.002	na	41.6	0.039	68.36	na
MG	T6	10	2.91	3.1	na	na	1498	na	0.30	10.5	na	0.89	479	0.19	0.003	na	34.6	0.045	43.59	na
MG	T7	5	3.62	3.4	na	na	1058	na	0.32	10.1	na	0.82	500	0.25	0.003	na	36.2	0.049	52.93	na
MG	T7	15	2.72	3.5	na	na	1029	na	0.35	16.7	na	1.01	566	0.10	0.002	na	23.8	0.052	13.80	na
MG	T8	2.5	7.05	3.0	na	na	3224	na	0.22	11.5	na	0.47	146	1.27	0.002	na	11.4	0.038	267.58	na
MG	T10	5	5.32	3.7	na	na	1388	na	0.30	14.1	na	0.72	200	0.55	0.002	na	17.1	0.047	101.57	na
MG	T10	15	4.78	3.5	na	na	1573	na	0.31	12.6	na	0.74	203	0.45	0.002	na	16.9	0.046	98.30	na
MG	T11	6	3.67	3.8	na	na	454	na	0.39	18.8	na	0.86	342	0.23	0.004	na	23.2	0.050	37.11	na
MG	T11	15	2.96	3.9	na	na	746	na	0.40	26.0	na	0.93	778	0.10	0.003	na	53.0	0.051	15.25	na
MG	T11	25	4.16	5.8	na	na	1807	na	0.66	33.2	na	1.21	734	0.13	0.004	na	61.5	0.078	35.82	na
MG	T12	2.5	2.86	3.6	na	na	166	na	0.35	18.0	na	0.81	341	0.09	0.002	na	22.5	0.052	16.57	na
MG	T12	25	3.03	3.7	na	na	1584	na	0.44	27.5	na	0.81	496	0.14	0.002	na	29.9	0.052	17.24	na
MG	T13	0	2.40	3.2	na	na	450	na	0.32	20.6	na	0.74	411	0.08	0.002	na	23.8	0.045	10.62	na
MG	T13	15	3.16	3.7	na	na	1512	na	0.35	21.6	na	0.81	344	0.10	0.003	na	29.6	0.052	26.55	na
MG	T14	10	2.71	3.2	na	na	703	na	0.30	22.0	na	0.77	316	0.10	0.003	na	20.9	0.045	24.52	na
MG	T15	5	4.46	3.5	na	na	2861	na	0.32	14.3	na	0.97	1111	0.22	0.003	na	48.6	0.052	107.56	na
MG	T1	0-6	6.01	3.1	0.2	0.24	2328	0.05	0.27	11.9	12.3	0.46	131	0.95	0.002	0.39	11.3	0.041	193.63	22.1
MG	T2	0-5	3.88	3.4	0.2	0.2	909	<0.02	0.35	14.0	21.4	0.74	233	0.31	0.002	0.16	21.2	0.053	70.33	29.4
MG	T3	0-15	5.32	4.0	0.1	0.2	3146	0.03	0.25	18.6	25.7	0.80	907	0.50	0.006	0.55	38.8	0.061	153.08	22.7
MG	T4	15-20	3.60	2.0	0.1	0.11	499	0.03	0.13	7.0	11.9	0.46	149	1.43	0.001	0.48	12.2	0.050	67.53	9.1
MG	T1	0-10	5.50	3.4	0.1	0.23	1648	0.06	0.29	21.7	17.2	0.73	229	0.75	0.002	0.31	19.3	0.063	129.79	24.7
MG	T2	0-10	3.78	2.6	0.1	0.22	1153	0.02	0.30	11.5	10.0	0.48	119	0.36	0.002	0.29	9.6	0.042	64.98	21.5
MG	T3	0-10	4.14	3.3	0.1	0.23	1050	0.02	0.34	14.9	17.9	0.74	220	0.35	0.002	0.27	17.7	0.049	66.69	26.8
MG	T4	0-10	3.90	3.0	0.1	0.18	917	0.03	0.26	13.2	19.8	0.72	433	0.27	0.007	0.30	25.9	0.050	57.28	21.0
MG	T5	0-10	5.11	4.0	0.1	0.27	3164	0.04	0.34	17.2	26.5	0.99	918	0.35	0.005	0.39	49.0	0.070	109.26	26.2
MG	T6	0-10	7.54	3.6	0.1	0.07	6559	0.08	0.26	24.8	23.9	0.79	2506	0.75	0.011	0.70	71.5	0.089	257.85	20.7
MG	T7	0-10	3.56	3.3	0.1	0.25	1188	0.02	0.35	14.0	23.5	0.88	562	0.20	0.002	0.22	37.3	0.056	49.01	25.9
MG	T8	0-10	3.44	3.2	0.1	0.25	778	0.02	0.34	13.3	22.0	0.83	374	0.27	0.004	0.22	29.2	0.055	41.06	26.0
MG	T9	0-10	5.30	3.3	0.1	0.26	1086	0.05	0.35	19.8	16.9	0.71	195	0.53	0.002	0.41	18.6	0.057	89.02	29.1
MG	T10	0-10	4.08	3.3	0.1	0.23	3416	0.03	0.32	16.0	17.3	0.70	199	0.32	0.002	0.27	15.4	0.050	67.78	28.2
MG	T11	0-10	3.16	3.4	0.1	0.13	656	0.02	0.31	19.1	21.6	0.78	370	0.16	0.002	0.38	25.7	0.056	37.86	29.5
MG	T12	0-5	3.58	2.6	0.1	0.15	6230	0.04	0.20	14.7	11.2	0.45	133	0.51	0.002	0.30	9.0	0.044	51.18	15.2
MG	T13	0-5	2.54	3.0	0.1	0.3	751	<0.02	0.28	19.7	21.4	0.75	317	0.08	0.002	0.18	25.7	0.050	45.59	23.5
MG	T14	0-5	2.27	2.5	0.1	0.11	484	<0.02	0.22	15.1	18.4	0.57	232	0.38	0.003	0.22	17.2	0.050	13.66	18.1
MG	S28	0-5	1.02	1.1	na	na	69953	na	0.03	6.0	na	0.19	76	0.35	<0.001	na	4.1	0.022	356.70	na

Gold District	Sample Site	Tailings Depth (cm)	Fe ICP-MS (% dry wt.) 0.01	Ga ICP-MS (mg/kg) 0.1	Ge ICP-MS (mg/kg) 0.1	Hf ICP-MS (mg/kg) 0.02	Hg ICP-MS (µg/kg) 5	In ICP-MS (mg/kg) 0.02	K ICP-MS (% dry wt.) 0.01	La ICP-MS (mg/kg) 0.5	Li ICP-MS (mg/kg) 0.1	Mg ICP-MS (% dry wt.) 0.01	Mn ICP-MS (mg/kg) 1	Mo ICP-MS (mg/kg) 0.01	Na ICP-MS (% dry wt.) 0.001	Nb ICP-MS (mg/kg) 0.02	Ni ICP-MS (mg/kg) 0.1	P ICP-MS (% dry wt.) 0.001	Pb ICP-MS (mg/kg) 0.01	Rb ICP-MS (mg/kg) 0.1
Statistics		**Min.**	0.37	0.1	<0.1	<0.02	<5	<0.02	0.01	2.9	0.1	0.01	<1	0.08	<0.001	<0.02	0.8	0.003	5.98	0.7
		Max.	20.91	5.8	0.2	1.72	69953	0.29	0.66	35.8	33.9	1.22	8284	12.08	0.037	1.41	76.7	0.121	1967.9	47.2
		Mean	4.19	2.7	0.1	0.26	3318	0.06	0.21	14.8	15.5	0.62	495	1.13	0.003	0.37	22.6	0.053	129.59	16.7
		Median	3.14	3.0	0.1	0.20	1040	0.03	0.19	13.4	14.9	0.70	317	0.52	0.002	0.30	18.2	0.051	44.59	15.9
		n	100	100	30	36	100	22	100	100	36	99	99	100	99	36	100	100	100	36
		Std Dev	3.76	1.2	0.0	0.33	9446	0.07	0.13	7.6	7.2	0.27	882	1.81	0.004	0.29	15.5	0.014	303.55	10.2
		95th pctl	12.32	4.4	0.2	0.75	8529	0.25	0.39	30.2	25.9	0.99	1144	4.19	0.008	0.93	52.6	0.078	394.36	29.4
		90th pctl	5.98	4.0	0.2	0.32	4254	0.08	0.35	25.6	23.8	0.93	804	2.72	0.006	0.69	48.6	0.070	194.40	28.7
		75th pctl	4.46	3.5	0.1	0.24	1834	0.05	0.30	18.9	21.4	0.82	510	0.95	0.003	0.39	29.0	0.061	95.57	25.0
		50th pctl	3.14	3.0	0.1	0.20	1040	0.03	0.19	13.4	14.9	0.70	317	0.52	0.002	0.30	18.2	0.051	44.59	15.9
		25th pctl	2.38	1.9	0.1	0.13	410	0.02	0.11	9.4	11.4	0.45	179	0.31	0.001	0.20	11.1	0.045	26.49	8.1

