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Our File: 2005-0670
July 4th, 2005

Nunavut Water Board (NWB)
P.O. Box 379
Gjoa Haven, Nunavut
X0B 1J0

Attention: Ms. Phyllis Beaulieu, Manager Licensing, NWB

Dear Ms. Beaulieu,

**Re: Water Licence NWB3HAL0308
Sewage Lagoon Decommissioning, Hall Beach**

On behalf of our client, Community Government Services (CGS), Government of Nunavut (GN) and the Hamlet of Hall Beach, we like to inform the Board of the plan to decommission a sewage lagoon cell in Hall Beach.

The old sewage treatment facility for Hall Beach was a two-cell interconnected system located approximately 1.0 kilometre from the Hamlet. The two cells had a total area of 0.4 hectares. The smaller of the cells was constructed in 1998 to address the increase in sewage generated within the community.

As part of the construction of the current new sewage lagoon system, the old cells were isolated from each other. The smaller cell was incorporated into the new lagoon while the larger cell was abandoned. The larger cell has an approximate area of 4691 square metres and is currently not been used, so the need for decommissioning.

We have started work on the preliminary engineering and the development of the decommissioning plan for the sewage lagoon. We will submit the detail design as soon as it is available.

The Hamlet's current Water License NWB3HAL0308 requires that, "*The Licensee shall submit to the Board for approval an Abandonment and Restoration Plan at least six (6) months prior to abandoning any facilities and the construction of new facilities to replace existing ones*". We understand that the TROW report (attached), which outlines a decommissioning plan was received by the NWB.

Our client hopes to complete the restoration project within the 2005 summer construction season. FSC will be providing you with a final plan toward the end of July. We hope that you will be able to assist us with approvals so that decommissioning may begin in September.

If you have any further comments or questions, do not hesitate to contact me.

Yours truly,
FSC Architects & Engineers

A handwritten signature in black ink, appearing to be "Ron Kent".

Ron Kent, P. Eng.,
Manager, Environmental Engineering



Hall Beach Sewage Lagoon Decommissioning

OTCD00016949A

**Hall Beach
Sewage Lagoon
Decommissioning**

Prepared for:
**Government of Nunavut
Community & Government Services
P.O. Box 330
Cape Dorset, NU.
X0A 0C0**

| INTERNAL | |
|----------|----------|
| PC | abp - 39 |
| MA | |
| FO | |
| LA | |
| BS | |
| ST | |
| TA1 | |
| TA2 | |
| RC | |
| ED | |
| CH | |
| BRD | |
| EXT. | |

**Nunavut Water
Board**

JUL 14 2005

Public Registry

Trow Associates Inc.

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Ottawa, Ontario K2E 7J5
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E-mail: ottawa@trow.com
Web Site: www.trow.com

OTCD00016949A
January 2005

Table of Contents

| | |
|---|-----------|
| Table of Contents | i |
| 1.0 Introduction | 1 |
| 1.1. General | 1 |
| 1.2. Background | 1 |
| 1.3. Scope of Study | 1 |
| 1.4. Information Provided | 2 |
| 2.0 Contaminant Assessment | 3 |
| 2.1. Introduction | 3 |
| 2.2. Scope of Work | 3 |
| 2.3. Field Methodology & Observations | 3 |
| 2.4. Assessment Criteria | 5 |
| 2.5. Soil Results | 6 |
| 2.6. Groundwater Results | 6 |
| 2.7. Discussion of Results | 6 |
| 3.0 Proposed Abandonment Plan | 7 |
| 3.1. Drainage Patterns | 7 |
| 3.2. Cover Material | 7 |
| 3.3. Potential Granular Resources | 7 |
| 3.4. Capital Cost | 11 |
| 4.0 Conclusions and Recommendations | 12 |
| 4.1. Conclusions | 12 |
| 4.2. Recommendations | 12 |
| Appendices | |
| Appendix A: Borehole Logs | 1 |
| Appendix B: Analytical Summary Tables | 2 |
| Appendix C: Laboratory Certificates of Analysis | 3 |
| Appendix D: Class 'D' Cost Estimate | 4 |

1.0 Introduction

Trow Associates Inc. (Trow) was retained by the Government of Nunavut, Community & Government Services to undertake an Engineering Study to support the decommissioning of an unused sewage lagoon in the Hamlet of Hall Beach, Nunavut. The decommissioning study was completed as a requirement of their Water License.

1.1. General

The Hamlet of Hall Beach is located on the east shore of the Melville Peninsula, on the western shore of Foxe Basin, at latitude 68° 46' N and longitude 81° 12' W. It is in a zone of continuous permafrost and is located on sand and gravel raised beaches, with flat to gently rolling terrain studded by numerous lakes and ponds. It has a reported population of 543 people according to 1996 census.

1.2. Background

Prior to the construction of the new sewage lagoon system, domestic waste generated by the Hamlet was collected and placed in the abandon lagoon system. The old system was comprised of two (2) interconnected cells, and was located approximately 1.0 kilometre from the Hamlet. The second, smaller cell was constructed in 1998 to address the increase in sewage generated within the community. The two cells had a total area of approximately 0.4 hectares. The lagoons functioned as exfiltration lagoons, with semi-permeable granular berms allowing the exfiltration of the sewage during the summer months. The sewage discharge was intercepted by a system of ditches, which lead to wetlands treatment areas, which discharged, into the Foxe Basin.

As part of the construction of the new sewage lagoon system, the two cells have been isolated from each other, and the northern cell has been incorporated into the new lagoon system. Only the larger southern cell has been abandon and is the object of this study. The southern cell has an area of 4691 square metres.

1.3. Scope of Study

The purpose of the study is to assist in ensuring the abandon lagoon site is closed in a manner that is aesthetically acceptable with minimal health and environmental impacts.

The components of the Hall Beach Hamlet's Water License that are addressed by this Plan include the following:

- 1) Identify any sites in the vicinity of the lagoon that have been affected by waste spills;
- 2) Identify if site remediation has occurred or if outstanding remediation activities are required;

- 3) Identify the potential for leachate impact beyond the footprint of the lagoon;
- 4) Establish surface and sub-surface drainage patterns and prepare a grading plan for the placement of cover material;
- 5) Determine the thickness of sludge material;
- 6) Assess the potential for hazardous materials to exist within decommissioned sewage lagoon site; and,
- 7) Recommend the type and source of cover materials.

1.4. Information Provided

As part of the Hall Beach Planning Study, completed by Ferguson Simek Clark Engineers & Architects, in 2002, a topographic survey of the two cells was undertaken. The Department of Community and Government Services provided an existing site plan with contours for the lagoon site from this survey.

Sampling of sludge has been completed and analysed by the DCGS, and results were made available.

2.0 Contaminant Assessment

2.1. Introduction

A subsurface investigation was completed within and adjacent to the former sewage lagoon to determine if the lagoon sludge had adversely impacted the soil and groundwater underlying the lagoon or beyond the berms in a downgradient direction (i.e. towards Foxe Basin).

2.2. Scope of Work

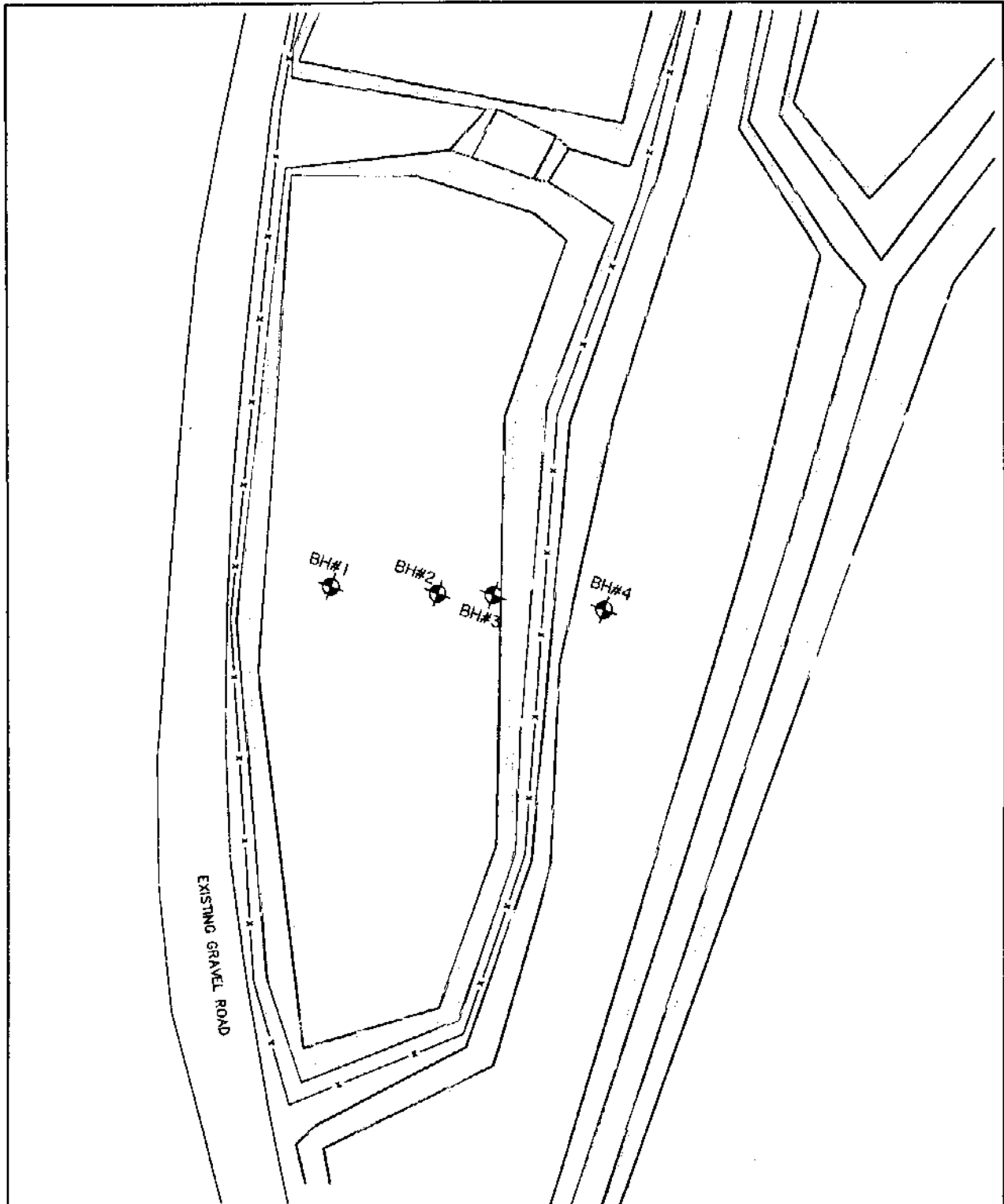
The scope of work for this component of the study included:

- 1) Review of the lagoon sludge analytical results that were previously coordinated and obtained by DCGS;
- 2) Completion of three boreholes within the former lagoon and one borehole beyond the lagoon berm in the downgradient direction;
- 3) Installation of groundwater monitoring wells in each of the boreholes;
- 4) Installation of a thermal couple in one of the monitoring wells (MW4);
- 5) Collection and submission of three soil samples from each borehole for detailed laboratory analysis;
- 6) Collection and submission of groundwater samples from each of the groundwater monitoring wells for detailed laboratory analysis; and,
- 7) Interpretation of the analytical results.

2.3. Field Methodology & Observations

Four 65 mm diameter boreholes were advanced to a maximum depth of 3.8 m using portable drilling equipment. The location of the boreholes/monitoring wells with respect to the former lagoon is shown in Figure A. During the drilling program, soil samples were collected on a continuous basis using a stainless steel, core barrel-sampling device. All soil samples were logged noting geological properties, moisture, colour, odour and any visual or olfactory indications of contamination. Borehole descriptions are presented in Appendix A – Borehole Logs.

Upon completion of the borehole, a 38 mm diameter PVC monitoring well was installed in each borehole. The annulus of the monitoring well screen was backfilled with an imported silica sand pack and a bentonite seal was placed at the ground surface. Monitoring well construction details are included with the Borehole Logs, and are presented in Appendix A.



Trow Associates Inc.