Notes: na = not analyzed; DL = detection limit

Gold District	Sample Site	Tailings Depth (cm)	Re ICP-MS (µg/kg) 1	S ICP-MS (% dry wt.) 0.02	Sb ICP-MS (mg/kg) 0.02	Sc ICP-MS (mg/kg) 0.1	Se ICP-MS (mg/kg) 0.1	Sn ICP-MS (mg/kg) 0.1	Sr ICP-MS (mg/kg) 0.5	Ta ICP-MS (mg/kg) 0.05	Te ICP-MS (mg/kg) 0.02	Th ICP-MS (mg/kg) 0.1	Ti ICP-MS (% dry wt.) 0.001	Tl ICP-MS (mg/kg) 0.02	U ICP-MS (mg/kg) 0.1	V ICP-MS (mg/kg) 2	W ICP-MS (mg/kg) 0.1	Y ICP-MS (mg/kg) 0.01	Zn ICP-MS (mg/kg) 0.1	Zr ICP-MS (mg/kg) 0.1
Goldenville Gold District (GD)																				
GD	T1	2	na	0.10	19.13	0.6	0.3	na	11.2	na	0.45	3.1	0.021	0.07	0.2	6	3.4	na	26.2	na
GD	T1	10	na	0.03	10.76	1.1	0.3	na	12.8	na	0.36	5.7	0.025	0.10	0.6	12	1.7	na	48.6	na
GD	T1	13	na	0.05	20.14	0.7	0.5	na	15.0	na	1.35	5.8	0.023	0.08	0.3	9	3.5	na	31.0	na
GD	T2	1	na	0.34	34.52	0.5	0.6	na	8.7	na	0.87	3.9	0.021	0.08	0.3	6	9.2	na	25.3	na
GD	T2	3.5	na	0.32	29.54	0.5	0.6	na	2.6	na	0.82	3.7	0.022	0.09	0.2	5	12.7	na	22.8	na
GD	T2	8	na	0.04	1.33	0.4	0.1	na	8.2	na	0.12	2.5	0.020	0.05	0.2	6	0.3	na	31.5	na
GD	T3	1	na	<0.01	2.64	0.5	0.1	na	16.8	na	0.07	3.6	0.021	0.06	0.3	6	1.0	na	44.1	na
GD	T3	21	na	0.02	0.85	0.7	<0.1	na	23.5	na	0.05	3.3	0.025	0.07	0.3	6	0.4	na	50.6	na
GD	T4	1	na	0.03	4.12	0.5	0.1	na	11.9	na	0.09	2.8	0.020	0.05	0.2	4	0.4	na	33.1	na
GD	T5	1	na	0.01	0.77	0.5	<0.1	na	28.2	na	0.02	2.8	0.020	0.05	0.2	6	0.1	na	33.9	na
GD	T5	8	na	0.20	2.55	1.0	0.1	na	43.9	na	0.06	5.6	0.033	0.12	0.5	11	0.9	na	67.6	na
GD	T6	1	na	0.01	8.54	0.9	0.3	na	26.4	na	0.25	6.8	0.030	0.11	0.4	8	1.7	na	48.9	na
GD	T6	17	na	0.04	5.88	0.6	0.1	na	15.1	na	0.14	4.3	0.023	0.07	0.3	5	0.9	na	36.2	na
GD	T7	1	na	0.21	23.72	0.6	0.4	na	9.9	na	0.58	3.9	0.021	0.07	0.3	5	4.6	na	27.3	na
GD	T7	14	na	0.10	3.24	0.6	0.1	na	16.2	na	0.10	2.7	0.024	0.07	0.2	6	0.9	na	38.2	na
GD	T8	1	na	<0.01	3.76	1.1	0.1	na	23.1	na	0.11	6.5	0.026	0.09	0.5	11	1.4	na	67.6	na
GD	T8	15	na	0.01	6.17	0.6	0.2	na	11.5	na	0.17	4.7	0.021	0.07	0.4	5	0.8	na	31.9	na
GD	T9	1	na	0.09	9.70	0.6	0.2	na	14.6	na	0.21	7.0	0.022	0.07	0.8	7	2.3	na	31.7	na
GD	T9	13	na	0.02	2.90	1.3	0.1	na	17.0	na	0.13	8.9	0.024	0.10	0.7	13	1.8	na	58.4	na
GD	T10	1	na	0.05	7.33	0.5	0.1	na	11.6	na	0.18	3.1	0.021	0.05	0.2	4	2.2	na	23.9	na
GD	T10	8	na	0.02	2.34	0.6	0.1	na	11.5	na	0.11	3.7	0.023	0.06	0.3	5	0.7	na	34.5	na
GD	T10	20	na	0.17	28.49	0.6	0.4	na	2.6	na	0.42	4.1	0.023	0.12	0.2	3	2.2	na	22.3	na
GD	T11	1	na	0.02	1.02	0.6	0.1	na	33.7	na	0.04	3.5	0.023	0.06	0.3	7	0.4	na	47.3	na
GD	T11	10	na	0.05	0.88	0.6	<0.1	na	23.6	na	0.04	3.8	0.023	0.06	0.3	7	0.4	na	84.3	na
GD	T12	1	na	0.08	2.71	1.4	0.2	na	73.2	na	0.08	7.3	0.026	0.10	0.7	12	1.7	na	66.9	na
GD	T12	5	na	0.04	1.69	1.4	0.1	na	36.0	na	0.06	8.1	0.027	0.09	0.7	13	1.5	na	69.8	na
GD	T12	19	na	0.12	0.94	1.4	0.1	na	54.9	na	0.04	8.3	0.021	0.09	1.0	14	0.6	na	67.9	na

Gold District	Sample Site	Tailings Depth (cm)	Re ICP-MS (µg/kg) 1	S ICP-MS (% dry wt.) 0.02	Sb ICP-MS (mg/kg) 0.02	Sc ICP-MS (mg/kg) 0.1	Se ICP-MS (mg/kg) 0.1	Sn ICP-MS (mg/kg) 0.1	Sr ICP-MS (mg/kg) 0.5	Ta ICP-MS (mg/kg) 0.05	Te ICP-MS (mg/kg) 0.02	Th ICP-MS (mg/kg) 0.1	Ti ICP-MS (% dry wt.) 0.001	Tl ICP-MS (mg/kg) 0.02	U ICP-MS (mg/kg) 0.1	V ICP-MS (mg/kg) 2	W ICP-MS (mg/kg) 0.1	Y ICP-MS (mg/kg) 0.01	Zn ICP-MS (mg/kg) 0.1	Zr ICP-MS (mg/kg) 0.1
GD	T13	1	na	0.03	1.56	0.7	0.1	na	51.5	na	0.05	3.9	0.022	0.06	0.3	6	0.7	na	39.8	na
GD	T13	6	na	0.03	2.63	1.4	0.1	na	72.7	na	0.07	7.3	0.031	0.11	0.6	12	1.9	na	67.6	na
GD	T13	8	na	0.07	1.11	1.6	0.1	na	54.6	na	0.04	8.1	0.026	0.09	0.9	14	1.3	na	64.5	na
GD	T15	1	na	0.15	65.00	0.4	0.8	na	7.0	na	1.79	2.1	0.013	0.09	0.1	2	0.8	na	12.6	na
GD	T15	5	na	0.03	6.56	0.1	0.2	na	0.6	na	0.25	1.8	0.002	<0.02	0.2	< 2	0.1	na	1.9	na
GD	T15	8	na	1.58	597.39	0.9	9.5	na	1.4	na	28.48	4.8	0.023	0.18	0.2	< 2	1.6	na	14.4	na
GD	T16	4	na	0.06	7.05	0.8	0.2	na	13.0	na	0.18	3.9	0.024	0.08	0.3	7	1.0	na	29.0	na
GD	T16	8	na	2.25	359.19	0.2	6.4	na	3.3	na	8.42	2.8	0.008	0.20	0.3	< 2	30.0	na	13.6	na
GD	T17	1	na	2.19	260.98	0.3	6.0	na	6.5	na	8.88	1.0	0.014	0.22	0.1	< 2	65.8	na	12.9	na
GD	T1	0-5	<1	2.54	291.54	<0.1	5.5	1.9	7.8	<0.05	9.17	0.9	0.013	0.29	0.1	<2	54.8	0.46	36.5	44.4
GD	T2	0-5	<1	0.07	11.68	0.8	0.1	0.2	11.9	<0.05	0.25	3.5	0.020	0.08	0.3	6	5.9	3.48	28.0	3.4
GD	T3	0-5	<1	1.92	162.50	0.4	2.5	0.2	2.9	<0.05	5.56	3.7	0.022	0.19	0.3	2	1.4	1.44	9.3	6.4
GD	T4	0-5	<1	0.10	14.25	0.6	0.1	0.1	15.4	<0.05	0.36	3.1	0.023	0.07	0.3	7	7.2	3.47	52.3	3.4
GD	T5	0-5	<1	0.11	3.83	1.0	<0.1	0.1	57.1	<0.05	0.06	7.0	0.031	0.10	0.7	9	3.0	6.87	57.8	6.7
GD	T1	0-5	<1	0.01	3.83	0.7	<0.1	0.1	13.0	<0.05	0.13	4.4	0.025	0.08	0.5	8	6.0	3.73	37.2	4.2
GD	T2	0-5	<1	<0.01	2.48	0.6	0.2	0.1	9.9	<0.05	0.06	3.3	0.022	0.07	0.4	7	0.9	3.46	34.3	3.8
GD	T3	0-5	2	0.12	1.50	1.3	0.1	0.2	76.5	<0.05	0.03	6.8	0.030	0.12	0.9	12	1.9	7.70	67.3	17.8
GD	T4	0-5	1	0.15	4.73	0.9	0.1	0.1	40.1	<0.05	0.11	5.6	0.028	0.10	0.6	9	2.3	6.35	57.8	10.6
GD	T5	0-10	<1	0.03	5.06	0.5	0.1	0.1	7.5	<0.05	0.07	2.9	0.019	0.06	0.3	6	1.3	2.49	23.8	6.3
GD	T6	0-10	<1	<0.01	1.00	0.6	0.2	0.1	28.2	<0.05	0.04	2.9	0.020	0.07	0.3	6	0.4	3.33	43.2	4.3
GD	T7	0-10	<1	<0.01	4.20	0.7	0.2	0.1	11.8	<0.05	0.15	3.3	0.022	0.11	0.4	6	1.8	3.92	36.6	5.9
GD	T8	0-10	<1	0.03	11.01	0.8	0.2	0.1	15.6	<0.05	0.43	3.8	0.023	0.09	0.4	7	2.9	3.74	34.2	5.6
GD	T9	0-10	1	0.01	2.62	0.7	0.2	0.1	9.8	<0.05	0.06	3.7	0.020	0.07	0.4	6	0.5	3.97	36.2	6.7
GD	T10	0-10	1	0.06	12.38	0.8	0.4	0.2	10.2	<0.05	0.36	3.6	0.022	0.09	0.4	7	2.4	3.67	37.0	5.9
GD	T11	0-5	1	0.02	5.30	0.5	0.1	0.1	8.4	<0.05	0.11	2.3	0.017	0.05	0.3	5	0.6	2.36	25.7	4.8
GD	T12	0-5	<1	0.31	9.36	3.2	0.6	1.2	8.1	<0.05	0.18	3.9	0.085	0.40	0.6	33	0.2	3.62	90.1	3.1
GD	T13	0-5	2	3.83	340.28	0.1	5.4	1.2	5.6	<0.05	6.97	1.0	0.007	0.27	0.2	<2	68.4	0.54	16.8	49.9