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| | | |
|------------------|---|-----------------------|
| SCALE 1:750 | CLIENT: COMMUNITY AND GOVERNMENT SERVICES | JOB NO. OTCD00016949A |
| DATE: 11/01/2005 | TITLE: BOREHOLE LOCATIONS | FIG - A |
| DRAWN: ABZ | | |

At the time of the drilling, there was approximately 0.1 m of sludge in the vicinity of the boreholes. Based on the field observations in MW-1, MW-2 and MW-3, the overburden material underlying the former lagoon consists of 0.4 to 0.6 m of sand and gravel with some sludge overlying 0.4 to 1.0 m of limestone cobbles. The cobble horizon was underlain by 1.0 to 1.4 m of silty clay followed by possible limestone bedrock (Appendix A). Beyond the lagoon berm (MW4), limestone gravel and cobbles extended from surface to a depth of 2.1 m. This unit was underlain by silty sand to a depth of 3.8 m where possible limestone bedrock was encountered. Based on field observations, there was no evidence to suggest that engineered fill or a basal liner was installed prior to its use as a sewage lagoon.

During the sampling program, three soil samples were collected from each borehole and submitted for laboratory analysis. In general, the samples were collected from: i) the surface; ii) the interface of the cobble/silty clay unit; and, iii) the interface of the silty clay/bedrock contact. This sampling profile allowed for a vertical assessment of potential impact of the underlying materials from the sewage sludge.

At the completion of the drilling program, groundwater was not encountered in the monitoring wells. However, during the drilling program, the friction of the drill bit caused the permafrost to melt. In anticipation that the monitoring wells may not yield sufficient groundwater, the melted permafrost was collected and is considered to be representative of groundwater conditions.

In order to assess the impact that the sewage lagoon had on the underlying soil and groundwater, other than domestic sewage waste, the representative soil and groundwater (i.e., melted permafrost) samples were submitted for metals, petroleum hydrocarbon and volatile organic compound (VOC) analysis.

2.4. Assessment Criteria

In terms of evaluating the analytical results obtained, the Government of Nunavut defaults to criteria established by the Canadian Council of Ministers of the Environment (CCME). For soil the CCME *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (2003) was used to compare the metals and VOC analytical results. The CCME has also established the *Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil* (2000), which is the federal remedial standard for petroleum impacted soils. The CCME and CWS criteria are based on four land use categories: i) agricultural; ii) residential/parkland; iii) commercial; and, iv) industrial. As this site is in an undeveloped area, distant from residential land, the most appropriate criteria for this site was considered to be industrial. The soil samples at the subject site varied between fine and coarse-grained materials and thus based on the field observations, the analytical results were compared to the coarse-grained criteria.

Although the groundwater in this area is not consumed, nor does it discharge to a water body that is used for consumption purposes, the groundwater results were compared to CCME *Canadian Water Quality Guidelines for Community Water Supplies* (1999) for comparative purposes only as the CCME has not established criteria for groundwater.

2.5. Soil Results

Twelve soil samples were collected from the boreholes on June 9-10, 2004 and submitted to Paracel Laboratories of Ottawa (Paracel) for the analysis of metals, VOCs, and Canada-Wide Standard petroleum hydrocarbons analysis. In addition, a sample of the sludge material was previously collected and submitted for metals analyses by the Analytical Services Unit at Queen's University.

The soil/sludge analytical results are included in Appendix B. Laboratory Certificates of Analysis are presented in Appendix C. The CCME criteria for all land uses were included in the tables for comparative purposes only.

Based on the laboratory analytical results from the soils/sludge samples, no exceedences of applicable federal criteria (apart from parkland criteria for the sludge material) were noted for the selected parameters within the lagoon and in the downgradient direction. As a result, no adverse soil impact in the lagoon area is anticipated.

2.6. Groundwater Results

Three groundwater samples were collected from MW1, MW2 and MW4 on June 10, 2004. As stated in Section 2.3, the wells were installed above the bedrock in permafrost. The water samples that were submitted for analysis represent melted permafrost that collected in the well during installation. Although this is not typically considered a representative groundwater sample, it is the only indication of groundwater quality that could be determined. The groundwater samples were submitted to Paracel for the analysis of metals, VOCs, and total petroleum hydrocarbons (TPH).

The groundwater analytical results are included in Appendix B. Laboratory Certificates of Analysis are presented in Appendix C. Based on the laboratory analytical results, no exceedences of applicable federal criteria were noted for the selected parameters. The exception to this was sodium in MW4, which is located outside of the sewage lagoon. It should be noted that the sodium criteria is based on aesthetic concerns, and is not a health-based criteria. As a result, no adverse impact to the groundwater in the lagoon area is anticipated.

2.7. Discussion of Results

Based on the laboratory analysis of the samples taken, the underlying soil was not adversely impacted. Therefore the potential for future impact beyond the lagoon site is minimal.

3.0 Proposed Abandonment Plan

Based on the conclusion from the soil and water sampling program that the risk of contamination is minimal, the proposed remediation plan for the lagoon cell is to fill the cell to cover the sludge, thereby encapsulating the sludge in frozen (permafrost) granular material. Final site cover serves several purposes: aesthetic improvements, reduce infiltration, site drainage, sludge stabilization through freezing.

3.1. Drainage Patterns

The lagoon is surrounded by a gravel road west and semi-permeable berms East that allowed the exfiltration of sewage eastward to an overland creeks which runs North through existing wet lands and eventually discharge to the Foxe Basin.

The placement of Fill and cover material will be used to alter the existing drainage patterns. It is proposed that fill and cover material will have an average slope of two percent starting from the east side of existing gravel road going eastward toward the creek. This will allow the water to sheet drain to the existing creek and reduce the amount of infiltration.

The East berm and south berm will be partially removed and used as fill material as shown on Sketch B.

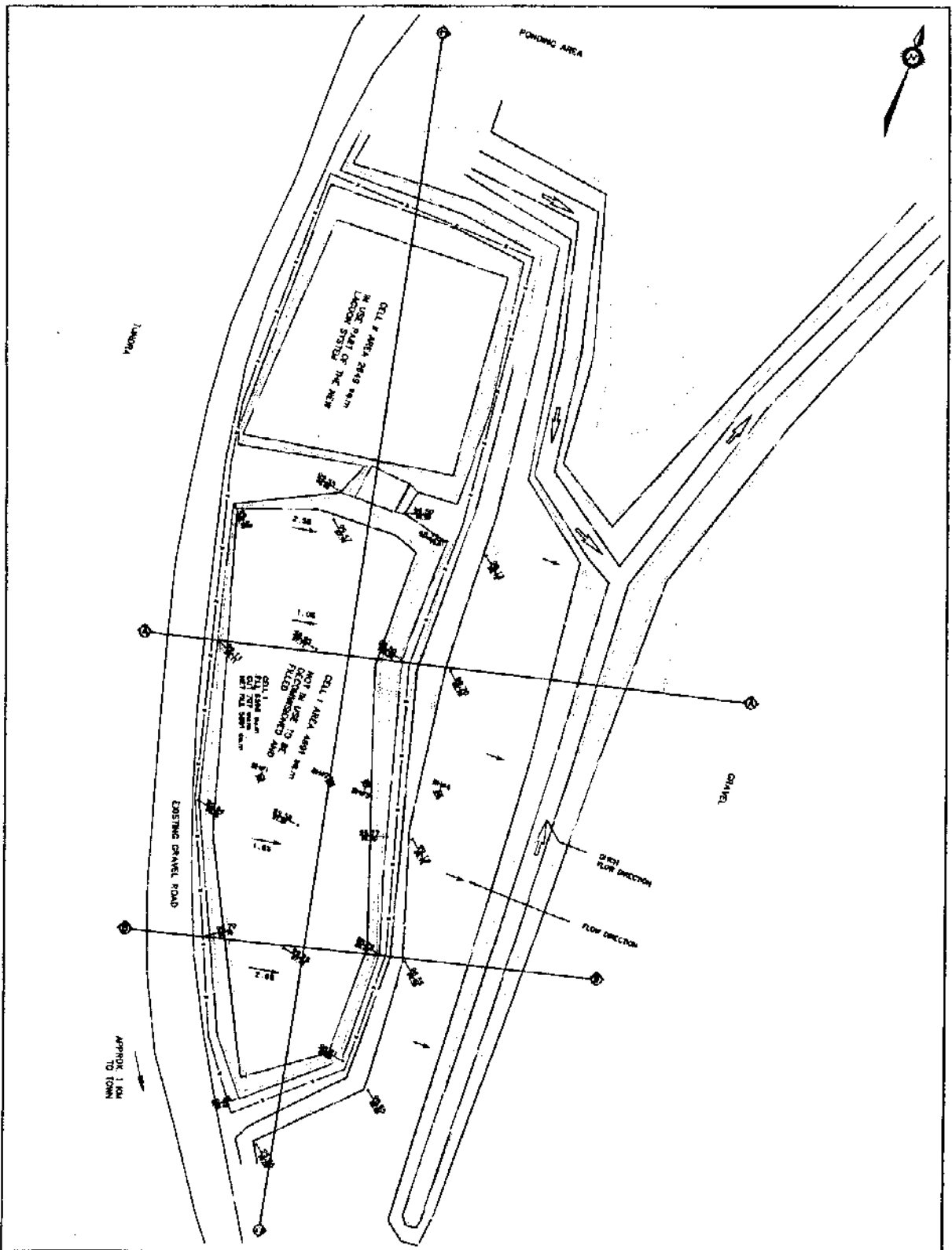
3.2. Cover Material


The old lagoon site should be backfilled with well graded granular material, to the grades as shown on Sketch C. The proposed grading will ensure positive drainage as described in Section 3.1. The proposed finished grades shall result in a minimum of 1.50 metres of granular material being applied to the lagoon site.