Gold District	Sample Site	Tailings Depth (cm)	Re ICP-MS (µg/kg) 1	S ICP-MS (% dry wt.) 0.02	Sb ICP-MS (mg/kg) 0.02	Sc ICP-MS (mg/kg) 0.1	Se ICP-MS (mg/kg) 0.1	Sn ICP-MS (mg/kg) 0.1	Sr ICP-MS (mg/kg) 0.5	Ta ICP-MS (mg/kg) 0.05	Te ICP-MS (mg/kg) 0.02	Th ICP-MS (mg/kg) 0.1	Ti ICP-MS (% dry wt.) 0.001	Tl ICP-MS (mg/kg) 0.02	U ICP-MS (mg/kg) 0.1	V ICP-MS (mg/kg) 2	W ICP-MS (mg/kg) 0.1	Y ICP-MS (mg/kg) 0.01	Zn ICP-MS (mg/kg) 0.1	Zr ICP-MS (mg/kg) 0.1
Montague Gold District (MG)																				
MG	T1	2.5	na	0.11	21.60	1.7	1.0	na	43.4	na	2.79	5.5	0.060	0.29	0.6	26	1.0	na	348.0	na
MG	T1	10	na	0.87	19.10	2.0	0.7	na	23.2	na	1.55	4.4	0.075	0.34	0.9	19	0.9	na	208.3	na
MG	T2	1	na	0.29	21.77	1.8	0.8	na	44.5	na	2.57	4.9	0.077	0.28	0.6	24	1.0	na	270.6	na
MG	T2	5	na	0.83	21.89	1.6	0.8	na	20.6	na	1.73	4.5	0.076	0.30	0.6	17	0.9	na	237.3	na
MG	T3	0	na	0.03	7.09	0.9	0.2	na	10.9	na	0.59	4.3	0.042	0.15	0.4	12	0.1	na	62.7	na
MG	T3	25	na	0.66	14.82	1.2	0.6	na	17.9	na	1.07	3.7	0.050	0.20	0.5	12	0.4	na	217.8	na
MG	T4	7.5	na	0.22	2.85	2.0	4.5	na	18.4	na	0.38	2.3	0.023	0.28	1.4	146	1.1	na	192.2	na
MG	T4	20	na	0.13	3.25	1.1	0.2	na	7.3	na	0.33	4.0	0.061	0.21	0.5	15	0.1	na	80.6	na
MG	T5	1	na	0.56	23.23	1.2	0.8	na	22.2	na	1.77	3.1	0.057	0.22	0.4	14	1.1	na	158.3	na
MG	T5	6	na	0.29	6.29	1.2	0.2	na	17.7	na	0.41	3.6	0.053	0.19	0.4	12	0.1	na	93.3	na
MG	T6	0	na	0.51	23.06	1.2	0.8	na	24.2	na	1.86	3.1	0.054	0.23	0.4	14	0.7	na	162.4	na
MG	T6	4	na	0.68	22.18	1.0	0.8	na	28.9	na	1.54	2.5	0.049	0.20	0.4	11	0.4	na	106.4	na
MG	T6	10	na	0.41	8.20	1.1	0.4	na	16.6	na	0.72	3.5	0.053	0.18	0.4	12	0.3	na	129.2	na
MG	T7	5	na	0.45	16.75	1.2	0.6	na	17.9	na	1.30	3.3	0.054	0.22	0.4	13	0.7	na	134.1	na
MG	T7	15	na	0.09	1.80	1.3	0.1	na	21.5	na	0.15	4.0	0.060	0.19	0.4	14	<0.1	na	83.5	na
MG	T8	2.5	na	0.22	102.10	1.0	3.1	na	4.4	na	6.16	3.0	0.042	0.26	0.3	14	0.7	na	41.1	na
MG	T10	5	na	0.14	37.75	1.3	1.2	na	5.8	na	2.57	3.5	0.051	0.29	0.4	14	0.9	na	54.1	na
MG	T10	15	na	0.12	32.05	1.2	1.0	na	6.2	na	2.16	3.3	0.053	0.25	0.4	14	0.3	na	51.9	na
MG	T11	6	na	0.03	12.38	1.2	0.3	na	8.3	na	0.82	3.9	0.070	0.25	0.4	17	0.4	na	81.5	na
MG	T11	15	na	0.03	3.63	1.5	0.1	na	15.1	na	0.20	5.8	0.072	0.23	0.5	15	0.2	na	193.4	na
MG	T11	25	na	0.03	5.35	2.4	0.3	na	20.0	na	0.36	6.6	0.114	0.38	0.7	23	0.3	na	248.1	na
MG	T12	2.5	na	0.03	2.45	1.1	0.1	na	8.4	na	0.33	5.3	0.066	0.23	0.8	17	<0.1	na	77.0	na
MG	T12	25	na	0.02	2.80	1.5	0.2	na	9.1	na	0.21	6.0	0.077	0.28	0.6	15	0.2	na	83.7	na
MG	T13	0	na	0.01	1.52	1.1	0.1	na	10.7	na	0.14	4.4	0.056	0.19	0.4	13	<0.1	na	75.0	na
MG	T13	15	na	0.01	4.11	1.3	0.2	na	9.1	na	0.37	4.3	0.068	0.24	0.5	16	0.4	na	128.8	na
MG	T14	10	na	<0.01	2.86	1.2	0.2	na	9.3	na	0.33	5.0	0.060	0.24	0.5	16	0.2	na	79.7	na
MG	T15	5	na	0.35	18.23	1.4	0.8	na	31.4	na	1.68	4.6	0.061	0.26	0.5	18	1.1	na	228.4	na
MG	T1	0-6	<1	0.18	60.36	1.2	2.3	0.2	4.2	<0.05	4.31	3.8	0.047	0.30	0.4	13	1.6	1.70	38.0	8.1
MG	T2	0-5	2	0.04	15.61	1.3	0.6	0.2	8.0	<0.05	1.37	3.9	0.063	0.28	0.4	14	0.5	2.84	68.9	7.7
MG	T3	0-15	<1	0.17	17.90	1.5	0.9	0.6	33.9	<0.05	2.35	5.2	0.068	0.27	0.6	21	0.9	4.08	207.5	9.7
MG	T4	15-20	<1	0.20	22.73	0.7	0.3	0.1	6.9	<0.05	0.56	3.5	0.026	0.09	0.3	6	2.1	2.51	39.0	4.1
MG	T1	0-10	<1	0.12	36.50	1.4	1.4	0.9	6.6	<0.05	2.60	6.3	0.051	0.30	0.6	18	3.3	2.74	65.6	10.0
MG	T2	0-10	<1	0.17	24.14	0.8	0.8	0.2	2.2	<0.05	1.88	3.5	0.050	0.24	0.4	13	0.3	1.03	33.4	8.6
MG	T3	0-10	<1	0.08	21.46	1.3	0.7	0.3	5.8	<0.05	1.62	4.3	0.055	0.29	0.5	16	0.1	2.15	59.4	8.8
MG	T4	0-10	<1	0.27	16.69	1.1	0.5	0.4	17.6	<0.05	1.27	4.1	0.048	0.22	0.5	16	0.6	2.48	119.2	8.6
MG	T5	0-10	<1	0.41	22.87	1.6	1.0	0.4	29.8	<0.05	1.99	5.5	0.068	0.32	0.7	21	1.8	3.64	240.7	12.5
MG	T6	0-10	<1	0.10	25.40	2.0	1.9	1.3	33.2	<0.05	3.63	5.2	0.053	0.38	1.1	49	0.8	6.14	396.5	6.0
MG	T7	0-10	<1	0.19	12.34	1.3	0.6	0.2	19.8	<0.05	0.96	4.3	0.055	0.26	0.5	16	0.7	2.70	151.2	9.6
MG	T8	0-10	1	0.24	13.11	1.0	0.4	0.2	13.8	<0.05	0.93	4.2	0.053	0.25	0.5	15	0.9	2.25	109.3	9.3
MG	T9	0-10	<1	0.05	38.36	1.2	1.0	0.2	6.7	<0.05	2.27	5.5	0.060	0.32	0.5	19	2.2	2.39	57.0	9.1
MG	T10	0-10	<1	0.10	21.39	1.1	0.6	0.2	5.8	<0.05	1.37	4.5	0.056	0.27	0.5	17	0.4	1.99	51.9	9.5
MG	T11	0-10	<1	0.04	6.57	1.2	0.3	0.2	9.5	<0.05	0.71	4.9	0.061	0.27	0.5	20	0.3	2.70	89.1	7.6
MG	T12	0-5	<1	0.22	23.67	0.9	0.9	0.5	4.4	<0.05	1.61	4.1	0.034	0.19	0.5	13	1.4	1.59	47.4	8.3
MG	T13	0-5	<1	0.02	2.56	1.1	<0.1	8.7	6.6	<0.05	0.13	5.3	0.051	0.22	0.6	14	0.1	2.61	176.1	12.6
MG	T14	0-5	1	0.02	1.72	0.8	<0.1	0.5	7.7	<0.05	0.10	3.7	0.039	0.15	0.4	12	0.2	2.10	55.7	5.2
MG	S28	0-5	na	<0.02	2.00	0.2	1.3	na	2.8	na	0.04	1.3	0.010	0.15	0.1	11	0.5	na	35.6	na

Gold District	Sample Site	Tailings Depth (cm)	Re ICP-MS (µg/kg) 1	S ICP-MS (% dry wt.) 0.02	Sb ICP-MS (mg/kg) 0.02	Sc ICP-MS (mg/kg) 0.1	Se ICP-MS (mg/kg) 0.1	Sn ICP-MS (mg/kg) 0.1	Sr ICP-MS (mg/kg) 0.5	Ta ICP-MS (mg/kg) 0.05	Te ICP-MS (mg/kg) 0.02	Th ICP-MS (mg/kg) 0.1	Ti ICP-MS (% dry wt.) 0.001	Tl ICP-MS (mg/kg) 0.02	U ICP-MS (mg/kg) 0.1	V ICP-MS (mg/kg) 2	W ICP-MS (mg/kg) 0.1	Y ICP-MS (mg/kg) 0.01	Zn ICP-MS (mg/kg) 0.1	Zr ICP-MS (mg/kg) 0.1
Statistics		**Min.**	<1	<0.01	0.77	<0.1	<0.1	0.1	0.6	<0.05	<0.02	0.9	<0.001	<0.02	<0.1	<2	<0.1	0.46	1.9	3.1
		Max.	2	3.83	597.39	3.2	9.5	8.7	76.5	0.00	28.48	8.9	0.114	0.40	1.4	146	68.4	7.70	396.5	49.9
		Mean	1	0.30	32.49	1.0	0.9	0.6	18.1	#DIV/0!	1.43	4.3	0.038	0.17	0.4	13	3.7	3.12	80.2	9.7
		Median	1	0.10	8.37	1.0	0.3	0.2	12.4	#NUM!	0.36	3.9	0.028	0.15	0.4	12	0.9	2.72	54.9	7.7
		n	9	93	100	99	93	36	100	0	100	100	100	99	100	94	97	36	100	36
		Std Dev	0	0.60	84.52	0.5	1.6	1.4	16.0	#DIV/0!	3.29	1.6	0.021	0.10	0.2	15	11.2	1.59	73.9	9.6
		95th pctl	2	1.72	167.42	1.8	4.9	1.5	54.6	#NUM!	6.20	7.3	0.075	0.32	0.9	23	9.9	6.48	237.5	24.5
		90th pctl	2	0.64	37.81	1.5	1.8	1.2	40.4	#NUM!	2.62	6.6	0.068	0.29	0.7	19	3.9	5.11	194.8	12.6
		75th pctl	2	0.22	21.96	1.3	0.8	0.4	23.1	#NUM!	1.57	5.2	0.054	0.25	0.5	15	1.8	3.69	85.5	9.5
		50th pctl	1	0.10	8.37	1.0	0.3	0.2	12.4	#NUM!	0.36	3.9	0.028	0.15	0.4	12	0.9	2.72	54.9	7.7
		25th pctl	1	0.03	2.84	0.6	0.1	0.1	7.8	#NUM!	0.11	3.3	0.022	0.08	0.3	6	0.4	2.23	34.3	5.5

Notes: na = not analyzed; DL = detection limit

ATTACHMENT E

Nova Scotia Lands Inc.

Contractors Health and Safety Plan

Nova Scotia Lands Inc.
Contractor
Health and Safety
Program

Site Decommissioning/Redevelopment
2017/2018

Contact: ***George MacNeil***
Health & Safety Coordinator
902-564-7940

Nova Scotia Lands Inc., Written July 2001
Contractor Health and Safety Program
Nova Scotia Lands Inc., 2017/2018 Rev. May 2018

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6. Appendix

Introduction

1-01 Nova Scotia Lands Inc. Health and Safety Policy

At Nova Scotia Lands Inc. worksites, there is nothing more important than the health and safety of our employees and the people working on site.

We are committed to:

- Integrating health and safety practices into all aspects of our work on various sites.
- Providing innovative and preventive health and safety programs. We will continually optimize the effectiveness and integrity of our programs through open communications, comprehensive training and education, audits and workplace assessments;
- Developing understanding among those in leadership of their personal responsibilities and their accountability to provide a safe and healthful workplace;
- Developing understanding among all employees, contractors and their employees of their personal responsibility to work safely, their accountability for individual performance and the assignment of appropriate authority to implement these responsibilities, and;
- Meeting or exceeding the requirements of applicable legislation and regulations for performance in health and safety matters.
- At each site controlled by Nova Scotia Lands Inc., there will be a designated Health and Safety Representative, a designated Environmental Representative as well as a Site Supervisor. Prior to the start of work on each site, a site-specific hazard assessment is to be conducted and Safe Work Permit completed. Emergency contact numbers are to be made available to all workers as well as hospital location and direction.

1-02 Nova Scotia Lands Inc. Health and Safety Policy

Background

This procedure manual is designed to provide the practices and procedures to ensure the safety of all employees, contractors, subcontractors, suppliers and their employees who will be working at Nova Scotia Lands Inc. controlled sites during this period.

Nova Scotia Lands Inc. is committed to the Health and Safety of all of its employees, and expects the same commitment by each contractor to its own employees. This program was developed for use by all contractors who perform work or provide services on NSLI Sites. Contractors include all on site service providers, construction contractors, outside carriers and all subcontractors.

The conservation and protection of our natural environment is a fundamental consideration and the responsibility of every employee on the Site. In addition to Health and Safety commitments, environmental assurances are expected by each contractor to its employees.

This program does not cover all of the sites-specific or even project-specific health and safety issues that may arise. This manual is by no means meant to be all inclusive of the requirements of the Occupational Health and Safety Act & Regulations for the province of Nova Scotia or any other applicable regulations.

Contractor Health and Safety Program Elements

The Contractor Health and Safety Program has six elements. These include:

1. **Contractor Pre-Qualification**
All new contractors must complete the Contractor Pre-Qualification requirements. Prior to doing work at these Sites, all Contractors must provide their Contractor's Health and Safety Program and Safety Policy Statement , W.C.B. experience rating and be members in good standing. Provide proof of Liability Insurance and be a member in good standing with a recognized safety organization. References may also be requested.

2. **Requirements of Contractor**
This element of our program is a compilation of the specific information that the Contractor needs to know before and be aware of during the performance of work at these sites in order to ensure compliance with our program. Not all information in this section applies to all contractors. It is up to the individual contractors to review this element and understand the applicable sections based on the work or service that they will be providing on these sites.

3. Commitment and Registration

This element of our program includes two (2) copies of the "The Site Contractors Health and Safety Program Commitment Agreement". This Commitment Agreement is to be signed and dated (after reviewing the "Requirements of Contractors") by a representative of the Contractor who has the authority to commit the Contractor Company to comply with Nova Scotia Lands Inc. Contractor Health and Safety Program. One copy is to be returned to the Site Health and Safety Coordinator and one copy is to be retained by the Contractor.

4. Contractor Employee Orientation

In this program element, the Contractor is responsible to issue and review the provided orientation with each contractor employee working at the Site at the beginning of work, and review monthly as conditions change. After review of the orientation, the contractor employee will complete and sign the acknowledgment section.

Contractor employees will not be allowed to work at these site unless they have had the provided orientation reviewed with them within the last year. The review of the orientation is the responsibility of the Contractor and must be done by competent persons.

Copies of this Program are available from the Site H & S Coordinator.

Contractor employees must have the orientation review prior to arriving on site, but in no circumstances will they be allowed to commence work without a review.

5. Safe Work Permit Meeting and Site Specific Information

Prior to doing any work at these sites, the Contractor and all Sub Contractors must attend a Safe Work Permit Meeting with Site Management to review the Site specific hazards and requirements necessary to ensure the work will be done in a safe manner. This information must be reviewed prior to starting the job with all contractor employees who will be at the Site. This information will form the basis for the Contractor to perform their own Site Hazard Assessment, Site Specific Health and Safety Plan and Safe Work Procedures.

In addition, there is to be a review of the Safe Work Permit each day by the Contractor Site Supervisor with his or her employees before commencing work. Where there is an established sector of work, location, conditions, and hazards and they will not change during a month, then a monthly safe work permit meeting can be held.

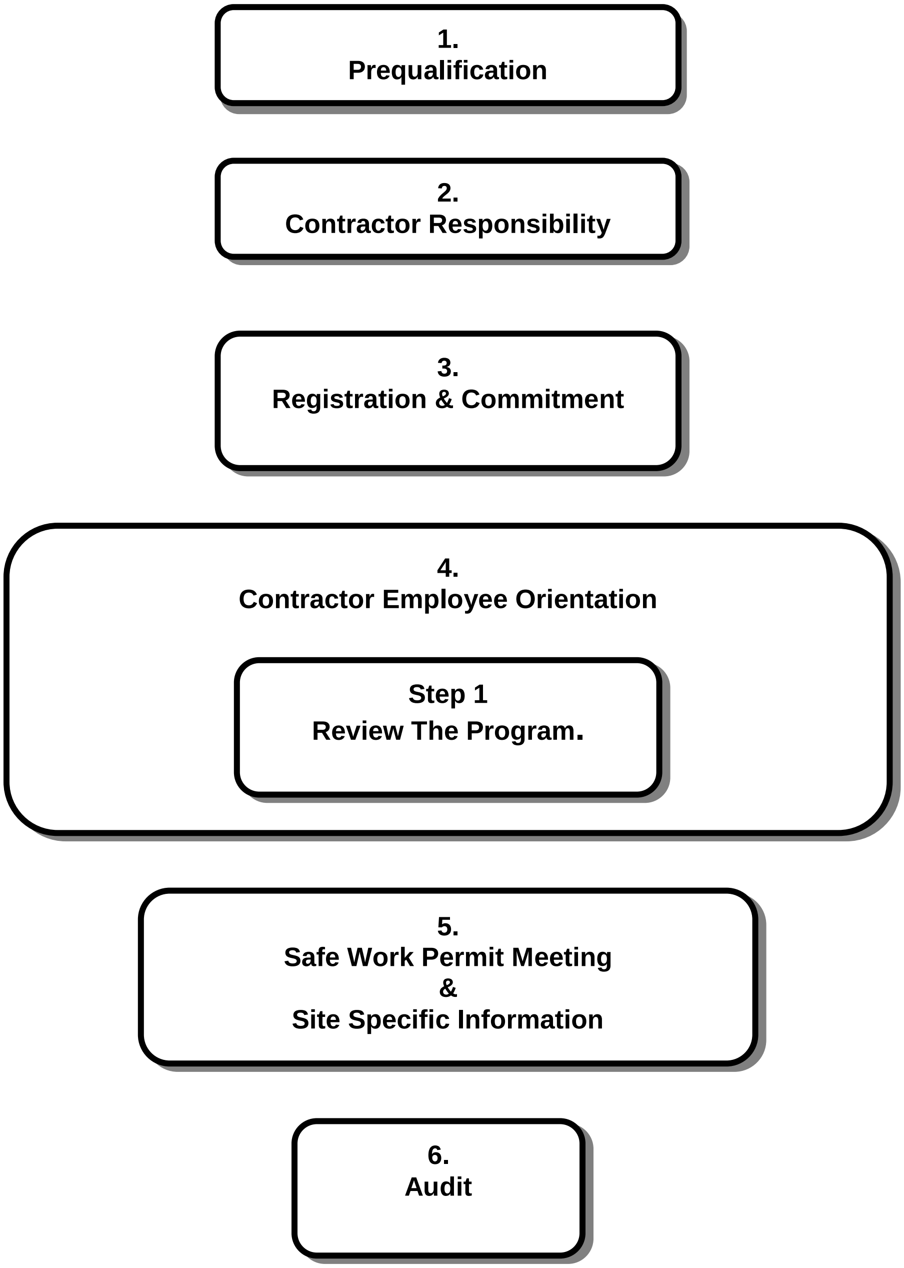
Outside Carriers, Delivery, Pickup, personnel are generally not required to have a safe work permit and site specific meeting unless the scope of the service that they provide will go beyond the routine delivery / pickup of commodities at approved points within these sites.

6. Audit for Compliance

This element of the Nova Scotia Lands Inc. Contractor Health and Safety Program outlines the specific information that the Contractor needs to know before and be aware of during the performance of work at these sites in order to ensure compliance with our program.

The Site H&S Coordinator will be conducting audits on a regular basis to assess the level of program compliance. The audit will be based upon the rules, responsibilities and safe work practices contained in this Nova Scotia Lands Inc. Contractor Health and Safety Program.

Figure 1-02(a) Contractor Health and Safety Program Elements



Requirements of Contractors

2-01 Purpose and Description

This element of the Nova Scotia Lands Inc. Contractor Health and Safety Program outlines the specific information that the Contractor needs to know before and be aware of during the performance of work at these sites in order to ensure compliance with our program.

It is a clear expectation that all Contractors must comply with all current Federal and Provincial Health and Safety and Environmental Legislation. It is also a clear expectation that Contractors provide competent employees and supervision that are knowledgeable and considered experts at the work they are performing. It should be specifically noted that if at any time while working at these sites a contractor employee is unsure if the work they are doing is safe, they must stop what they are doing and contact their supervisor immediately.

In addition Nova Scotia Lands Inc. has specific requirements of Contractors working at our sites that must be adhered to.

This section of the manual outlines these requirements. As you review these requirements it is imperative to keep in mind that the next section of the manual will require that you formally acknowledge that you are prepared to commit your company to adhere to these requirements when performing work or providing services at these sites.

2-02 Governing Authorities

Various governing authorities have the authority to inspect or audit the work at the Site. Inspections / investigations may be random or may be prompted by direct complaints received from employees, unions, contractors, or a neighbouring community.

Cooperation with government inspectors and immediate compliance with any directives or orders of these authorities is essential in order to limit the potential for downtime resulting from work stoppages or the assessment of penalties.

The Site H&S Coordinator must be immediately advised of any inspection / investigation by a governing authority on the worksite and be copied on all reports.