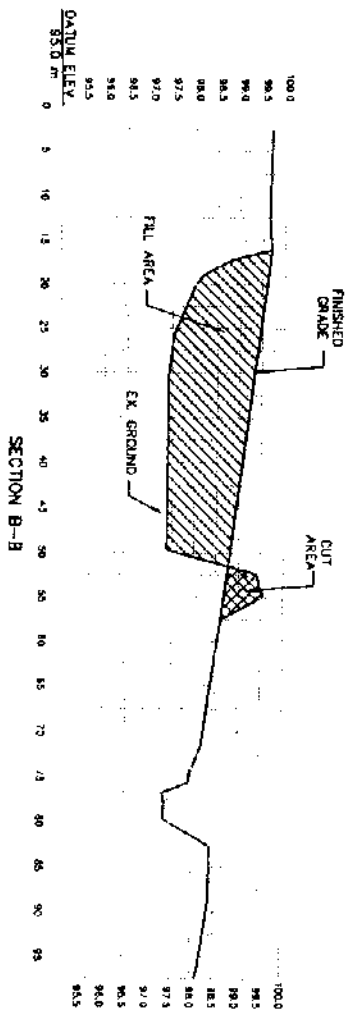
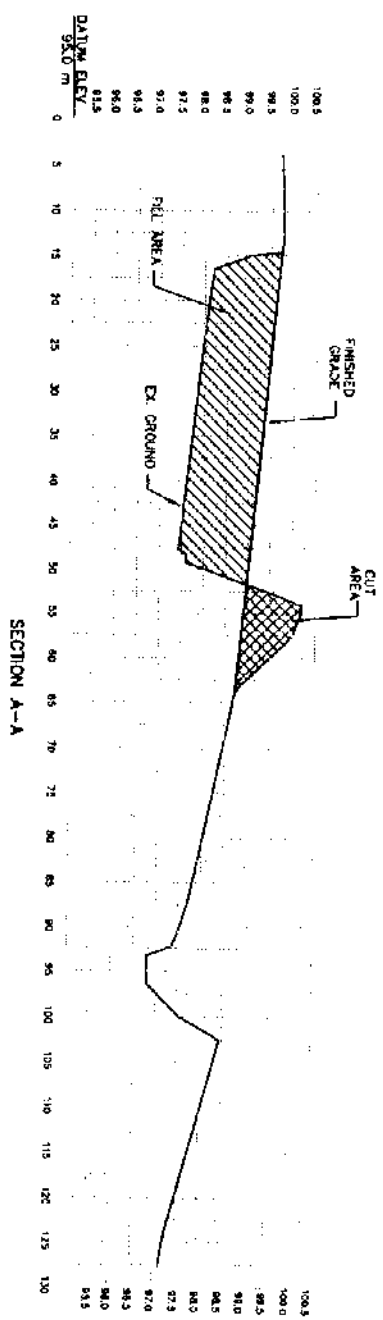
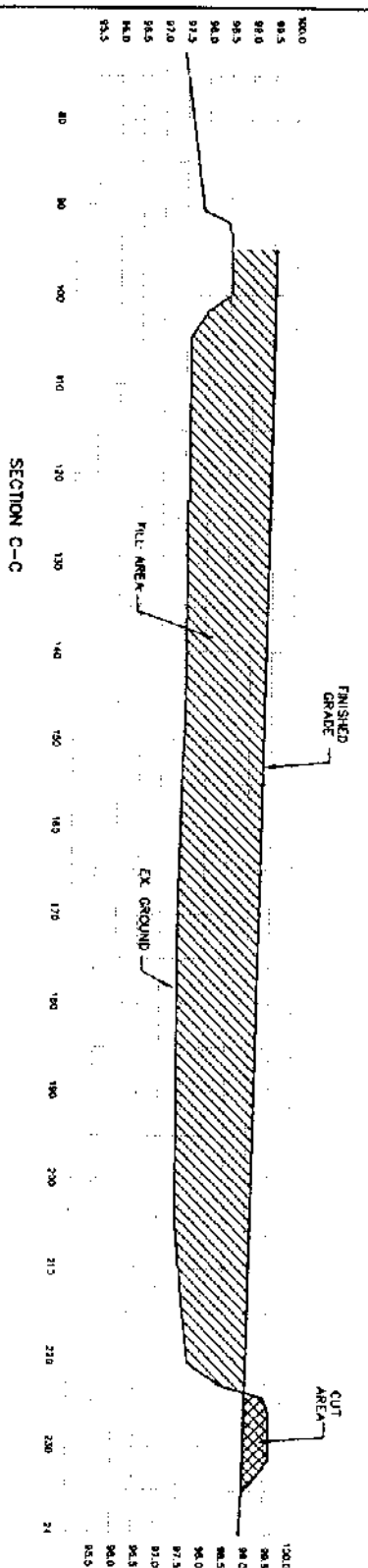
Based on the area and depth of the lagoon, from the survey provided, an estimated 6,600 cubic metres of cover material will be required. As described in Section 3.1, the east and south berms will be partially removed and the material can be use as cover material. This will generate in an estimated 700 cubic metres of fill, reducing the amount of needed fill material to approximately 5,900 cubic metres.


3.3. Potential Granular Resources

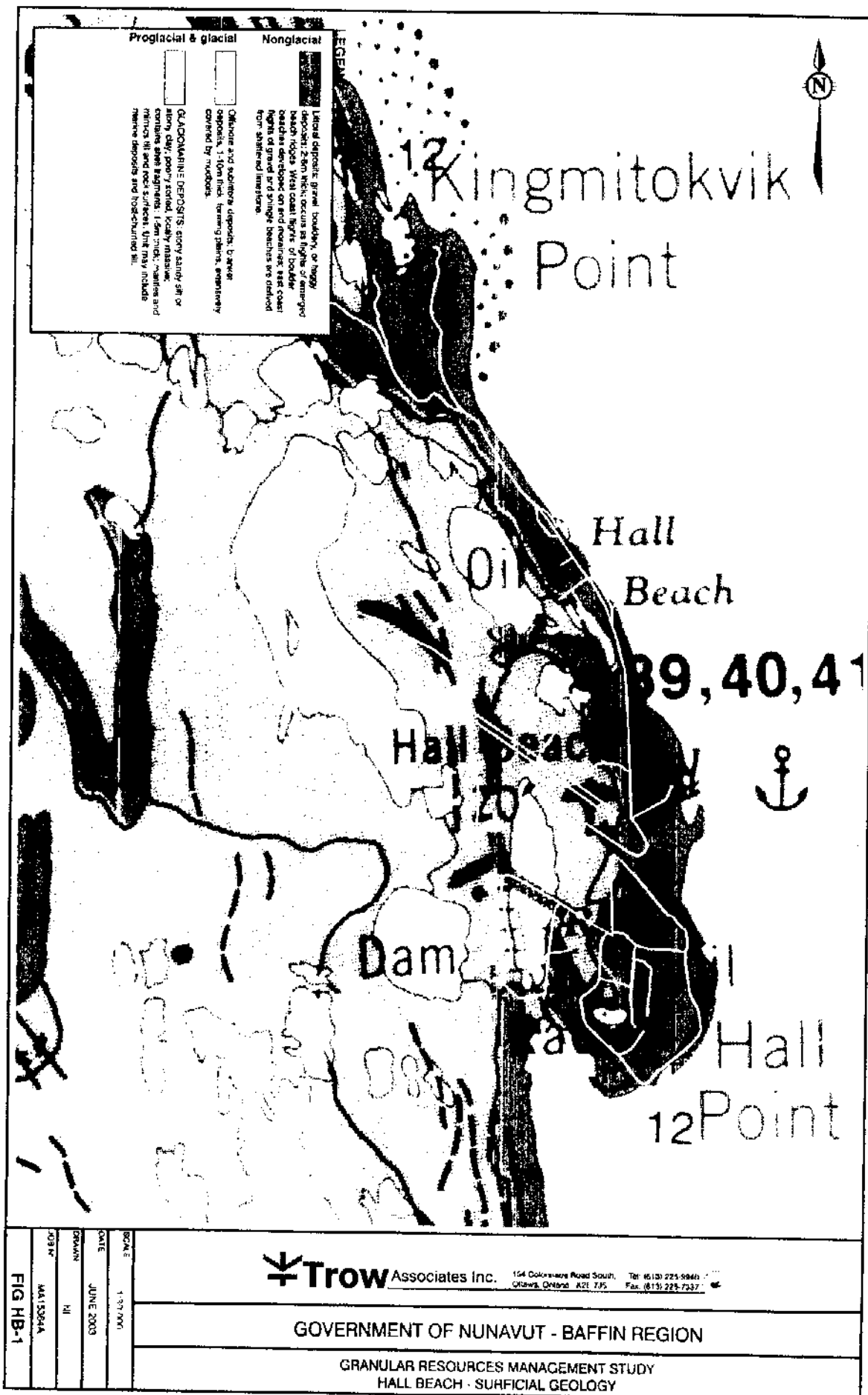
A study completed by Trow Associates Inc. in March 2004 reported on granular resources management for 12 communities in Baffin Region including Hall Beach Hamlet. The study indicated that non-glacial deposits of gravel and boulders are located along the shoreline. These deposits extend to the north as well as south of Hall Beach Hamlet see Figure HB-1. The flights of gravel and shingle beaches are derived from shattered limestone. As such, this material is expected to be a suitable granular resource.



| | |
|--|---|
|  155 Glenview Road Suite 700 Ottawa, Ontario K2E 7L8 Tel: (613) 228-8948 Fax: (613) 228-7797 | |
| CLIENT: | DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES |
| TITLE: | HALL BEACH OLD LAGOON DECOMMISSIONING |
| SCALE: | 1:750 |
| DATE: | 11/01/2005 |
| DRAWN: | AGZ |
| CHECKED: | |
| PROJECT: | OTCD00016949A |
| SKETCH B | |



| | |
|---|---|
|  Trow Associates Inc. 184 Colborne Road South, Tel: (913) 226-4999 Oshawa, Ontario K2E 7J6, Fax: (913) 226-7397 | |
| CLIENT: | DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES |
| TITLE: | HALL BEACH OLD LAGOON DECOMMISSIONING |
| SCALE: | H 1:500 V 1:120 |
| DATE: | 11/01/2005 |
| DRAWN: | ABZ |
| CHECKED: | OTCD00016949A |
| SKETCH C | |



The study noted that glaciomarine deposits are located adjacent to and west of the coastal non-glacial deposits. These deposits comprise of stony sandy silt or stony clay and are expected to be less suitable for making select grades compared to the offshore deposits.

3.4. Capital Cost

The following Class 'D' cost estimate is for the required material and grading work needed for Hall Beach Lagoon site, and includes a 20% contingency. The estimated cost for the required work for the abandonment of the Hall Beach Sewage lagoon is \$275,000.00. A detailed breakdown of the cost estimate is included in Appendix "D".

4.0 Conclusions and Recommendations

4.1. Conclusions

From the analytical results from the 12 soil samples for metals, VOCs and hydrocarbons, the following can be concluded:

- 1) The underlying soil was not adversely impacted , and
- 2) The potential for future impact beyond the lagoon is minimal

4.2. Recommendations

Base on the conclusions from the soil sampling and analysis, the following is recommended:

- 1) The sludge should be encapsulated with granular cover to promote stabilization through freezing,
- 2) The top of the cover material should be graded as per the proposed grading plan to minimize the potential infiltration,
- 3) No long term monitoring is required,
- 4) The existing wells should be abandoned.

Trow Associates Inc.

Steven Burden
Senior Engineer
Civil Division

Abdal Abo Zarad
Project Engineer
Civil Division

Chris Kimmerly
Division Manager
GeoEnvironmental Division

Appendix A: Borehole Logs

Project No: OTCD00016949A

Project: Sewage Lagoon

Client:

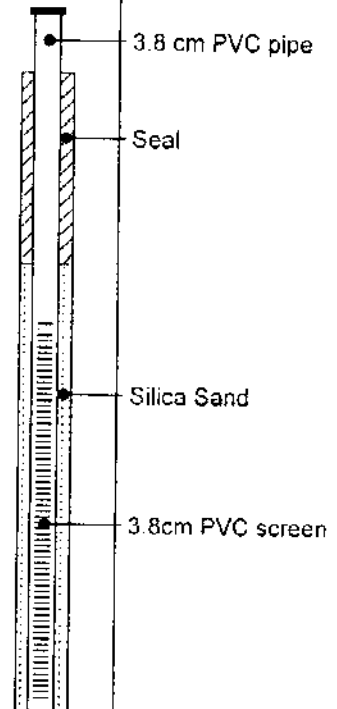
Location: Hall Beach Hamlet, Nunavut

Log of Borehole: MW1



Field Sup: V. Freitag

| SUBSURFACE PROFILE | | | SAMPLE | | | | VOC Concentration | Well Data | Lab Analysis |
|--------------------|--------|--|--------|--------|------|----------|-------------------|-----------|--------------|
| Depth | Symbol | Description | Elev. | Number | Type | Recovery | ppm | | |
| | | | | | | | 125 250 375 | | |
| | | | | | | | %LEL | | |
| | | | | | | | 10 30 50 70 90 | | |
| ft m | | | | | | | | | |
| -1 | | Ground Surface | 0.0 | | | | | | |
| 0 | | GRAVEL | | MJ1 | | | | | |
| 1 | | sand and gravel with pockets of grey waste, frozen, moderate to no odour | -0.4 | CBS2 | | | | | |
| 2 | | | -0.6 | CBS3 | | | | | |
| 3 | | SILTY SAND GRAVEL | | CBS5 | | | | | |
| 4 | | silty sand and gravel, frozen, grey, no odour | | CBS6 | | | | | |
| 5 | | COBBLES | | CBS7 | | | | | |
| 6 | | limestone fragments with some silty clay seams, grey, frozen | -1.6 | CBS8 | | | | | |
| 7 | | SILTY CLAY | | MJ9 | | | | | |
| 8 | | green/grey, frozen, with limestone fragments, no odour | | CBS10 | | | | | |
| 9 | | | | CBS11 | | | | | |
| 10 | | | | MJ12 | | | | | |
| 11 | | POSSIBLE BEDROCK | -3.0 | CBS13 | | | | | |
| 12 | | limestone | | | | | | | |
| 13 | | End of Borehole | | | | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | | | |



Samples MJ1, MJ9 & MJ12 submitted for TPH, VOC and metals analysis

Drill Method: Coring with casing

Drill Date: June 10, 2004

Hole Size: 7.6 cm

Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ontario K2E 7J5

Datum:

Checked by:

Sheet: 1 of 1

Project No: OTCD00016949A

Project: Sewage Lagoon

Client:

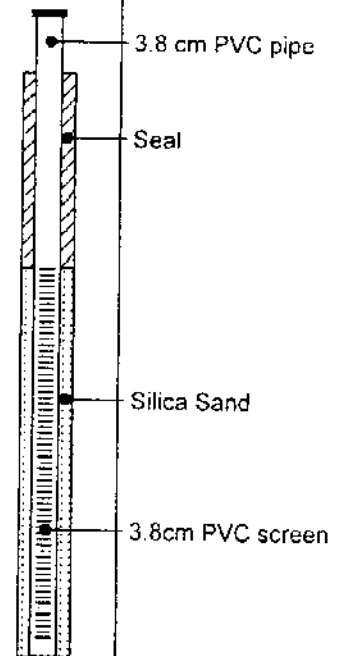
Location: Hall Beach Hamlet, Nunavut

Log of Borehole: MW2



Field Sup: V. Freitag

| SUBSURFACE PROFILE | | | SAMPLE | | | | VOC Concentration | Well Data | Lab Analysis |
|--------------------|--------|--------------------------|--------|--------|------|----------|-------------------|-----------|--------------|
| Depth: | Symbol | Description | Elev. | Number | Type | Recovery | ppm | | |
| | | | | | | | 125 250 375 | | |
| | | | | | | | %LEL | | |
| | | | | | | | 10 30 50 70 90 | | |
| -1 | | Ground Surface | 0.0 | | | | | | |
| 0 | | SAND AND GRAVEL | | | | | | | |
| 1 | | sand and gravel with | | MJ1 | | | | | |
| 2 | | pockets of grey waste, | -0.6 | CBS2 | | | | | |
| 3 | | frozen, moderate to no | | CBS3 | | | | | |
| 4 | | odour | | CBS5 | | | | | |
| 5 | | COBBLES | | CBS6 | | | | | |
| 6 | | limestone fragments | -1.4 | | | | | | |
| 7 | | with some silty clay | | | | | | | |
| 8 | | seams, grey, frozen | | | | | | | |
| 9 | | SILTY CLAY | | MJ7 | | | | | |
| 10 | | green/grey, frozen, with | | CBS8 | | | | | |
| 11 | | limestone fragments, | | CBS9 | | | | | |
| 12 | | faint to no odour | | CBS10 | | | | | |
| 13 | | | | | | | | | |
| 14 | | POSSIBLE BEDROCK | -2.2 | MJ11 | | | | | |
| 15 | | limestone | | | | | | | |
| | | End of Borehole | | | | | | | |



Samples MJ1, MJ7 & MJ11 submitted for TPH, VOC and metals analysis

Drill Method: Coring with casing

Drill Date: June 9, 2004

Hole Size: 7.6 cm

Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ontario K2E 7J5

Datum:

Checked by:

Sheet: 1 of 1

Project No: OTCD00016949A

Project: Sewage Lagoon

Client:

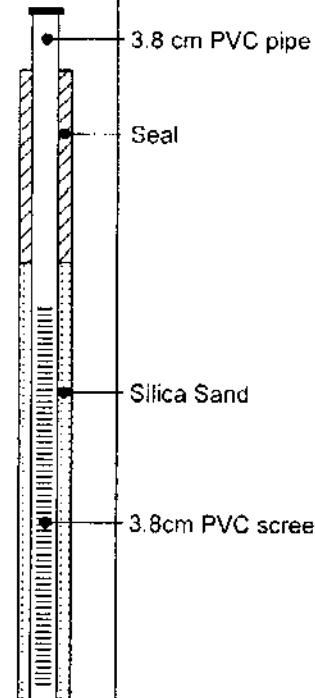
Location: Hall Beach Hamlet, Nunavut

Log of Borehole: MW3



Field Sup: V. Freitag

| SUBSURFACE PROFILE | | | SAMPLE | | | | VOC Concentration | Well Data | Lab Analysis |
|--------------------|--------|----------------------------|--------|--------|------|----------|-------------------|-----------|--------------|
| Depth | Symbol | Description | Elev. | Number | Type | Recovery | ppm | | |
| | | | | | | | 125 250 375 | | |
| | | | | | | | %LEL | | |
| | | | | | | | 10 30 50 70 90 | | |
| -1 | | Ground Surface | 0.0 | | | | | | |
| 0 | | SILTY SAND + GRAVEL | | | | | | | |
| 1 | | silty sand and gravel | | MJ1 | | | | | |
| 2 | | with pockets of grey | | | | | | | |
| 3 | | waste and cobbles, | | | | | | | |
| 4 | | frozen, strong odour | | | | | | | |
| 5 | | | -1.3 | CBS2 | | | | | |
| 6 | | | | CBS3 | | | | | |
| 7 | | COBBLES | | | | | | | |
| 8 | | limestone fragments | | | | | | | |
| 9 | | with some silty clay | | | | | | | |
| 10 | | seams, grey, frozen | -1.7 | CBS6 | | | | | |
| 11 | | | | CBS7 | | | | | |
| 12 | | SILTY CLAY | | | | | | | |
| 13 | | green/grey, frozen, with | | MJ8 | | | | | |
| 14 | | limestone fragments, | | | | | | | |
| 15 | | faint to no odour | | CBS9 | | | | | |
| 16 | | | -2.7 | CBS10 | | | | | |
| 17 | | POSSIBLE BEDROCK | | | | | | | |
| 18 | | limestone | 3.0 | MJ11 | | | | | |
| 19 | | End of Borehole | | | | | | | |



Samples MJ1, MJ8 & MJ11 submitted for TPH, VOC and metals analysis

Drill Method: Coring with casing

Drill Date: June 9, 2004

Hole Size: 7.6 cm

Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ontario K2E 7J5

Datum:

Checked by:

Sheet: 1 of 1

Project No: OTCD00016949A

Project: Sewage Lagoon

Client:

Location: Hall Beach Hamlet, Nunavut

Log of Borehole: MW4



Field Sup: V. Freitag

| SUBSURFACE PROFILE | | | SAMPLE | | | | VOC Concentration ppm 125 250 375 | Well Data | Lab Analysis |
|--------------------|--------|---|--------|--------|------|----------|---|-----------|--------------|
| Depth | Symbol | Description | Elev. | Number | Type | Recovery | %LEL 10 30 50 70 90 | | |
| -1 m | | Ground Surface | 0.0 | | | | | | |
| 0 | | GRAVEL | | | | | | | |
| 1 | | limestone gravel, frozen, no odour | | MJ1 | | | | | |
| 2 | | | | CBS2 | | | | | |
| 3 | | | | CBS3 | | | | | |
| 4 | | | | CBS4 | | | | | |
| 5 | | | | CBS5 | | | | | |
| 6 | | | -1.8 | CBS6 | | | | | |
| 7 | | COBBLES | | | | | | | |
| 8 | | limestone fragments, strong odour | -2.1 | MJ7 | | | | | |
| 9 | | | | CBS8 | | | | | |
| 10 | | SILTY SAND | | | | | | | |
| 11 | | green/grey, with gravel and limestone fragments, frozen, faint to no odour | | CBS9 | | | | | |
| 12 | | | | CBS10 | | | | | |
| 13 | | | | MJ11 | | | | | |
| 14 | | | | CBS12 | | | | | |
| 15 | | | | CBS13 | | | | | |
| 16 | | | -3.8 | | | | | | |
| 17 | | POSSIBLE BEDROCK | | | | | | | |
| 18 | | limestone | -4.0 | CBS14 | | | | | |
| 19 | | End of Borehole | | | | | | | |

Drill Method: Coring with casing

Drill Date: June 10, 2004

Hole Size: 7.6 cm

Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ontario K2E 7J5

Datum:

Checked by:

Sheet: 1 of 1

Appendix B: Analytical Summary Tables

TABLE 4
GROUNDWATER ANALYTICAL RESULTS (mg/L)
METALS PARAMETERS

| Sample ID Sample Date (dd/mm/yy) | | MW1 10/06/04 | MW2 09/06/04 | MW4 10/06/04 |
|-------------------------------------|-------------------------|-----------------|-----------------|-----------------|
| Parameter | CCME Community Water | | | |
| Aluminum | 0.1 | 0.02 | < 0.01 | 0.02 |
| Antimony | 0.006 | < 0.001 | < 0.001 | < 0.001 |
| Arsenic | 0.025 | < 0.01 | < 0.01 | < 0.01 |
| Barium | 1 | < 0.01 | < 0.01 | < 0.01 |
| Beryllium | nv | < 0.001 | < 0.001 | < 0.001 |
| Boron | 5 | 0.1 | 0.3 | 0.5 |
| Cadmium | 0.005 | < 0.001 | < 0.001 | < 0.001 |
| Calcium | nv | 50 | 70 | 75 |
| Chromium | 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Cobalt | nv | < 0.005 | < 0.005 | < 0.005 |
| Copper | 1 | < 0.005 | < 0.005 | 0.01 |
| Iron | 0.3 | < 0.2 | < 0.2 | 0.2 |
| Lead | 0.01 | < 0.001 | < 0.001 | < 0.001 |
| Magnesium | nv | 15 | 26 | 55 |
| Manganese | 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Molybdenum | nv | < 0.005 | 0.005 | 0.02 |
| Nickel | nv | 0.01 | 0.01 | 0.015 |
| Potassium | nv | 6 | 19 | 44 |
| Selenium | 0.01 | < 0.005 | < 0.005 | < 0.005 |
| Silver | nv | < 0.001 | < 0.001 | < 0.001 |
| Sodium | 200 | 52 | 160 | 500 |
| Thallium | nv | < 0.001 | < 0.001 | < 0.001 |
| Tin | nv | < 0.01 | < 0.01 | < 0.01 |
| Vanadium | nv | < 0.01 | < 0.01 | < 0.01 |
| Zinc | 5 | < 0.02 | 0.02 | 0.02 |
| Mercury | 0.001 | < 0.0001 | < 0.0001 | < 0.0001 |
| Chromium, hexavalent | nv | < 0.01 | < 0.01 | < 0.01 |

Notes:

1) *Canadian Environmental Quality Guidelines* (revised 2002)

2) nv - no value stipulated in guideline for this parameter

Bold and Shaded - exceeds applicable CCME criteria

TABLE 5
GROUNDWATER ANALYTICAL RESULTS (mg/L)
PETROLEUM HYDROCARBON PARAMETERS

| Sample ID Sample Date (dd/mm/yy) | | MW1 10/06/04 | MW2 09/06/04 | MW4 10/06/04 |
|-------------------------------------|-------------------------|-----------------|-----------------|-----------------|
| Parameter | CCME Community Water | | | |
| TPH (gasoline/diesel) | nv | < 0.3 | < 0.5 | < 0.3 |
| TPH (heavy oil) | nv | < 0.9 | NA | < 1.0 |

Notes:

- 1) *Canadian Environmental Quality Guidelines* (revised 2002)
- 2) nv - no value stipulated in guideline for this parameter
- 3) NA - Not analysed