2-03 Record Keeping

There are specific requirements for record keeping in various sections contained within this manual that must be kept on file for a period of two years. These records must reflect the appropriate training for the work that the contractor will be performing. The following lists the minimum requirements:

- Date of Training
- Material Covered
- Name of Employee
- Trade and Certificates
- Signature of trainer
- Signature of trainee

Nova Scotia Lands Inc. also expects that all tradesmen carry all current and valid trade certificates deemed necessary by governing legislation and trade regulation for the nature of work that they perform.

2-04 Fitness to Work

Background

Every contractor has a responsibility for the health and safety and well being of each person under their direction, including employees, sub-contractors, visitors and other authorized guests.

Impairment

Impairment impacting a person's health and safety on the job site is the issue; such impairment may be due to injury, medical condition, alcohol, drugs, medication or other possible conditions affecting behaviour including stress, fatigue, anger, depression, anxiety, etc.

Persons Found in a Suspected Impaired Condition

Where persons are found in a suspected impaired condition, (eg. behaving in an abnormal or inappropriate manner):

1. The person must not be allowed to work or remain on the job site.

2. If an employee is suspected of being impaired when entering the premises (e.g., reporting for work, returning from lunch), Security and or Supervision will refuse entry and the employee's Direct Supervisor is to be contacted. Police will be called if necessary and further follow-up action will be taken with the employee's employer.

3. The person in question must be offered medical assistance to be arranged through the Site H&S Coordinator. If the offer for assistance is refused the Supervisor must then send the person home. A taxi ride home must be offered by the Supervisor. When necessary, Security or Supervision will notify the police if the person refuses transportation home.

4. All employees sent home because of suspected impairment must be reassessed prior to the next working shift. If requested, the Site H&S Coordinator will assist in determining fitness for work and any need for further assessment. The Contractor Employee must be accompanied by his / her Supervisor.

2-05 Security and Site Access

Access to the sites will not be permitted without prior authorization. All appropriate personal protective equipment and general safety precautions must be adhered to.

Security and or Supervision are required to verify authorization upon entry and exit at work sites. Security and or Supervision will provide directions and general precautions, and will arrange for an escort to the worksite where warranted.

2-06 Traffic / Parking Regulations

Traffic Regulations

Posted speed limits on all Site roadways and traffic signs (e.g., stop signs) must be adhered to. Maximum speed is 30 km/hr. unless otherwise posted. Passing is not permitted with the exception of slow moving equipment where extreme caution must be taken to ensure it can be done safely and the maximum posted speed limit is not exceeded. Large mobile equipment is not considered to be a slow moving vehicle. Parking violations that are safety related will be treated as a violation of traffic rules.

Driveways, laneways, or emergency vehicle routes must not be blocked or restricted at any time.

Violation of Traffic Rules are considered to be a Major Safety Infraction and progressive discipline will be followed. The first offence results in a written warning; a second offence within a one-year period will result in a one-day suspension or suspension of driving privileges on the property for one (1) month. Depending on the severity of the first offence a written warning may be omitted and an automatic suspension given.

Construction Access and Parking

All construction personnel must use designated routes to access construction parking areas.

All contractors will park their personal vehicles in the area designated by Nova Scotia Lands Inc. Representatives. All vehicles to be backed in when parked around any buildings.

Driveways, laneways, walkways, or emergency vehicle routes must not be blocked or restricted at any time by construction vehicles, machinery, equipment or materials except in the course of demolition or other business activity.

Overnight parking of equipment or vehicles must occur only with permission. The security of equipment or vehicles is the responsibility of the contractor. No vehicle is to be left without appropriate brakes / blocking.

Vehicles must not be left unlocked overnight or with keys in place.

Construction equipment such as zoom booms, scissors lifts, bulldozers, forklifts, etc., must have all moveable parts in their stowed positions when left unattended.

2-07 Mobile Equipment / Crane(s) and Certification

Background

This section discusses the requirements related to Mobile Equipment and Cranes that may be required to perform the work that you are contracted to do.

All contractors must ensure that all personnel required to operate mobile equipment, e.g., backhoes, trucks, excavators, etc. during the course of their work, are properly trained, possess a current drivers license as well as all other necessary licenses and / or certificates and are competent.

All mobile equipment must be in good operating condition with current maintenance and inspection records available on request. (See current legislation and regulations for mobile equipment.)

Mobile Cranes

- Ensure that you have discussed all necessary arrangements, e.g., crane placement, road restrictions, medical, security, and fire department notification, lockouts, safety watch, etc. with the appropriate Site Representative coordinating your work prior to the Safe Work Permit meeting.

- Discuss the procedure for operation of a mobile crane within the buildings of the facility.

Pendant / Overhead Cranes

- All Contractor personnel who will be operating a pendant / overhead travelling crane during the course of their work at the Site must be in possession of a current certified license for overhead travelling crane operation.

Elevating Work Platforms

- Personnel must be given verbal, visual and hands-on instruction on the safe operation and requirements to operate that specific class of elevating work platform, prior to start of job. Operator Certificate required at all times.

- Review current legislation and regulations for Elevating Work Platforms.

2-08 Embedded Services Locate Request

An Embedded Services Locate Request is a written approval that must be obtained from Site Representatives prior to any excavation, digging, drilling, grading, piling, boring, or concrete removal.

The Locate Request identifies all embedded services (e.g., electrical conduits, pipelines, telephone lines) located in the area.

The Nova Scotia Lands Representative will acquire this written approval prior to the safe work permit meeting. Any other specific instructions or procedures will be issued prior to starting work.

Note: Never disturb or remove red concrete without a Locate Request.

2-09 Equipment and/ or Work Area Isolation

Purpose

To prevent uncontrolled movement or flows, accidental starts of process, electrical and mechanical equipment as well as programmable logical controllers (PLC's) and other computerized devices. This also includes isolating the flow of gas, air, hydraulics, steam and hazardous materials.

Isolations may be in the form of lockouts, blocking, pinning, chaining, flagging off or barricading. At the sites, most isolations performed are lockouts.

Everyone has the right to lock-out for themselves, or to work under the protection of their supervision (i.e. Supervisors can lockout for their employee's).

How Do We Isolate?

Before any work is performed, we isolate by:

a) Identifying the energy sources;
b) Requiring the hazard(s) to be identified;
c) Defining the isolations to be taken, and;
d) Checking for isolation effectiveness.

Note: Isolation of an area should include a sign identifying who is responsible for the isolation and how they can be reached.

- The Nova Scotia Lands Inc. Representative will arrange for Qualified Electrical Personnel to isolate areas as required by contractors.
- The decision on how an isolation is to be performed must be developed by a competent person with knowledge of the equipment, area and process. This can be accomplished as part of a written procedure.
- For simple equipment isolation - The Site Representative will arrange for Electrical Contractor to isolate area, and assist Contractors by isolating equipment / services so that the contractor can affix their locks.
- **Nova Scotia Lands Inc. Representative will also arrange to isolate high voltage breakers / switches (greater than 750 volts)** as per switching procedure. The Contractor to affix locks as per isolation requirements.
- Key points of isolation to be discussed at the Safety Work Permit Meeting:
    - How many locks required?
    - Where to place locks?
    - Who will show contractor where to put locks?
    - Ensure locks are adequately identified (Name / Company or Department / phone#)
    - **Safety Locks must have only one key**

Equipment and/ or Work Area Isolation

- For permanent shutdowns - Isolation to be performed with an approved written Isolation Procedure and place Isolation Procedure and / or Isolation Checklist along with key in "Lock-out Box". All areas and electrical equipment must be so tagged.
- Ensure copy of the "permanent" Shutdown Isolation Procedure is attached to Safe Work Permit.
- For major shutdowns, Qualified Personnel to place lock on "Lock-out Box or Bar" (in most areas). Some areas may require
- "All" on- site Contractor Personnel to place lock on "Lockout Box/Bar". Please discuss this issue to assure all persons included.
- If the scope of work changes and requires that the isolation be changed, another isolation procedure meeting to be held to document changes. A new Safe Work Permit Meeting is to be held using the new isolation procedure to ensure all personnel on job-site are aware of the changes.
- All safety locks used for isolation purposes are long shanked. Personal Safety Locks must be:
    - individually keyed or keyed alike in multiple sets;
    - b) Supplied with ONE key;
    - c) Identified with name and company of user, on the lock or on a suitable tag, and;
    - d) Used ONLY by person identified on tag.

Written Isolation Procedure

The Supervisor of the person(s) performing the work is responsible for determining when a written isolation procedure is needed to make a job safe.

1. All written isolation procedures must be developed by a competent person with knowledge of the equipment, area and process and must include:
    - the equipment, devices or things requiring isolation
    - the method of isolation required
    - blocking, pressure release, purging, physical / electrical disconnects, barricades and testing of equipment
    - to make certain isolations are effective
    - switches, valves or isolating devices required to be locked out
    - the initial approval and subsequent revisions to be approved by the Nova Scotia Lands Inc. Representative using the procedure.
2. When no written procedure is required for a job, the job supervisor for the work must determine what is required for isolation at the time.

Equipment and/ or Work Area Isolation

3. When the written isolation procedure is used, the procedure must be:
   - dated and approved by the supervisor/leader making the job safe, and;
   - where lock boxes / bars are used the procedure or listing is to be posted on the job site or lock box and
   - Visible to anyone to review, prior to start of work.

Made Safe

4. The person making the job site safe must check that the isolation is effective.

5. Prior to the start of work, each person working on a job must check with the job supervisor that the isolation is effective. An additional check is required if there is a return to the job later in the shift.

Locking Out

6. Lock(s) are to be placed as to prevent the physical movement of the isolating device(s) - switch, valve, lever, etc.

7. A supervisor, or person having responsibility over others, may lockout for those they have responsibility for, providing there is an approved written isolation procedure.

8. When personal locks are used, the user either affixes them or is present to witness their use.

Inspecting

Inspecting is defined as the act of viewing and / or checking only on the work and does not entail working on the equipment.

A supervisor or staff/technician may inspect only with the approval and accompaniment of the person who has the area locked out.

Lock Removal

NO PERSONAL OR OPERATIONS LOCK CAN BE REMOVED OTHER THAN BY THE PERSON WHO AFFIXED IT UNLESS THAT PERSON IS PRESENT TO WITNESS THE REMOVAL.

All persons must be clear before any lock protecting them is removed. If necessary, isolation of the area is to be maintained during the removal process to prevent entry of any person(s) into the affected area.

When a person leaves a job and their lock(s) are still affixed, that person must be satisfied that the equipment or area they are working in is still properly isolated prior to resuming work.

Periodically, circumstances arise when equipment or a process must be taken out of service for maintenance reasons and the job cannot be immediately completed. Examples of this would be the removal of electrical motors for repair or the removal of a valve for repairs when the valve or motor must be sent out for the repair work to be done. In these circumstances, no locks will be removed unless the equipment or process is completely safe or the responsibility for the isolation is transferred to another person who will replace the original locks with their locks. The responsibility for this belongs to the person performing the work.

Where safety lock(s) are left on and it is ABSOLUTELY IMPERATIVE that the equipment be used, the person responsible for the lock(s) must be contacted to come in for removal. This applies to all applications - personal, supervisor, and operational locks. If the above is not possible, the lock(s) may be removed, after determining that it is safe to do so, by the Site Supervision, Electrical and Mechanical Maintenance personnel.

This includes the operations locking out.

- "Lock Removal" must be documented and copies are to be sent to the Health and Safety Coordinator.

2-10 Barriers and Barrier Tape

Background

Barriers are used to stop the passage of people or vehicles in a restricted area.

A barrier must be installed to warn people of hazards created by demolition, asbestos removal, construction and/or maintenance activities in the area and to direct persons past such hazards.

Guarding (Barricade) is a requirement of the Occupational Health and Safety Act and the Regulations.

All barriers at The Site must be installed in accordance with the requirements outlined in the Occupational Health and Safety Act & Regulations.

All openings, sumps, vessels, bins, hoppers, elevated platforms or pits, other than grease pits, which constitute a hazard, must be fenced or otherwise guarded. (Occupational Health and Safety Act and Regulations).

Types of Barriers Approved For Use at The Site

There are two types of Barriers approved for use at these sites:

Fixed Barricades

Fixed barricades are used to physically prevent entry into a restricted area because a hazard exists. Access may be restricted by using:

- Wooden Barricades
- Concrete Barricades
- Fabricated structures made from steel or wood
- Fencing

Fixed Barriers should be used to prevent entry of unauthorized people or equipment into areas where a hazard exists. Examples of situations when fixed barricades should be used include:

- Excavations
- Openings in floor, walls, platforms and handrails;
- Tripping hazards such as: Uneven floor or surfaces under repair;
- Fall prevention
- Road closures

Barrier Tape

Barrier Tape is used to warn people of a potential hazard and deter entry into a restricted area. This method does not physically prevent entry, but people must not enter the area restricted without authorization from the Site supervisor. It will be considered a major safety infraction for any unauthorized person(s) entering into a barricaded area.

Barrier Tape will be used to warn people of a potential hazard and / or prevent entry into a restricted area. Examples of when barrier tape will be used include:

- Demolition
- Asbestos removal
- Commissioning / Decommissioning of live equipment
- Restricting access because of a fire line
- Identifying a confined space (work in progress)
- Cordoning off and accident investigation site, and
- Flagging off floor area because of overhead work in progress

Note: The use of barrier tape as an alternative means to stop/halt physical entry into an area where there is an open pit or missing handrail etc., is strictly prohibited. A fixed barrier must be used in this situation.

The standard barrier tape that is to be used in all applications at the Site is **(Yellow) Caution and (Red) "Danger, Authorized Entry Only"**.

All barrier tape must be removed from the Site at the time the work is complete or at the time the hazard no longer exists.

Barrier Tape Identification Tag

When Barrier Tape is used it is the responsibility of the Site supervisor to ensure that identifying tags are affixed around the perimeter of the barrier tape. As a minimum, an identification tag must be affixed to each point of entry to the barricaded area.

CAUTION

DANGER

2-11 Personal Protective Equipment

Personal Protective Equipment provides a secondary method of protection for an employee where it is not possible to eliminate or control the hazard.

The personal protective equipment necessary will be discussed at, and stated on the Safe Work Permit Form. Specific protection for the work being performed must be evaluated by the contractor.

All Personal Protective Equipment deemed necessary by the Contractor to protect the health and safety of the contractor employee(s) is to be provided by the contractor.

As a minimum the following Personal Protective Equipment is generally required in all plant areas:

- CSA Approved Hard Hat
- CSA Approved High Impact Safety Glasses (with permanently attached side shields) - Prescription or Non-Prescription
- Safety Boots
- Arms and Legs completely covered as required
- High Visibility Safety Vest/Jacket

All personal protective equipment must be inspected as required regularly and be in a condition that provides the protection it was designed for.

Foot protection, as a minimum must be 6” safety footwear with a Canadian Standards Association (CSA) approval with Grade 1 (i.e., Green Patch) designation may be worn on Site.

Clothing requirements are long-sleeved shirts and long pants as required. This also applies to getting to and from the job site.

2-12 Confined Space Entry

Definition

A confined space means a space in which, because of its construction, location, contents or work activity therein, the accumulation of a hazardous gas, vapor, dust or fume or the creation of an oxygen-deficient or oxygen enriched atmosphere may occur.

Physical Characteristics of a Confined Space

The physical characteristics of a confined space are:

- A space that is large enough and so configured that an employee can enter and perform assigned work,
- An enclosure that, by design, has limited openings for entry and exit.
- An area or space that has the potential to accumulate a hazardous gas, vapor, dust or fume or become
- An oxygen-deficient or oxygen enriched atmosphere, either from an external source or an internal source.

Confined spaces may include, but are not limited to, sewers, tunnels, manholes, utility vaults, piping, storage tanks, process vessels, pits, excavations, and other similar types of enclosures with limited access and / or without adequate ventilation to eliminate the potential for the accumulation of a contaminant or oxygen depletion or enrichment.

CSE Procedure

A procedure, listing the requirements for safe entry and safe work within a confined space must be written and approved by a competent supervisor before any entry is made. All hazards must be identified, and eliminated or controlled according to the procedure. This procedure must be reviewed with all of the entrants of the confined space.

Legal Requirement

The Occupational Health and Safety Act (OHSA) & Regulations, outline the minimum requirements that must be met before entering a confined space. The Nova Scotia Lands Inc. Confined Space Entry Standard is designed to meet or exceed the legislative requirements of this regulation.

2-13Purging Procedures

Definition

Purge is the act of replacing the atmosphere within a closed system or vessel (container) by an inert substance in such a manner as to prevent the formation of an explosive mixture with air, prevent a dangerous concentration of an asphyxiate or toxic gas, or in the case of oxygen, to lower the oxygen content to prevent damage to the vessel or to personnel from extremely rapid combustion.

Preparation and Execution of the Purge Procedures

All purge procedures will be prepared and executed by authorized personnel only.

Having completed the purge out procedure, the contractor will lockout isolation points with own locks and proceed to perform the necessary work.

All Purge Procedure related details (e.g., lockouts, special instructions), must be discussed at the Safe Work Permit Meetings.

2-14 Emergency Response Plan (ERP)

The Emergency Response Plan (ERP) outlines responsibilities, sources and communication relating to the activities on Site. The plan enables coordination of contractor Emergency Response Plan (ERP), as well as providing a ready reference for communications and simple checklists for effective emergency response.

The contractor must ensure that the Site H&S Coordinator reviews the Contractor ERP plan prior to start of work. This is normally done at the Safe Work Permit Meeting.

2-15 Communication

Safe Work Permit Meetings / Site Specifics

It is of the utmost importance that all information received by the Contractor Supervision at the "Safe Work Permit Meeting" and through "Site Specific Information Packages" is communicated to all contractor employees, sub-contractors and their employees. All communication must be documented and kept on file.

Contractors Toolbox Safety Talks

It is the responsibility of the Contractor to ensure that toolbox safety talks are delivered daily (prior to starting work) to all employees working on the project, as a means of providing regular Health and Safety awareness, and encouraging employees to actively participate in Health and Safety matters.

Documenting the delivery of these safety talks is the responsibility of the contractor. The documentation must include a record of the names (with signatures) of all employees in attendance, date, time, and discussion topics.

2-16 Workplace Inspections

The contractor is responsible for maintaining a safe work area and must ensure that regular workplace inspections take place. Formal documented workplace inspections must be done weekly by the contractor supervisor accompanied by an employee.

Individual work must be checked daily for:

- Health, safety and ergonomic hazards
- All tools and equipment are safe to use
- Signs and labels are legible

Typically, the types of things to review would include but not be limited to, the condition of:

- Personal Protective Equipment
- Access Stairs and Platforms
- Ladders
- Scaffolds
- Equipment and Tools
- Vehicle
- Housekeeping
- Emergency Eyewash and Showers
- Material Storage
- Material Safety Data Sheets

2-17 Accident Investigation

Background

Nova Scotia Lands Inc. requires each contractor to have an effective accident reporting system that is understood and implemented by all contractor and subcontractor employees prior to commencing work on the Site premises.

When an Accident Occurs at the former Sydney Steel Site

It is the responsibility of the contractor to ensure that all employees are trained to report all accidents, with or without injuries. When an accident occurs, the contractor's supervisor must:

- Investigate all accidents with or without injury and provide a full report to the Site H&S Coordinator.
- If there is an injury, arrange transportation to the nearest Hospital by calling **911.**

When serious injuries are incurred, emergency communications are required.

- In the case of a critical injury or death, secure the scene of the accident and do not disturb unless disturbance is necessary in order to eliminate danger to other persons. Immediately inform the H&S Coordinator.
- Take all necessary actions to prevent a recurrence of the accident and document the actions taken.

Emergency Communications

Ambulance / Fire – **911**

NOTE:

When an Accident Occurs at other Nova Scotia Lands Inc. Controlled Sites

It must be determined at the Safe Work Permit Meeting prior to the start of work, what Emergency Contact Numbers are to be used, Hospital location, emergency routes identified and site maps provided if possible.

2-18 Regulated Substances

Material Safety Data Sheets outline and will be used to discuss substance hazards and safety requirements, more specifically safety equipment, make, model, filter types, gloves, etc. The locations of Safety Showers and Eyewash Stations must also be reviewed and communicated to all contractors.

In the event of the removal of designated substances such as asbestos, all contractors on the job site must review a written removal procedure at the Safe Work Permit Meeting.

2-19 Chemical Management and Transportation of Dangerous Goods (TDG)

The contractor must comply with all applicable regulations including The Transportation of Dangerous Goods Act.

Unless otherwise specified in writing by the Contractors and the Site Representatives, the Contractor will:

1. Have a list or inventory of all chemicals being brought by the Contractor to the job site, with up-to-date Material Safety Data Sheets (MSDS). The chemical inventory will contain:
    - the name of the material
    - the amount used and stored (e.g., per month, per year or whatever is convenient, and;
    - where the material is used and stored

2. Have an up-to-date written emergency response plan, which outlines actions to be taken by the contracting employees in the event of a leak, spill, fire or explosion. Contracting employees must have been properly trained in spill response and control procedures and if expected to respond to a "dangerous goods occurrence", receive Transportation of Dangerous Goods (TDG) training once every three (3) years.

3. Ensure that chemical containers (drums/totes) are labelled as to content, in good condition and impermeable to the chemicals they contain. Non-compatible chemicals are to be segregated. All applicable safety marks, labeling, placarding and documentation are used.

4. Be in constant attendance when loading / unloading a storage tank.

5. Ensure that valves and nozzles are locked in the closed position when not engaged.

6. Have all required licenses to purchase, store or use a chemical and comply with all chemical storage and chemical waste regulations.

2-20 Reporting Environmental Incidents

It is The Site policy to report environmental incidents (or "spills") to the Department of Environment and other authorities.