TABLE 6
GROUNDWATER ANALYTICAL RESULTS (mg/L)
VOLATILE ORGANIC COMPOUND PARAMETERS

| Sample ID Sample Date (dd/mm/yy) | | MW1 10/06/04 | MW2 09/06/04 | MW4 10/06/04 |
|-------------------------------------|-------------------------|-----------------|-----------------|-----------------|
| Parameter | CCME Community Water | | | |
| Benzene | 0.005 | < 0.0005 | < 0.0005 | < 0.0005 |
| Bromodichloromethane | nv | < 0.0004 | < 0.0004 | < 0.0004 |
| Bromoform | nv | < 0.0008 | < 0.0008 | < 0.0008 |
| Bromomethane | nv | < 0.001 | < 0.001 | < 0.001 |
| Carbon Tetrachloride | 0.005 | < 0.0005 | < 0.0005 | < 0.0005 |
| Chlorobenzene | 0.03 | < 0.0004 | < 0.0004 | < 0.0004 |
| Chloroethane | nv | < 0.001 | < 0.001 | < 0.001 |
| Chloroform | nv | < 0.0006 | < 0.0006 | < 0.0006 |
| Chloromethane | nv | < 0.003 | < 0.003 | < 0.003 |
| Dibromochloromethane | nv | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,2-Dibromoethane | nv | < 0.001 | < 0.001 | < 0.001 |
| o-Dichlorobenzene | 0.003 | < 0.0004 | < 0.0004 | < 0.0004 |
| m-Dichlorobenzene | nv | < 0.0004 | < 0.0004 | < 0.0004 |
| p-Dichlorobenzene | 0.001 | < 0.0004 | < 0.0004 | < 0.0004 |
| 1,1-Dichloroethane | nv | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,2-Dichloroethane | 0.005 | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,1-Dichloroethylene | 0.014 | < 0.0006 | < 0.0006 | < 0.0006 |
| c-1,2-Dichloroethylene | nv | < 0.0004 | < 0.0004 | < 0.0004 |
| t-1,2-Dichloroethylene | nv | < 0.001 | < 0.001 | < 0.001 |
| 1,2-Dichloropropane | nv | < 0.0007 | < 0.0007 | < 0.0007 |
| c-1,3-Dichloropropene | nv | < 0.0004 | < 0.0004 | < 0.0004 |
| t-1,3-Dichloropropene | nv | < 0.0005 | < 0.0005 | < 0.0005 |
| Ethylbenzene | 0.0024 | < 0.0005 | < 0.0005 | < 0.0005 |
| Methylene Chloride | 0.05 | < 0.004 | < 0.004 | < 0.004 |
| Styrene | nv | < 0.0004 | 0.0048 | < 0.0004 |
| 1,1,1,2-Tetrachloroethane | nv | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,1,2,2-Tetrachloroethane | nv | < 0.0006 | < 0.0006 | < 0.0006 |
| Tetrachloroethylene | 0.03 | < 0.0005 | < 0.0005 | < 0.0005 |
| Toluene | 0.024 | < 0.0005 | 0.001 | < 0.0005 |
| 1,1,1-Trichloroethane | nv | < 0.0004 | < 0.0004 | < 0.0004 |
| 1,1,2-Trichloroethane | nv | < 0.0006 | < 0.0006 | < 0.0006 |
| Trichloroethylene | 0.05 | < 0.0004 | < 0.0004 | < 0.0004 |
| Trichlorofluoromethane | nv | < 0.001 | < 0.001 | < 0.001 |
| 1,3,5-Trimethylbenzene | nv | < 0.0005 | < 0.0005 | < 0.0005 |
| Vinyl Chloride | 0.002 | < 0.0005 | < 0.0005 | < 0.0005 |
| Xylenes | 0.3 | < 0.0015 | < 0.0015 | < 0.0015 |

Notes:

1) Canadian Environmental Quality Guidelines (revised 2002)

2) nv - no value stipulated in guideline for this parameter

**Appendix C:
Laboratory Certificates of
Analysis**

PARACEL **Laboratories Ltd.**

Environmental & Indoor Air Quality

300-2319 St. Laurent Blvd.
Ottawa ON K1G 4J8
Phone: (613) 731-9577
Fax: (613) 731-9064
Toll Free: 800-7491947
email: paracel@paracellabs.com

Order #: J2284

Certificate of Analysis

Trow Associates Inc.

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Attn: Mr. Chris Kimmerly

Phone: (613)-225-9940
Fax: (613)-225-7337

Client PO: **OTCO00016949A**

Project: **Sewage Lagoon Hall Beach**
Custody #: **16643**

Report Date: 25-Jun-2004
Order Date: 21-Jun-2004

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

| Paracel ID | Client ID |
|-------------------|------------------|
| J2284.1 | BH1/MW1 |
| J2284.2 | BH2/MW2 |
| J2284.3 | BH4/MW4 |

Approved By: _____ Dale Robertson, B.Sc.
Laboratory Director

Any use of these test results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work,
and that our employees or agents shall not under any circumstance be liable to you in connection with this work

Certificate of Analysis

Client: Trow Associates Inc.

Client PO: OTC000016949A

Report Date: 25-Jun-2004

Order Date: 21-Jun-2004

Project: Sewage Lagoon Hall Beach

Analysis Summary Table

| Analysis | Method Reference/Description |
|----------------------|------------------------------------|
| Metals | EPA 200.8 - ICP-MS |
| Mercury | EPA 7470A - CVAA |
| Chromium, hexavalent | based on EPA 7196A - colourimetric |
| TPH (gasoline) | E3421 - P&T GC-FID |
| TPH (diesel) | E3420 - GC-FID |
| TPH (heavy oils) | Based on EPA 413 - gravimetric |
| VOCs | EPA 624 - P&T GC-MS |

n/a: not applicable

MDL: Method Detection Limit

Sample/Test Specific Notes

| SampleID | Analysis | Note |
|----------|------------------|--|
| BH1/MW1 | TPH (heavy oils) | elevated detection limits due to limited sample amount |
| BH2/MW2 | TPH (diesel) | elevated detection limits due to limited sample amount |
| BH4/MW4 | TPH (heavy oils) | elevated detection limits due to limited sample amount |

Certificate of Analysis

Client: Trow Associates Inc.

Report Date: 25-Jun-2004

Client PO: OTC000016949A

Order Date: 21-Jun-2004

Project: Sewage Lagoon Hall Beach

Matrix: Water

Sample Date: 10-Jun-2004

| Parameter | MDL/Units | BH1/MW1 | BH2/MW2 | BH4/MW4 |
|----------------------|-------------|----------|----------|----------|
| | | J2284.1 | J2284.2 | J2284.3 |
| Aluminum | 0.01 mg/L | 0.02 | < 0.01 | 0.02 |
| Antimony | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| Arsenic | 0.01 mg/L | < 0.01 | < 0.01 | < 0.01 |
| Barium | 0.01 mg/L | < 0.01 | < 0.01 | < 0.01 |
| Beryllium | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| Boron | 0.05 mg/L | 0.10 | 0.30 | 0.50 |
| Cadmium | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| Calcium | 0.2 mg/L | 50 | 70 | 75 |
| Chromium | 0.05 mg/L | < 0.05 | < 0.05 | < 0.05 |
| Cobalt | 0.005 mg/L | < 0.005 | < 0.005 | < 0.005 |
| Copper | 0.005 mg/L | < 0.005 | < 0.005 | 0.010 |
| Iron | 0.2 mg/L | < 0.2 | < 0.2 | 0.2 |
| Lead | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| Magnesium | 0.2 mg/L | 15 | 26 | 55 |
| Manganese | 0.05 mg/L | < 0.05 | < 0.05 | < 0.05 |
| Molybdenum | 0.005 mg/L | < 0.005 | 0.005 | 0.020 |
| Nickel | 0.005 mg/L | 0.010 | 0.010 | 0.015 |
| Potassium | 0.2 mg/L | 6.0 | 19 | 44 |
| Selenium | 0.005 mg/L | < 0.005 | < 0.005 | < 0.005 |
| Silver | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| Sodium | 0.2 mg/L | 52 | 160 | 500 |
| Thallium | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| Tin | 0.01 mg/L | < 0.01 | < 0.01 | < 0.01 |
| Vanadium | 0.01 mg/L | < 0.01 | < 0.01 | < 0.01 |
| Zinc | 0.02 mg/L | < 0.02 | 0.02 | 0.02 |
| Mercury | 0.0001 mg/L | < 0.0001 | < 0.0001 | < 0.0001 |
| Chromium, hexavalent | 0.01 mg/L | < 0.01 | < 0.01 | < 0.01 |
| TPH (gasoline) | 0.2 mg/L | < 0.2 | < 0.2 | < 0.2 |
| TPH (diesel) | 0.1 mg/L | < 0.1 | < 0.3 | < 0.1 |
| TPH (heavy oil) | 0.5 mg/L | < 0.9 | | < 1.0 |

Certificate of Analysis

Client: Trow Associates Inc.

Report Date: 25-Jun-2004

Client PO: OTC00016949A

Order Date: 21-Jun-2004

Project: Sewage Lagoon Hall Beach

| | | BH1/MH1 | BH2/MH2 | BH4/MH4 |
|---------------------------|-------------|----------|----------|----------|
| | | J2284.1 | J2284.2 | J2284.3 |
| Benzene | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| Bromodichloromethane | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |
| Bromoform | 0.0008 mg/L | < 0.0008 | < 0.0008 | < 0.0008 |
| Bromomethane | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| Carbon Tetrachloride | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| Chlorobenzene | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |
| Chloroethane | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| Chloroform | 0.0006 mg/L | < 0.0006 | < 0.0006 | < 0.0006 |
| Chloromethane | 0.003 mg/L | < 0.003 | < 0.003 | < 0.003 |
| Dibromochloromethane | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,2-Dibromoethane | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| m-Dichlorobenzene | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |
| o-Dichlorobenzene | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |
| p-Dichlorobenzene | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |
| 1,1-Dichloroethane | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,2-Dichloroethane | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,1-Dichloroethylene | 0.0006 mg/L | < 0.0006 | < 0.0006 | < 0.0006 |
| c-1,2-Dichloroethylene | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |
| t-1,2-Dichloroethylene | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| 1,2-Dichloropropane | 0.0007 mg/L | < 0.0007 | < 0.0007 | < 0.0007 |
| c-1,3-Dichloropropene | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |
| t-1,3-Dichloropropene | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| Ethylbenzene | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| Methylene Chloride | 0.004 mg/L | < 0.004 | < 0.004 | < 0.004 |
| Styrene | 0.0004 mg/L | < 0.0004 | 0.0048 | < 0.0004 |
| 1,1,1,2-Tetrachloroethane | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,1,2,2-Tetrachloroethane | 0.0006 mg/L | < 0.0006 | < 0.0006 | < 0.0006 |
| Tetrachloroethylene | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| Toluene | 0.0005 mg/L | < 0.0005 | 0.0010 | < 0.0005 |
| 1,1,1-Trichloroethane | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |

Certificate of Analysis

Report Date: 25-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC00016949A

Project: Sewage Lagoon Hall Beach

| | | BH1/MW1 | BH2/MW2 | BR4/MW4 |
|------------------------|-------------|----------|----------|----------|
| | | J2284.1 | J2284.2 | J2284.3 |
| 1,1,2-Trichloroethane | 0.0006 mg/L | < 0.0006 | < 0.0006 | < 0.0006 |
| Trichloroethylene | 0.0004 mg/L | < 0.0004 | < 0.0004 | < 0.0004 |
| Trichlorofluoromethane | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| 1,3,5-Trimethylbenzene | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| Vinyl Chloride | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| m/p-Xylene | 0.001 mg/L | < 0.001 | < 0.001 | < 0.001 |
| o-Xylene | 0.0005 mg/L | < 0.0005 | < 0.0005 | < 0.0005 |
| 1,4-Bromofluorobenzene | surrogate | 103% | 98% | 99% |
| Dibromofluoromethane | surrogate | 100% | 102% | 101% |
| Toluene-d8 | surrogate | 97% | 95% | 96% |

Certificate of Analysis

Report Date: 25-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC000016949A

Project: Sewage Lagoon Hall Beach

QA/QC Results

| | Blank | Spike (QC Limits) | Duplicate | |
|----------------------|---------------|-------------------|-----------|----------|
| Aluminum | < 0.01 mg/L | 103% (70 - 130%) | 0.06 | 0.06 |
| Antimony | < 0.001 mg/L | 91% (70 - 130%) | < 0.001 | < 0.001 |
| Arsenic | < 0.01 mg/L | 99% (70 - 130%) | < 0.01 | < 0.01 |
| Barium | < 0.01 mg/L | 92% (70 - 130%) | 0.02 | 0.02 |
| Beryllium | < 0.001 mg/L | 101% (70 - 130%) | < 0.001 | < 0.001 |
| Boron | < 0.05 mg/L | 95% (70 - 130%) | < 0.05 | < 0.05 |
| Cadmium | < 0.001 mg/L | 98% (70 - 130%) | < 0.001 | < 0.001 |
| Chromium | < 0.05 mg/L | 102% (70 - 130%) | < 0.05 | < 0.05 |
| Cobalt | < 0.005 mg/L | 103% (70 - 130%) | < 0.005 | < 0.005 |
| Copper | < 0.005 mg/L | 100% (70 - 130%) | 0.010 | 0.015 |
| Lead | < 0.001 mg/L | 95% (70 - 130%) | 0.001 | 0.001 |
| Manganese | < 0.05 mg/L | 105% (70 - 130%) | < 0.05 | < 0.05 |
| Molybdenum | < 0.005 mg/L | 97% (70 - 130%) | < 0.005 | < 0.005 |
| Nickel | < 0.005 mg/L | 99% (70 - 120%) | < 0.005 | < 0.005 |
| Selenium | < 0.005 mg/L | 100% (70 - 130%) | < 0.005 | < 0.005 |
| Silver | < 0.001 mg/L | 100% (70 - 108%) | < 0.001 | < 0.001 |
| Thallium | < 0.001 mg/L | 102% (70 - 130%) | < 0.001 | < 0.001 |
| Tin | < 0.01 mg/L | 95% (70 - 130%) | 0.01 | 0.01 |
| Vanadium | < 0.01 mg/L | 102% (70 - 130%) | < 0.01 | < 0.01 |
| Zinc | < 0.02 mg/L | 99% (70 - 130%) | 0.18 | 0.18 |
| Mercury | < 0.0001 mg/L | 82% (75 - 125%) | < 0.0001 | < 0.0001 |
| Chromium, hexavalent | < 0.01 mg/L | 115% (75 - 125%) | < 0.01 | < 0.01 |
| TPH (gasoline) | < 0.2 mg/L | 95% (50 - 150%) | < 0.2 | < 0.2 |
| TPH (diesel) | < 0.1 mg/L | 110% (50 - 150%) | | |
| TPH (heavy oil) | < 0.5 mg/L | 101% (64 - 132%) | | |
| Benzene | < 0.0005 mg/L | 93% (61 - 135%) | < 0.0005 | < 0.0005 |
| Bromodichloromethane | < 0.0004 mg/L | 108% (48 - 164%) | < 0.0004 | < 0.0004 |
| Bromoform | < 0.0008 mg/L | 124% (3 - 182%) | < 0.0008 | < 0.0008 |
| Carbon Tetrachloride | < 0.0005 mg/L | 123% (19 - 155%) | < 0.0005 | < 0.0005 |
| Chlorobenzene | < 0.0004 mg/L | 95% (61 - 139%) | < 0.0004 | < 0.0004 |

Certificate of Analysis

Report Date: 25-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC000016949A

Project: Sewage Lagoon Hall Beach

| | Blank | Spike (QC Limits) | Duplicate |
|---------------------------|---------------|-------------------|-------------------|
| Chloroethane | < 0.001 mg/L | 95% (50 - 150%) | < 0.001 < 0.001 |
| Chloroform | < 0.0006 mg/L | 100% (52 - 134%) | < 0.0006 < 0.0006 |
| Chloromethane | < 0.003 mg/L | 94% (50 - 193%) | < 0.003 < 0.003 |
| Dibromochloromethane | < 0.0005 mg/L | 92% (33 - 175%) | < 0.0005 < 0.0005 |
| 1,2-Dibromoethane | < 0.001 mg/L | 109% (33 - 172%) | < 0.001 < 0.001 |
| m-Dichlorobenzene | < 0.0004 mg/L | 93% (63 - 133%) | < 0.0004 < 0.0004 |
| o-Dichlorobenzene | < 0.0004 mg/L | 93% (55 - 141%) | < 0.0004 < 0.0004 |
| p-Dichlorobenzene | < 0.0004 mg/L | 86% (64 - 134%) | < 0.0004 < 0.0004 |
| 1,1-Dichloroethane | < 0.0005 mg/L | 96% (51 - 134%) | < 0.0005 < 0.0005 |
| 1,2-Dichloroethane | < 0.0005 mg/L | 107% (38 - 164%) | < 0.0005 < 0.0005 |
| 1,1-Dichloroethylene | < 0.0006 mg/L | 84% (47 - 150%) | < 0.0006 < 0.0006 |
| c-1,2-Dichloroethylene | < 0.0004 mg/L | 94% (62 - 139%) | < 0.0004 < 0.0004 |
| t-1,2-Dichloroethylene | < 0.001 mg/L | 90% (48 - 153%) | < 0.001 < 0.001 |
| 1,2-Dichloropropane | < 0.0007 mg/L | 97% (45 - 155%) | < 0.0007 < 0.0007 |
| c-1,3-Dichloropropane | < 0.0004 mg/L | 114% (27 - 178%) | < 0.0004 < 0.0004 |
| t-1,3-Dichloropropane | < 0.0005 mg/L | 106% (40 - 167%) | < 0.0005 < 0.0005 |
| Ethylbenzene | < 0.0005 mg/L | 94% (58 - 147%) | < 0.0005 < 0.0005 |
| Styrene | < 0.0004 mg/L | 109% (48 - 146%) | < 0.0004 < 0.0004 |
| 1,1,1,2-Tetrachloroethane | < 0.0005 mg/L | 121% (70 - 131%) | < 0.0005 < 0.0005 |
| 1,1,2,2-Tetrachloroethane | < 0.0006 mg/L | 92% (24 - 171%) | < 0.0006 < 0.0006 |
| Tetrachloroethylene | < 0.0005 mg/L | 95% (33 - 153%) | < 0.0005 < 0.0005 |
| Toluene | < 0.0005 mg/L | 93% (55 - 148%) | < 0.0005 < 0.0005 |
| 1,1,1-Trichloroethane | < 0.0004 mg/L | 98% (44 - 133%) | < 0.0004 < 0.0004 |
| 1,1,2-Trichloroethane | < 0.0006 mg/L | 111% (38 - 163%) | < 0.0006 < 0.0006 |
| Trichloroethylene | < 0.0004 mg/L | 109% (55 - 152%) | < 0.0004 < 0.0004 |
| Trichlorofluoromethane | < 0.001 mg/L | 100% (60 - 163%) | < 0.001 < 0.001 |
| 1,3,5-Trimethylbenzene | < 0.0005 mg/L | 89% (57 - 135%) | < 0.0005 < 0.0005 |
| Vinyl Chloride | < 0.0005 mg/L | 95% (51 - 168%) | < 0.0005 < 0.0005 |
| m/p-Xylene | < 0.001 mg/L | 96% (45 - 168%) | < 0.001 < 0.001 |
| o-Xylene | < 0.0005 mg/L | 98% (28 - 183%) | < 0.0005 < 0.0005 |

PARACEL Laboratories Ltd. **Environmental & Indoor Air Quality**

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Toll Free: 800-7491947
email: paracel@paracellabs.com

Order #: J2283

Certificate of Analysis

Trow Associates Inc.

154 Colonnade Road South

Ottawa, Ontario K2E 7J5

Attn: Mr. Chris Kinmerly

Phone: (613)-225-9940

Fax: (613)-225-7337

Client PO: **OTCO00016949A**

Project: **Sewage Lagoon Hall Beach**

Custody #: **166436**

Report Date: 29-Jun-2004

Order Date: 21-Jun-2004

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

| Paracel ID | Client ID |
|-------------------|-------------------|
| J2283.1 | BH1 MJ1 0-11 |
| J2283.2 | BH1 MJ9 5.3-6.8 |
| J2283.3 | BH1 MJ12 8.0-9.3 |
| J2283.4 | BH2 MJ1 0-18 |
| J2283.5 | BH2 MJ7 4.6-5.8 |
| J2283.6 | BH2 MJ11 8.6-9 |
| J2283.7 | BH3 MJ1 0-2.8 |
| J2283.8 | BH3 MJ8 6.5-7.3 |
| J2283.9 | BH3 MJ11 9.1-9.10 |
| J2283.10 | BH4 MJ1 0-1.5 |
| J2283.11 | BH4 MJ7 6-7 |
| J2283.12 | BH4 MJ11 8.9-9.6 |

Approved By: _____ Dale Robertson, B.Sc.
Laboratory Director

Any use of these test results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work,
and that our employees or agents shall not under any circumstance be liable to you in connection with this work.

Certificate of Analysis

Client: Trow Associates Inc.

Client PO: OTC000016949A

Report Date: 29-Jun-2004

Order Date: 21-Jun-2004

Project: Sewage Lagoon Hall Beach

Analysis Summary Table

| Analysis | Method Reference/Description |
|----------------------|--|
| Metals | EPA 6020 - ICP-MS |
| Mercury | EPA 7471A - CVAA |
| Boron, available | based on SM17 4500-B C - colourimetric |
| Chromium, hexavalent | based on EPA 7196A - colourimetric |
| PHC F1 (CCME) | CWS PHCs - P&T GC-FID |
| PHC F2-F4 (CCME) | CWS - Tier 1 Method, GC-FID |
| VOCs, low level | EPA 8260 - P&T GC-MS |

n/a: not applicable

MDL: Method Detection Limit

Soil results calculated on a dry weight basis.

CCME PHC additional information:

The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

- F1 range corrected for BTEX where available
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric TPH (heavy oil) result is not to be added to the PHC fractions.

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC000016949A

Project: Sewage Lagoon Hall Beach

Matrix: Soil

Sample Date: 09-Jun-2004

| Parameter | MDL/Units | BH1 MJ1 0-11 | BH1 MJ9 5.3-6.8 | BH1 MJ12 8.0-9.3 |
|----------------------|------------|--------------|-----------------|------------------|
| | | J2283.1 | J2283.2 | J2283.3 |
| Antimony | 1 ug/g | < 1 | < 1 | < 1 |
| Arsenic | 1 ug/g | 4 | 7 | 7 |
| Barium | 10 ug/g | < 10 | 30 | 10 |
| Beryllium | 0.5 ug/g | < 0.5 | 1.0 | 1.0 |
| Cadmium | 1 ug/g | < 1 | < 1 | < 1 |
| Calcium | 200 ug/g | 230,000 | 27,000 | 22,000 |
| Chromium | 5 ug/g | 5 | 35 | 40 |
| Cobalt | 5 ug/g | < 5 | 10 | 15 |
| Copper | 5 ug/g | 60 | 5 | 5 |
| Iron | 200 ug/g | 7,400 | 24,000 | 26,000 |
| Lead | 1 ug/g | 3 | 2 | 2 |
| Magnesium | 200 ug/g | 11,000 | 26,000 | 26,000 |
| Molybdenum | 1 ug/g | 1 | < 1 | < 1 |
| Nickel | 5 ug/g | 40 | 30 | 35 |
| Selenium | 1 ug/g | < 1 | < 1 | < 1 |
| Silver | 0.3 ug/g | < 0.3 | < 0.3 | < 0.3 |
| Sodium | 200 ug/g | < 200 | 2,000 | 3,000 |
| Thallium | 1 ug/g | < 1 | < 1 | < 1 |
| Tin | 5 ug/g | < 5 | < 5 | < 5 |
| Vanadium | 10 ug/g | < 10 | 30 | 30 |
| Zinc | 20 ug/g | 60 | 40 | 60 |
| Mercury | 0.1 ug/g | < 0.1 | < 0.01 | < 0.1 |
| Boron, available | 1 ug/g | < 1 | < 1 | < 1 |
| Chromium, hexavalent | 0.4 ug/g | < 0.4 | < 0.4 | < 0.4 |
| F1 PHCs (C6-C10) | 20 ug/g | < 20 | < 20 | < 20 |
| F2 PHCs (C10-C16) | 10 ug/g | < 10 | < 10 | < 10 |
| F3 PHCs (C16-C34) | 10 ug/g | < 10 | < 10 | < 10 |
| F4 PHCs (C34-C50) | 10 ug/g | < 10 | < 10 | < 10 |
| Benzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Bromodichloromethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC00016949A

Project: Sewage Lagoon Hall Beach

| | | BH1 MJ1 0-11 | BH1 MJ9 5.3-6.8 | BH1 MJ12 8.0-9.3 |
|---------------------------|------------|--------------|-----------------|------------------|
| | | J2283.1 | J2283.2 | J2283.3 |
| Bromoform | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Bromomethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Carbon Tetrachloride | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Chlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Chloroethane | 0.005 ug/g | < 0.005 | < 0.005 | < 0.005 |
| Chloroform | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Chloromethane | 0.02 ug/g | < 0.02 | < 0.02 | < 0.02 |
| Dibromochloromethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,2-Dibromoethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| m-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| o-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| p-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1-Dichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,2-Dichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1-Dichloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| c-1,2-Dichloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| t-1,2-Dichloroethylene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| 1,2-Dichloropropane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| c-1,3-Dichloropropane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| t-1,3-Dichloropropane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Ethylbenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Methylene Chloride | 0.02 ug/g | < 0.02 | < 0.02 | < 0.02 |
| Styrene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,1,2-Tetrachloroethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| 1,1,2,2-Tetrachloroethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Tetrachloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Toluene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,1-Trichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,2-Trichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Trichloroethylene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |

Certificate of Analysis

Client: Trow Associates Inc.