Under the Environmental Protection Act, a "spill" is defined as a discharge into the natural environment that includes air, a natural watercourse (like a Harbour), groundwater and the ground and may happen out of a structure or container (e.g., tank, piping, valves, vehicle, building, stack vents).

The Contractor must take immediate action to safely stop the emission or contain the discharge and notify the H&S Coordinator of the situation.

The Environmental Officer will report the environmental incident as per Nova Scotia Lands Inc. “Emergency Response Plan”.

2-21 Electrical Equipment Areas

Access to areas that contain "Live" electrical equipment are **restricted** to authorized personnel only. Authorized Personnel are defined as:

- Qualified electrical contractors and personnel;
- Persons accompanied by Qualified electrical personnel, and / or;
- Contractors who have been given "short term" access per their Safe Work Permit

Contractors that require short term "unaccompanied" access into electrical equipment areas must be under the direction of electrical personnel. The Site-Specific health and safety information and tour must detail the specific location, the hazards for the area and any other relative information. This must be given to the contractor as part of the Safe Work Permit Meeting.

While in an electrical equipment area, persons who come within one (1) metre or three (3) feet (or more depending on the voltage level) of **live** exposed electrical equipment must wear the required personal protective equipment or the **live** exposed electrical equipment must be guarded.

For additional details refer to Contractor Requirement "Working on or Near Live Electrical Equipment" on the following three pages.

2-22 Working On or Near Live Electrical Equipment (750 Volts AC or DC and Below)

Background

At the Nova Scotia Lands Inc. Sites, the method for working on any electrical equipment is to isolate and lockout all sources of energy. However, in certain circumstances it is necessary to test and troubleshoot electrically energized equipment.

At the Nova Scotia Lands Inc. Sites, we do not "repair" or "replace" live equipment. There is only one exception to this statement and that is the changing of or racking in and out of low voltage substation breakers, on a live bus, with the cell door open.

Definitions **Near**

Near has been defined with respect to live exposed electrical equipment at 750 volts and below as within one meter.

The following list of questions will assist an individual in determining whether they are near and likely to become endangered at distances greater than one meter from the live exposed parts. A qualified electrical person must make this evaluation.

- Are you or the equipment or materials used to perform the job likely to come in physical contact with the energized electrical circuits?
- Are there tripping hazards in the work area?
- Could you lose your balance because the work requires you to reach an excessive distance?
- Do you have adequate lighting to see clearly what you are doing?
- Do you have conductive materials or equipment on your person?
- Is there any possibility of equipment movement?
- Do you think protective barriers should be used?
- Has all your equipment been checked and in good working order?
- Do you have a sense of nervousness about your proximity to live exposed electrics on a specific job?
- Has the voltage and amperage level been considered?
- Have you considered any environmental conditions like water, dust, congestion etc.?
- Any other hazards in the workplace?

Trouble-Shooting and Testing

The action performed on an electrically energized system to determine the existence or cause of a problem.

Working On or Near Live Electrical Equipment (750 Volts AC or DC and Below)

Working On

To repair, replace, test or trouble-shoot electrical equipment.

Hazard Assessment

Each job will be assessed and the hazards identified by a competent electrical person (i.e., a person, who is, through training and experience, able to recognize electrical hazards and trained in CPR).

Based on the assessment the appropriate procedures and required personal protective equipment will be used.

Personal Protective Equipment

All Personal Protective Equipment deemed necessary by either the Site H&S Coordinator and / or the Contractor to protect the health and safety of the contractor employee(s) is to be provided by the contractor.

If a person approaches within one meter of live exposed electrical equipment at 750 volts or below, the necessary Personal Protective Equipment must be worn.

When working on or near live exposed electrical equipment at 230 volts AC or DC and above or approaching within one meter, the following personal protective equipment **must** be properly worn:

Personal Protective Equipment:

- Hard hat
- Safety glasses with permanent side shields
- Shock Resistant (Omega) Work Boots
- Flame Resistant Clothing System
- Class ‘0’ Rubber Gloves with leather outers for 230 volts (AC/DC) or above
- Face Shield (if arc hazard exists)
- Any other personal protective equipment as determined by the area in which the work is being done (e.g., hearing protection, harness, respirator, etc.,)

Other:

- A second suitably equipped competent person when working with voltage levels at or over 300 Volts, except for testing or trouble-shooting (i.e. changing of or racking in and out of a low voltage substation breaker on a live bus, with the cell door open)
- Testing equipment must be certified by the manufacturer for its intended use

Working On or Near Live Electrical Equipment (750 Volts AC or DC and Below)

- When working on or near live electrical equipment below 230 volts, the following requirements are optional per hazard assessment.

Personal Protective Equipment:

- Class ‘0’ Rubber Gloves with leather outers for below 230 volts (AC/DC)
- Flame resistant clothing for below 230 volts (AC/DC)

Other:

- A second suitably equipped competent person when working with voltage levels below 300 Volts AC or DC.
- Mats (e.g., insulated rubber)

2-23 Scaffolds

What is a Scaffold?

A scaffold is an elevated working platform for supporting both people and materials. It is a temporary structure used mainly for construction and / or maintenance work. Scaffolds must be designed to support at least four (4) times the anticipated weight of people and materials that will use them.

Legal Requirement

Proper components, certification in erection, use and disassembly of scaffolds are a requirement of the Occupational Health and Safety Act and Regulations. Also certification in Fall Protection/Fall Arrest is required. For certainty follow The Nova Scotia Labour and Advanced Education Reference Guide To The Fall Protection and Scaffolding Regulations.

Construction / Erection

Operating Services - Carpenters Responsibilities

All types of scaffolding (may or may not include frame scaffolding) must be constructed, erected or assembled by a competent person. During construction and upon completion of the scaffolding, the competent person is responsible to attach the appropriate identification tag.

Overhead Protection

Whenever work is being done on a scaffold over people working below, overhead protection must be provided on the scaffold. This protection will be planking or other strong suitable materials.

Means of Access

A safe and convenient means must be provided to gain access to the working platform level. Means of access may be by a portable ladder, fixed ladder, ramp or runway, or stairway.

Identification of Scaffolds

"DO NOT USE" Scaffold Identification Tag (WHITE Plastic Holder RED Lettering)

- During construction, erection or assembly of any scaffold, *a **"DO NOT USE"** Scaffold Identification Tag* must be affixed by the erectors in a prominent location on the scaffold and / or at each point of potential access to the scaffolds.

"USE WITH CAUTION" Scaffold Identification Tag (YELLOW Plastic Insert)

- If the scaffold cannot be built strictly to specifications, the erectors must affix a ***"USE WITH CAUTION"*** *Scaffold Identification Tag* with special instructions at each point of access. For example, if a guardrail cannot be installed, the Yellow Tag will indicate this restriction and provide instructions that a safety harness must also be worn.

"OK TO USE" Scaffold Identification Tag (GREEN Plastic Insert)

- Once construction, erection or assembly of the scaffold has been completed and has been approved for use by the erectors, they must affix an ***"OK TO USE"*** *Scaffold Identification Tag* at each point of access.

Inspection and Maintenance

Contractors Responsibilities

Contractors, who are using scaffolding, must inspect the scaffolding each day prior to use.

Removal, Component Inspection and Storage

Any scaffolding that is no longer being used (i.e., the job is completed), is to be removed by a competent person. Once removed, the competent person is also responsible for inspecting the scaffolding components for any damaged parts or components, discarding or repairing these components and proper storage of all components prepared for future use.

Scaffold Pre-Use Checklist

The following are some items to consider prior to using scaffolding:

- Are scaffold components in safe condition for use?
- Are planks in safe condition for use? For wood planking, the following applies:

Scaffolds

- Planks must be at least two (2) inches thick by ten (10) inches wide and must meet or exceed the requirements for Number 2 Grade Spruce or better planking rough sawn.
- Must be free of wormholes, cracks, checks, splits, excessive knots, wanes, warps and twists.
- The weight of the plank must be checked. A lightweight plank indicates that it is dry and possibly brittle.
- The surface of the plank must be checked for the possible penetration of potentially damaging substances (e.g., acidic solutions)
- Immediately discard any planks showing these or other defects.
- Do planks overhang their supports by no less than six (6) inches and no more than twelve (12) inches?
- Planks are secured from slipping (e.g., Planks have cleats where required and are properly fastened to the planks)
- Is the frame spacing and sill size capable of carrying the intended load?
- Have competent persons been in charge of erecting the scaffold?
- Are sills properly placed and of adequate size?
- Have screw jacks been used to level and plumb scaffold versus unstable objects such as concrete blocks, loose bricks, etc.?
- Are base plates and / or screw jacks in firm contact with sills and frames?
- Is scaffold level and plumb?
- Is guard railing (complete with top and mid rail and toe board) in place on all open sides?
- Has proper access been provided?
- Has overhead protection or wire screening been provided where necessary?
- Has the ratio of height to least lateral dimension not exceeded three (3) to one (1) *(i.e., Three to One Rule).* For example, if the base measurements of the scaffold provide a width of five (5) feet and the length of the selected cross braces provide a bay length of ten (10) feet, the maximum height of the scaffold shall not exceed fifteen (15) feet (i.e., 3 x 5 feet = 15 feet).
- Exceptions may include circumstances where:
- The scaffold is tied into the structure:
- The scaffold is properly stabilized by guy wires, and / or;
- The scaffold is secured by outrigger stabilizers sufficient to maintain the ratio.
- Have brackets and accessories been properly placed:
- Brackets?
- Putlogs?
- Tube and Clamp?
- All nuts and bolts tightened?

- Is scaffold free of makeshift devices or ladders to increase height?
- Are working platforms fully planked between guardrails?
- Are toe boards installed properly?
- Have precautions been taken to prevent against hazardous conditions such as:
- Power lines?
- Wind loading?
- Possible washout of footings?
- Uplift and overturning moments due to placement of brackets, putlogs, or other causes?

General Safety Rules

The following are some general safety rules for the use of scaffolding:

BEFORE Using Scaffolding, **Check** to ensure that:

- Scaffolding is approved for use (e.g., Review "Identification Tag")
- Base is sound, level and adjusted
- Legs are plumb and all braces are in place
- Locking devices and ties are secured
- Cross members are level
- Planks, Decks and Guardrails are in good condition, installed and secure

DO:

- Follow all instructions / notes on Scaffold Tag (e.g., use harness)
- Remove snow and ice from scaffold platforms, ladders and access areas.
- Use an access ladder to climb on or off a scaffold, not scaffold frame, unless it is specially designed to be climbed.
- Ensure that the scaffold is securely attached to the building structure. The effects from winds increase when scaffolds are covered.
- Protect all planked or working levels with proper guard rails, mid-rails and toe boards along all open sides and at the ends of scaffold platforms.
- Guardrails may be removed for the purpose of lowering or hoisting materials but must be replaced immediately. Fall Protection (i.e., safety harness) must be worn when guardrails are removed.