Client PO: OTC000016949A

Report Date: 29-Jun-2004

Order Date: 21-Jun-2004

Project: Sewage Lagoon Hall Beach

| | | BH1 MJ1 0-11 | BH1 MJ9 5.3-6.8 | BH1 MJ12 8.0-9.3 |
|------------------------|------------|--------------|-----------------|------------------|
| | | J2283.1 | J2283.2 | J2283.3 |
| Trichlorofluoromethane | 0.005 ug/g | < 0.005 | < 0.005 | < 0.005 |
| 1,3,5-Trimethylbenzene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Vinyl Chloride | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| m/p-Xylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| o-Xylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,4-Bromofluorobenzene | surrogate | 113% | 120% | 111% |
| Dibromofluoromethane | surrogate | 101% | 101% | 102% |
| Toluene-d8 | surrogate | 98% | 99% | 99% |

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC000016949A

Project: Sewage Lagoon Hall Beach

| Matrix: Soil Sample Date: 09-Jun-2004 | | BH2 MJ1 0-10 | BH2 MJ7 4.6-5.8 | BH2 MJ11 8.6-9 |
|--|------------|--------------|-----------------|----------------|
| Parameter | MDL/Units | J2283.4 | J2283.5 | J2283.6 |
| Antimony | 1 ug/g | < 1 | < 1 | < 1 |
| Arsenic | 1 ug/g | 2 | 6 | 6 |
| Barium | 10 ug/g | < 10 | 10 | 20 |
| Beryllium | 0.5 ug/g | < 0.5 | 0.5 | 0.5 |
| Cadmium | 1 ug/g | < 1 | < 1 | < 1 |
| Calcium | 200 ug/g | 220,000 | 26,000 | 61,000 |
| Chromium | 5 ug/g | 5 | 35 | 35 |
| Cobalt | 5 ug/g | < 5 | 10 | 10 |
| Copper | 5 ug/g | 15 | < 5 | 5 |
| Iron | 200 ug/g | 4,000 | 23,000 | 23,000 |
| Lead | 1 ug/g | 4 | 1 | 2 |
| Magnesium | 200 ug/g | 13,000 | 25,000 | 22,000 |
| Molybdenum | 1 ug/g | 1 | < 1 | < 1 |
| Nickel | 5 ug/g | 20 | 30 | 35 |
| Selenium | 1 ug/g | < 1 | < 1 | < 1 |
| Silver | 0.3 ug/g | < 0.3 | < 0.3 | < 0.3 |
| Sodium | 200 ug/g | < 200 | 2,400 | 1,800 |
| Thallium | 1 ug/g | < 1 | < 1 | < 1 |
| Tin | 5 ug/g | < 5 | < 5 | < 5 |
| Vanadium | 10 ug/g | < 10 | 30 | 30 |
| Zinc | 20 ug/g | 20 | 40 | 40 |
| Mercury | 0.1 ug/g | < 0.1 | < 0.1 | < 0.1 |
| Boron, available | 1 ug/g | < 1 | < 1 | < 1 |
| Chromium, hexavalent | 0.4 ug/g | < 0.4 | < 0.4 | < 0.4 |
| F1 PHCs (C6-C10) | 20 ug/g | < 20 | < 20 | < 20 |
| F2 PHCs (C10-C16) | 10 ug/g | < 10 | < 10 | < 10 |
| F3 PHCs (C16-C34) | 10 ug/g | 20 | < 10 | < 10 |
| F4 PHCs (C34-C50) | 10 ug/g | < 10 | < 10 | < 10 |
| Benzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Bromodichloromethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |

Certificate of Analysis

Client: Trow Associates Inc.

Client PO: OTC00016949A

Report Date: 29-Jun-2004

Order Date: 21-Jun-2004

Project: Sewage Lagoon Hall Beach

| | | BH2 MJ1 0-10 | BH2 MJ7 4.6-5.8 | BH2 MJ11 8.6-9 |
|---------------------------|------------|--------------|-----------------|----------------|
| | | J2283.4 | J2283.5 | J2283.6 |
| Bromoform | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Bromomethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Carbon Tetrachloride | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Chlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Chloroethane | 0.005 ug/g | < 0.005 | < 0.005 | < 0.005 |
| Chloroform | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Chloromethane | 0.02 ug/g | < 0.02 | < 0.02 | < 0.02 |
| Dibromochloromethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,2-Dibromoethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| m-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| o-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| p-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1-Dichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,2-Dichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1-Dichloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| c-1,2-Dichloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| t-1,2-Dichloroethylene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| 1,2-Dichloropropane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| c-1,3-Dichloropropane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| t-1,3-Dichloropropane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Ethylbenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Methylene Chloride | 0.02 ug/g | < 0.02 | < 0.02 | < 0.02 |
| Styrene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,1,2-Tetrachloroethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| 1,1,2,2-Tetrachloroethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Tetrachloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Toluene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,1-Trichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,2-Trichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Trichloroethylene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |

Certificate of Analysis

Report Date: 29-Jun-2004

Order Date: 21-Jun-2004

Client: Trow Associates Inc.

Client PO: OTC00016949A

Project: Sewage Lagoon Hall Beach

| | | BH2 MJ1 0-18 | BH2 MJ7 4.6-5.8 | BH2 MJ11 8.6-9 |
|------------------------|------------|--------------|-----------------|----------------|
| | | J2283.4 | J2283.5 | J2283.6 |
| Trichlorofluoromethane | 0.005 ug/g | < 0.005 | < 0.005 | < 0.005 |
| 1,3,5-Trimethylbenzene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Vinyl Chloride | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| m/p-Xylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| o-Xylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,4-Bromofluorobenzene | surrogate | 115% | 123% | 118% |
| Dibromofluoromethane | surrogate | 100% | 102% | 101% |
| Toluene-d8 | surrogate | 96% | 101% | 98% |

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC000016949A

Project: Sewage Lagoon Hall Beach

Matrix: Soil

Sample Date: 09-Jun-2004

| Parameter | MDL/Units | BH3 MJ1 0-2.8 | BH3 MJ8 6.5-7.3 | BH3 MJ11 9.1-9.10 |
|----------------------|------------|---------------|-----------------|-------------------|
| | | J2283.7 | J2283.8 | J2283.9 |
| Antimony | 1 ug/g | < 1 | < 1 | < 1 |
| Arsenic | 1 ug/g | 3 | 8 | 5 |
| Barium | 10 ug/g | < 10 | 20 | 20 |
| Beryllium | 0.5 ug/g | < 0.5 | 1.0 | 1.0 |
| Cadmium | 1 ug/g | < 1 | < 1 | < 1 |
| Calcium | 200 ug/g | 290,000 | 22,000 | 24,000 |
| Chromium | 5 ug/g | 5 | 40 | 40 |
| Cobalt | 5 ug/g | < 5 | 15 | 15 |
| Copper | 5 ug/g | 20 | 5 | 5 |
| Iron | 200 ug/g | 4,600 | 28,000 | 27,000 |
| Lead | 1 ug/g | 3 | 2 | 2 |
| Magnesium | 200 ug/g | 14,000 | 27,000 | 26,000 |
| Molybdenum | 1 ug/g | < 1 | < 1 | < 1 |
| Nickel | 5 ug/g | 25 | 40 | 35 |
| Selenium | 1 ug/g | < 1 | < 1 | < 1 |
| Silver | 0.3 ug/g | < 0.3 | < 0.3 | < 0.3 |
| Sodium | 200 ug/g | < 200 | 3,200 | 2,400 |
| Thallium | 1 ug/g | < 1 | < 1 | < 1 |
| Tin | 5 ug/g | < 5 | < 5 | < 5 |
| Vanadium | 10 ug/g | < 10 | 40 | 40 |
| Zinc | 20 ug/g | 20 | 60 | 60 |
| Mercury | 0.1 ug/g | < 0.1 | < 0.1 | < 0.1 |
| Boron, available | 1 ug/g | < 1 | < 1 | < 1 |
| Chromium, hexavalent | 0.4 ug/g | < 0.4 | < 0.4 | < 0.4 |
| F1 PHCs (C6-C10) | 20 ug/g | < 20 | < 20 | < 20 |
| F2 PHCs (C10-C16) | 10 ug/g | < 10 | < 10 | < 10 |
| F3 PHCs (C16-C34) | 10 ug/g | < 10 | < 10 | < 10 |
| F4 PHCs (C34-C50) | 10 ug/g | < 10 | < 10 | < 10 |
| Benzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Bromodichloromethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC00016949A

Project: Sewage Lagoon Hall Beach

| | | BH3 MJ1 0-2.8 | BH3 MJ8 6.5-7.3 | BH3 MJ11 9.1-9.10 |
|---------------------------|------------|---------------|-----------------|-------------------|
| | | J2283.7 | J2283.8 | J2283.9 |
| Bromoform | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Bromomethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Carbon Tetrachloride | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Chlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Chloroethane | 0.005 ug/g | < 0.005 | < 0.005 | < 0.005 |
| Chloroform | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Chloromethane | 0.02 ug/g | < 0.02 | < 0.02 | < 0.02 |
| Dibromochloromethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,2-Dibromoethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| m-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| o-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| p-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1-Dichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,2-Dichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1-Dichloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| c-1,2-Dichloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| t-1,2-Dichloroethylene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| 1,2-Dichloropropane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| c-1,3-Dichloropropene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| t-1,3-Dichloropropene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Ethylbenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Methylene Chloride | 0.02 ug/g | < 0.02 | < 0.02 | < 0.02 |
| Styrene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,1,2-Tetrachloroethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| 1,1,2,2-Tetrachloroethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Tetrachloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Toluene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,1-Trichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,2-Trichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Trichloroethylene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC000016949A

Project: Sewage Lagoon Hall Beach

| | | BH3 MJ1 0-2.8 | BH3 MJ8 6.5-7.9 | BH3 MJ11 9.1-9.10 |
|------------------------|------------|---------------|-----------------|-------------------|
| | | J2283.7 | J2283.8 | J2283.9 |
| Trichlorofluoromethane | 0.005 ug/g | < 0.005 | < 0.005 | < 0.005 |
| 1,3,5-Trimethylbenzene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Vinyl Chloride | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| m/p-Xylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| o-Xylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,4-Bromofluorobenzene | surrogate | 120% | 116% | 124% |
| Dibromofluoromethane | surrogate | 100% | 104% | 105% |
| Toluene-d8 | surrogate | 96% | 101% | 103% |

Certificate of Analysis

Report Date: 29-Jun-2004

Order Date: 21-Jun-2004

Client: Trow Associates Inc.