DO NOT:

- Do not use scaffolding that have a "DO NOT USE" Scaffold Identification Tag affixed anywhere on the scaffolding.
- Do not jump onto planks or platforms.

Scaffolds

- Do not climb or stand on cross braces or guardrails.
- Do not work on scaffolds during storms or high winds.
- Do not use ladders or makeshift devices on top of scaffolds to increase height.
- Do not overload (i.e., exceed tagged capacity) scaffold frames or platforms.
- Do not rest materials or equipment on guardrails.
- Do not try to repair bent or kinked frames. Immediately discard them.
- Do not use scaffolds near electrical wires.

2-24 Controlling Air Emissions

Background

Minimizing air emissions from the source is an environmental priority.

Dust, or particulate, from storage piles and open areas is caused by high winds and vehicle traffic.

Minimizing Air Emissions

Contractors must minimize air emissions by following:

Loading Practices
Trucks must not be overloaded with material. Overfilling causes spillage from trucks. The spilled material creates “track out”. Track out is carried along the road by the vehicle's tires. It dries on the road and when driven over, is crushed, creating dry dust, or air emissions.

Speed Limits
All speed limits must be obeyed. Following posted traffic speed limits minimizes the amount of dust created on roadways.

Turn off Engines
Drivers must turn off engines while stationary unless the engine is required for a specific reason (e.g., vacuuming in or pumping off load).

Sandblasting
To minimize airborne sandblasting particulate, the contractor must use the lowest dust abrasive available. Where sandblasting of paints may be lead based, the debris generated during the removal of the existing paint will be collected and disposed of properly – the debris cannot be diluted to render it non-hazardous.

Construction and Demolition
Track out from job sites must be controlled and waste / debris from any demolition must be properly disposed.

Spill Control and Response

Spill Control The preferred method of controlling spills is to prevent them from happening in the first place.

To prevent spills, a Contractor must use the following individually, or in combination:

1. Store oils or chemicals away from sewer grates or where a spill could reach a sewer.

2. Inspect the condition of the oil or chemical container, drum, tote etc., transferring the material to a new container if necessary.

3. Ensure level controls, alarms and / or standby backup pumps are in working condition.

4. Develop and maintain procedures to respond to a spill and instruct their employees in these procedures.

Spill Response **The Contractor responds to a spill by:**

1. If possible, stop the spill, taking into account employee safety first.

2. Prevent the spill from entering sewers by stopping the flow, dyking, sealing manhole covers and sewer grates and spreading absorbents.

3. Report the spill to the Site Representative immediately, who will follow the "Emergency Response Plan" reporting procedure.

4. In the event of a chemical spill, the Material Safety Data Sheet (MSDS) must be consulted. Safe handling procedures, instructions in case of fire, health hazard ratings and summarized spill response procedures are listed on all MSDS sheets. The MSDS sheet must be made available to the Site Representative.

Waste Management

The Contractor must comply with Nova Scotia Waste Regulations of The Environmental Protection Act.

Unless otherwise specified in writing by the Contractor and the Site Representative, the Contractor will:

- Restore the job site and any lands affected by it, to an acceptable condition, free of all waste, debris and hazardous materials. The Contractor is responsible for removing any refuse, including empty containers (e.g., drums, cans), left over construction material and packaging.

- No residuals or contaminated water is to be allowed into if any, Site water treatment plants or sewer systems. Liquid industrial waste cannot be dumped down a sink or sewer.

- Segregate any waste generated from a job and identify as either hazardous, liquid, industrial or non-hazardous.

- Waste containers will be dated and labelled as to content. The containers must be in good condition and impermeable to the waste it's receiving. The lid will be kept closed unless adding more of the same waste.

- Prior to shipping off wastes, the Contractor must ensure that shipping documents, labelling and placarding requirements are complied with according to legislation.

Commitment Agreement

This program has been prepared to assist you in your business dealings with Nova Scotia Lands Inc. The regulations and procedures set out in this manual ARE NOT INTENDED TO REPLACE OR SUPERSEDE ANY LAWS, REGULATIONS OR LIABILITY APPLICABLE TO THE WORK UNDERTAKEN BY YOU. In the event of a conflict, you must act in accordance with the governing law or regulation and report the conflict to the appropriate Site H&S Coordinator. This manual has been registered to:

Company Name:

Contact Name:

Address: Street:

City: Province:

Postal Code:

Telephone Number:

Fax Number:

Email Address:

I, ____, representing the above named company, fully understand and have complied with and will continue to comply with, the requirements outlined in the Nova Scotia Lands Inc. Contractor Health and Safety Program and confirm that all our employees assigned and / or sub-contractors retained to work on these sites are in compliance with the requirements as outlined in the program.

Signed:_________________________________Date: _______________________

Copy "Commitment Agreement" for your records and return signed and dated original via mail to:

Nova Scotia Lands Inc.
P.O. Box 430, Station ‘A’
Sydney, Nova Scotia, Canada,
B1P 6H2
Or via facsimile to:
- (902) 564-7903

Attention: H&S Coordinator

Contractor Employee Orientation

This section outlines the training and orientation to the Nova Scotia Lands Inc. Contractor Health and Safety Program that the contractor must give their employees, prior to the start of any work.

Contractors must ensure that all supervisors are trained in the Requirements of the Contractor sections of the Nova Scotia Lands Inc. Contractor Health and Safety program.

Contractors must ensure that all employees and its sub-contractors are trained in the provided orientation. The purpose of the orientation is to provide basic information on the employee's personal responsibilities for Health and Safety.

It is the contractors' responsibility to issue and review the contents of the provided Manual. (Additional copies are available on request). The contractor employee will complete and sign the acknowledgment section and the contractor will record that an employee orientation has taken place. The orientation is valid for one year from the orientation date.

This orientation must be redone on an annual basis. The contractor company must keep a record of all orientations on file.

The following items must also be reviewed:

- Your rights and the Nova Scotia Occupational Health and Safety Act.
- A review of your company’s safety policy and program by the H&S Coordinator.
- WHMIS 2015/GHS awareness training, including labels and interpretation.
- A review and training in any “Trade Specific” High Hazard concerns, including Occupational Health and Safety Act and Regulations requirements.

Safe Work Permit Meeting

Prior to any "work" being done by a contractor, a Safe Work Permit Meeting must be held to establish and document safe procedures. These meetings are conducted by the Site Representative or the H&S Coordinator. Work must never begin before the Safe Work Permit Meeting has taken place and information conveyed to all employees.

An employee must review the instructions of the safe work permit meeting and sign the acknowledgment form. Where there is an established scope of work, location, conditions, hazards, and they will not change during a month, then a monthly safe work permit can be held.

A Safe Work Permit Meeting is scheduled to:

- Inform the Contractor of the Health and Safety hazards or requirements of the area in which they will be working. The Contractor site supervisor (or appropriate designate) is responsible to convey this information to all contract personnel working on the project.
- Ensure the contractor conforms and complies with any local rules for the area in which they will be working, The Site's Health and Safety Program and the Occupational Health and Safety Act and Regulations.
- Inform appropriate employees of the scope and schedule of the work being performed. Further specific information requirements are outlined on Form 124 "Safety Work Permit".

The contractor must visit the job site with a Site representative prior to the safe work permit meeting.

6-01 Appendix

- Safe Work Permit
- Acknowledgement of Training

SAFE WORK PERMIT (Form 124 B)

Date Held:______________________ P.O.:______________ Reqn.:___________ File No.:____________

Contractor:___________________________________ Sub Contractor:_____________________________

Dept.____________________________ Scope of Work: ____

NSL Coordinator/ ext: ___________ Start Date & Time: _____________ Est. Comp. Date: ___________

1. **Crane(s) Mobile Equipment Required:** Yes ☐ No ☐ Type of Equipment________________________

2. **Embedded Services Locate Request discussed:** Yes ☐ No ☐
   Clearance No.____

3. **Equipment and/or work area to be isolated:** Yes ☐ No ☐ If Yes Specify:_______________________

4. **Personal Protective Equipment to be worn, Specify:** Hard Hats ☐ Safety Boots ☐ Safety Glasses ☐ Fall Arrest Harness ☐ Hearing Protection ☐ Respiratory Protection ☐ Chemical Goggles ☐ High Visibility Vest ☐ Gloves ☐ Shield ☐ Chaps ☐ Other Specify:___________________________________

5. **Confined Space Entry:** Yes ☐ No ☐ (a confined space means a space if which, because of its construction, location, contents or work activity therein, the accumulation of a hazardous gas, vapour, dust or fume or the creation of an oxygen-deficient or oxygen-enriched atmosphere may occur.)
   Contractor to follow Confined Space Entry Procedure: Issued ☐ Procedure No. ___________________

6. **Area Gas Check Required** ☐ Specify Type ______________________ Contact: __________________

7. **Purging of Pipelines:** Yes ☐ No ☐ If Yes, procedure must be attached, Procedure No. ______________

8. **Additional Protection:** Safety Watch ☐ Fire Watch ☐ Other ___________________________________

9. **Road / Rail Restrictions:** Yes ☐ No ☐ If Yes, Contact ____

10. **ERP Procedures** discussed/issued Yes ☐ No ☐

11. **Incident Tracking Form Discussed** Yes ☐ No ☐ (in the event of an incident, environmental or Health and Safety related, an incident tracking form is to be submitted to the Site H&S Coordinator)

NOTES:____
____
____
____
____
____

This permit is no longer valid if the contractor/sub contractor does not start within 8 days of permit meeting or leaves the job site for more than 8 days. Any deviation from this permit must be confirmed with the NSLI Coordinator.

ACKNOWLEDGEMENT OF TRAINING

DATE___________

PRESENTER___________________

SUBJECT CONTRACTOR EMPLOYEE SITE ORIENTATION

EMPLOYEE:

1. I HAVE ATTENDED AN OVERVIEW OF THE NOVA SCOTIA LANDS INC. SITE CONTRACTOR HEALTH AND SAFETY PROGRAM, THE NOVA SCOTIA LANDS INC. SITE EMERGENCY RESPONSE PLANS, SITE LOCATION MAPS AND I UNDERSTAND MY RESPONSIBILITIES FOR HEALTH AND SAFETY WHILE WORKING ON THIS SITE.

2. I HAVE RECEIVED AN OVERVIEW AND A COPY OF THE HANDOUT YOUR RIGHTS, RESPONSIBILITIES AND THE NOVA SCOTIA OCCUPATIONAL HEALTH AND SAFETY ACT.

3. I UNDERSTAND THAT A COPY OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS, A TELEPHONE NUMBER FOR THE NOVA SCOTIA LABOUR AND ADVANCED EDUCATION, SITE WORKPLACE HEALTH AND SAFETY POLICY AND PROGRAM, HAVE BEEN MADE AVAILABLE FOR MY VIEWING.

4. A COPY OF THIS FORM IS TO BE KEPT ON FILE BY THE CONTRACTOR AND A COPY SENT TO THE SITE HEALTH AND SAFETY COORDINATOR.

EMPLOYEE SIGNITURE

____

EMPLOYER____________________