Client PO: OTC00016949A

Project: Sewage Lagoon Hall Beach

Matrix: Soil

Sample Date: 09-Jun-2004

| Parameter | MDL/Units | BH4 MJ1 0-1.5 | BH4 MJ7 6-7 | BH4 MJ11 8.9-9.6 |
|----------------------|------------|---------------|-------------|------------------|
| | | J2283.10 | J2283.11 | J2283.12 |
| Antimony | 1 ug/g | < 1 | < 1 | < 1 |
| Arsenic | 1 ug/g | 2 | 2 | 7 |
| Barium | 10 ug/g | < 10 | < 10 | 20 |
| Beryllium | 0.5 ug/g | < 0.5 | < 0.5 | 1.0 |
| Cadmium | 1 ug/g | < 1 | < 1 | < 1 |
| Calcium | 200 ug/g | 310,000 | 170,000 | 27,000 |
| Chromium | 5 ug/g | 5 | 10 | 35 |
| Cobalt | 5 ug/g | < 5 | < 5 | 15 |
| Copper | 5 ug/g | 20 | 15 | 5 |
| Iron | 200 ug/g | 4,400 | 6,200 | 25,000 |
| Lead | 1 ug/g | 3 | 2 | 2 |
| Magnesium | 200 ug/g | 11,000 | 17,000 | 27,000 |
| Molybdenum | 1 ug/g | < 1 | < 1 | < 1 |
| Nickel | 5 ug/g | 25 | 20 | 30 |
| Selenium | 1 ug/g | < 1 | < 1 | < 1 |
| Silver | 0.3 ug/g | < 0.3 | < 0.3 | < 0.3 |
| Sodium | 200 ug/g | < 200 | 1,400 | 3,200 |
| Thallium | 1 ug/g | < 1 | < 1 | < 1 |
| Tin | 5 ug/g | < 5 | < 5 | < 5 |
| Vanadium | 10 ug/g | < 10 | 10 | 30 |
| Zinc | 20 ug/g | 20 | 20 | 60 |
| Mercury | 0.1 ug/g | < 0.1 | < 0.1 | < 0.1 |
| Boron, available | 1 ug/g | < 1 | < 1 | < 1 |
| Chromium, hexavalent | 0.4 ug/g | < 0.4 | < 0.4 | < 0.4 |
| F1 PHCs (C6-C10) | 20 ug/g | < 20 | < 20 | < 20 |
| F2 PHCs (C10-C16) | 10 ug/g | < 10 | < 10 | < 10 |
| F3 PHCs (C16-C34) | 10 ug/g | < 10 | < 10 | < 10 |
| F4 PHCs (C34-C50) | 10 ug/g | < 10 | < 10 | < 10 |
| Benzene | 0.002 ug/g | 0.002 | < 0.002 | < 0.002 |
| Bromodichloromethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC000016949A

Project: Sewage Lagoon Hall Beach

| | | BR4 MJ1 0-1.5 | BR4 MJ7 6-7 | BR4 MJ11 8.9-9.6 |
|---------------------------|------------|---------------|-------------|------------------|
| | | J2283.10 | J2283.11 | J2283.12 |
| Bromoform | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Bromomethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Carbon Tetrachloride | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Chlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Chloroethane | 0.005 ug/g | < 0.005 | < 0.005 | < 0.005 |
| Chloroform | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Chloromethane | 0.02 ug/g | < 0.02 | < 0.02 | < 0.02 |
| Dibromochloromethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,2-Dibromoethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| m-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| o-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| p-Dichlorobenzene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1-Dichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,2-Dichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1-Dichloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| c-1,2-Dichloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| t-1,2-Dichloroethylene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| 1,2-Dichloropropane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| c-1,3-Dichloropropene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| t-1,3-Dichloropropene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Ethylbenzene | 0.002 ug/g | 0.004 | 0.002 | < 0.002 |
| Methylene Chloride | 0.02 ug/g | < 0.02 | < 0.02 | < 0.02 |
| Styrene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,1,2-Tetrachloroethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| 1,1,2,2-Tetrachloroethane | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |
| Tetrachloroethylene | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Toluene | 0.002 ug/g | 0.008 | < 0.002 | < 0.002 |
| 1,1,1-Trichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| 1,1,2-Trichloroethane | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| Trichloroethylene | 0.003 ug/g | < 0.003 | < 0.003 | < 0.003 |

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC00016949A

Project: Sewage Lagoon Hall Beach

| | | BN4 MJ1 0-1.5 | BN4 MJ7 6-7 | BN4 MJ11 8.9-9.6 |
|------------------------|------------|---------------|-------------|------------------|
| | | J2283.10 | J2283.11 | J2283.12 |
| Trichlorofluoromethane | 0.005 ug/g | < 0.005 | < 0.005 | < 0.005 |
| 1,3,5-Trimethylbenzene | 0.003 ug/g | 0.009 | 0.009 | < 0.003 |
| Vinyl Chloride | 0.002 ug/g | < 0.002 | < 0.002 | < 0.002 |
| m/p-Xylene | 0.002 ug/g | 0.008 | 0.010 | < 0.002 |
| o-Xylene | 0.002 ug/g | 0.006 | < 0.002 | < 0.002 |
| 1,4-Bromofluorobenzene | surrogate | 111% | 115% | 110% |
| Dibromofluoromethane | surrogate | 101% | 100% | 101% |
| Toluene-d8 | surrogate | 102% | 98% | 97% |

Certificate of Analysis

Client: Trow Associates Inc.

Report Date: 29-Jun-2004

Order Date: 21-Jun-2004

Client PO: OTC00016949A

Project: Sewage Lagoon Hall Beach

QA/QC Results

| | Blank | Spike (QC Limits) | Duplicate | |
|----------------------|--------------|-------------------|-----------|---------|
| Antimony | < 1 ug/g | 92% (70 - 130%) | 4 | 5 |
| Arsenic | < 1 ug/g | 99% (70 - 130%) | 34 | 34 |
| Barium | < 10 ug/g | 94% (70 - 130%) | 90 | 80 |
| Beryllium | < 0.5 ug/g | 94% (70 - 130%) | < 0.5 | < 0.5 |
| Cadmium | < 1 ug/g | 90% (70 - 130%) | 45 | 39 |
| Chromium | < 5 ug/g | 89% (70 - 130%) | 25 | 20 |
| Cobalt | < 5 ug/g | 90% (70 - 130%) | < 5 | < 5 |
| Copper | < 5 ug/g | 88% (70 - 130%) | 25,000 | 26,000 |
| Lead | < 1 ug/g | 98% (70 - 130%) | 250 | 230 |
| Molybdenum | < 1 ug/g | 99% (70 - 130%) | 52 | 51 |
| Nickel | < 5 ug/g | 87% (70 - 130%) | 110 | 120 |
| Selenium | < 1 ug/g | 89% (70 - 130%) | 8 | 7 |
| Silver | < 0.3 ug/g | 96% (70 - 130%) | 2.4 | 2.4 |
| Thallium | < 1 ug/g | 98% (70 - 130%) | < 1 | < 1 |
| Tin | < 5 ug/g | 98% (70 - 130%) | 5 | 5 |
| Vanadium | < 10 ug/g | 94% (70 - 130%) | 20 | 20 |
| Zinc | < 20 ug/g | 98% (70 - 130%) | 80 | 80 |
| Mercury | < 0.1 ug/g | 84% (65 - 135%) | 2.6 | 2.6 |
| Boron, available | < 1 ug/g | 98% (77 - 120%) | < 1 | < 1 |
| Chromium, hexavalent | < 0.4 ug/g | 103% (75 - 135%) | < 0.4 | < 0.4 |
| F1 PHCs (C6-C10) | < 20 ug/g | 84% (50 - 150%) | < 20 | < 20 |
| F2-F4 PHCs (C10-C50) | < 10 ug/g | 74% (50 - 150%) | < 10 | < 10 |
| Benzene | < 0.002 ug/g | 96% (62 - 142%) | 0.12 | 0.11 |
| Bromodichloromethane | < 0.002 ug/g | 97% (29 - 183%) | < 0.002 | < 0.002 |
| Bromoform | < 0.002 ug/g | 113% (14 - 183%) | < 0.002 | < 0.002 |
| Carbon Tetrachloride | < 0.002 ug/g | 127% (12 - 165%) | < 0.002 | < 0.002 |
| Chlorobenzene | < 0.002 ug/g | 99% (61 - 146%) | < 0.002 | < 0.002 |
| Chloroethane | < 0.005 ug/g | 90% (7 - 178%) | < 0.005 | < 0.005 |
| Chloroform | < 0.003 ug/g | 88% (53 - 140%) | < 0.003 | < 0.003 |
| Chloromethane | < 0.02 ug/g | 89% (31 - 181%) | < 0.02 | < 0.02 |

Certificate of Analysis

Report Date: 29-Jun-2004

Client: Trow Associates Inc.

Order Date: 21-Jun-2004

Client PO: OTC00016949A

Project: Sewage Lagoon Hall Beach

| | Blank | Spike (QC Limits) | Duplicate | |
|---------------------------|--------------|-------------------|-----------|---------|
| Dibromochloromethane | < 0.002 ug/g | 94% (8 - 189%) | < 0.002 | < 0.002 |
| 1,2-Dibromoethane | < 0.002 ug/g | 106% (50 - 150%) | < 0.002 | < 0.002 |
| m-Dichlorobenzene | < 0.002 ug/g | 86% (62 - 137%) | < 0.002 | < 0.002 |
| o-Dichlorobenzene | < 0.002 ug/g | 94% (54 - 147%) | < 0.002 | < 0.002 |
| p-Dichlorobenzene | < 0.002 ug/g | 97% (64 - 136%) | < 0.002 | < 0.002 |
| 1,1-Dichloroethane | < 0.002 ug/g | 99% (46 - 136%) | < 0.002 | < 0.002 |
| 1,2-Dichloroethane | < 0.002 ug/g | 98% (17 - 185%) | < 0.002 | < 0.002 |
| 1,1-Dichloroethylene | < 0.002 ug/g | 99% (58 - 142%) | < 0.002 | < 0.002 |
| c-1,2-Dichloroethylene | < 0.002 ug/g | 97% (58 - 145%) | < 0.002 | < 0.002 |
| t-1,2-Dichloroethylene | < 0.003 ug/g | 97% (48 - 159%) | < 0.003 | < 0.003 |
| 1,2-Dichloropropane | < 0.002 ug/g | 99% (46 - 162%) | < 0.002 | < 0.002 |
| c-1,3-Dichloropropene | < 0.002 ug/g | 114% (28 - 162%) | < 0.002 | < 0.002 |
| t-1,3-Dichloropropene | < 0.002 ug/g | 92% (38 - 152%) | < 0.002 | < 0.002 |
| Ethylbenzene | < 0.002 ug/g | 98% (37 - 162%) | 0.076 | 0.060 |
| Styrene | < 0.002 ug/g | 95% (38 - 152%) | < 0.002 | < 0.002 |
| 1,1,1,2-Tetrachloroethane | < 0.003 ug/g | 87% (69 - 130%) | < 0.003 | < 0.003 |
| 1,1,2,2-Tetrachloroethane | < 0.003 ug/g | 118% (19 - 180%) | < 0.003 | < 0.003 |
| Tetrachloroethylene | < 0.002 ug/g | 98% (50 - 135%) | < 0.002 | < 0.002 |
| Toluene | < 0.002 ug/g | 97% (51 - 148%) | 0.008 | 0.008 |
| 1,1,1-Trichloroethane | < 0.002 ug/g | 99% (29 - 155%) | < 0.002 | < 0.002 |
| 1,1,2-Trichloroethane | < 0.002 ug/g | 105% (23 - 177%) | < 0.002 | < 0.002 |
| Trichloroethylene | < 0.003 ug/g | 85% (37 - 174%) | < 0.003 | < 0.003 |
| Trichlorofluoromethane | < 0.005 ug/g | 99% (39 - 171%) | < 0.005 | < 0.005 |
| 1,3,5-Trimethylbenzene | < 0.003 ug/g | 95% (44 - 142%) | 0.49 | 0.40 |
| Vinyl Chloride | < 0.002 ug/g | 95% (38 - 163%) | < 0.002 | < 0.002 |
| m/p-Xylene | < 0.002 ug/g | 99% (38 - 154%) | 0.31 | 0.29 |
| o-Xylene | < 0.002 ug/g | 98% (47 - 148%) | 0.006 | 0.006 |

Appendix D: Class 'D' Cost Estimate

APPENDIX "D"
CLASS 'D' COST ESTIMATE

| ITEM | QUANTITY | UNIT PRICE | COST |
|-------------------------|-----------|------------|---------------------|
| Imported Cover Material | 5900 cu.m | \$35.0 | \$205,500.00 |
| Cut Existing Berms | 700 cu.m | \$15.0 | \$14,000.00 |
| Site Grading | L.S. | \$5,000.0 | \$5,000.00 |
| Miscellaneous Clean-up | L.S. | \$5,000.0 | \$5,000.00 |
| Subtotal | | | \$229,500.00 |
| Contingency | | | \$45,900.00 |
| TOTAL | | | \$275,400.00 |