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District of SECHELT

DISTRICT OF SECHELT SEPTAGE RECEIVING FACILITY LONG-TERM PLAN

Technical Memo No. 6:

Decommissioning and Demolition Plan

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Submitted by: SPERLING HANSEN ASSOCIATES

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1. INTRODUCTION

1.1 Background

The Dusty Road Septage Receiving Facility (DRSRF) located in Sechelt, British Columbia, is approaching the end of its operational life. The facility was originally constructed as a wastewater treatment plant and later repurposed for septage receiving. Over time, the infrastructure has deteriorated and now exhibits significant operational and structural deficiencies.

Recent asset condition assessments have rated the facility in poor condition and identified major capital reinvestment requirements to maintain operations. In response, the District of Sechelt is proceeding with the development of a replacement septage receiving facility. Once the new facility becomes operational, the Dusty Road facility will be permanently decommissioned and demolished.

The Dusty Road site is located on Crown land under a lease agreement that expires in 2031. As part of the lease obligations, the District of Sechelt (District or Sechelt) must remove all infrastructure and restore the site to its predevelopment condition upon closure.

1.2 Purpose of This Plan

The purpose of this Decommissioning and Demolition Plan (Plan or DDP) is to define the framework for safely shutting down operations, removing infrastructure, managing waste, verifying environmental conditions, and restoring the site following closure of the DRSRF.

The Plan provides guidance for:

- orderly shutdown of septage receiving operations
- removal of liquids, sludge, and residual wastes
- isolation of utilities and mechanical systems
- demolition and removal of all structures and buried infrastructure
- management and export of demolition and hazardous wastes
- environmental assessment, remediation, and confirmation testing
- restoration of the site to predevelopment conditions
- preparation of final closure documentation

The closure standard established in this Plan is intentionally more stringent than a typical demolition project due to the requirements to leave the property in a pre-lease condition that satisfies the requirements in the Contaminated Sites Regulation, should the landowner change the use of the property from gravel extraction. All infrastructure will be removed from the site, and environmental conditions will be verified before final restoration.

2. DECOMMISSIONING OBJECTIVES

The primary objectives of the decommissioning and demolition process are to:

1. Safely cease all septage receiving operations and secure the site.
2. Coordinate closure with commissioning of the new septage receiving facility to ensure uninterrupted service.
3. Remove all liquids, sludge, grit, screenings, and residual septage materials from tanks, piping, and process units.
4. Isolate and decommission utilities and mechanical/electrical systems.
5. Remove all above-grade and underground infrastructure.
6. Identify and properly manage any identified hazardous materials.
7. Export all demolition debris and wastes to authorized receiving facilities.
8. Conduct environmental soil and groundwater testing following decommissioning.
9. Restore the site to stable predevelopment conditions.

3. CLOSURE SUCCESS CRITERIA

Closure will be considered complete when all of the following conditions are achieved:

Infrastructure removal: All buildings, tanks, process equipment, foundations, pipes, conduits, vaults, utilities, liners, and buried debris have been removed from the site unless otherwise authorized in writing by the Crown land landlord or regulators.

Waste export verification: Waste tracking documentation demonstrates that all demolition materials, residual wastes, and hazardous materials have been transported to authorized receiving facilities. This is a document that will be submitted by the Contractor to the District.

Environmental verification: Post-decommissioning environmental sampling confirms that soil and groundwater conditions meet applicable numerical standards for the intended land use. The results are provided in a report to the District by the Contractor.

Site restoration: Final site grading, drainage, soil profile, and vegetation restoration meet the requirements established by the Crown land lease and restoration plan. A document will be delivered to the District showing the final site conditions as required.

4. REGULATORY FRAMEWORK

The decommissioning work will be conducted in accordance with applicable municipal bylaws, provincial legislation, regulations, and technical guidance, including the following:

Environmental Management Act (EMA): Provides the legislative authority for pollution prevention, environmental protection, spill response, and remediation in British Columbia.

- no permits and approvals required for the demolition and site clean up if all waste is being removed from the site
- regulation under EMA include the CSR and HWR (see below)

Contaminated Sites Regulation (CSR): Establishes legally enforceable standards for soil, water, sediment, and vapour and defines requirements for site investigation and remediation.

The ownership of the property is currently a leasehold on Crown land under the District's name that expires in 2031. According to the SCRD Zoning Bylaw No. 722, is zoned Agriculture (AG) and is also within the boundaries of the Agriculture Land Reserve (ALR). When the facility was built on this parcel by the SCRD in 1993 it is assumed that the non-farm use was approved by the Agriculture Land Commission.

- the standards to which the property is remediated depends on the future planned use
- once the property reverts back to the Crown it may need to be rezoned to allow for future industrial use.
- if the Province is not satisfied that all waste and contamination has been removed, further testing and sampling may be required to show them that soil and groundwater quality meet the intended future use
- changing the use from public service/industrial to a higher-level use, e.g., residential, commercial or agricultural, may trigger a site remediation process

BC Contaminated Sites Technical Guidance (TG01): Provides Ministry expectations for site characterization, delineation, and confirmation sampling.

- If the owner of the property is not satisfied that all waste and contamination has been removed, further testing and sampling (site characterization) may be required to show them that soil and groundwater quality meet the end use category standards (e.g., industrial)
- Changing the end use from industrial to a higher-level use, e.g., commercial or residential, may trigger a site remediation process as outlined in TG01

Hazardous Waste Regulation (HWR): Defines requirements for hazardous waste classification, transportation, manifesting, and recordkeeping.

- A Provincial Identification Number is required if more than 1,000 kg of hazardous waste (or smaller, strictly defined amounts) at any given time or within 30 days is generated or stored
    - applications and all other information can be found on BC Hazardous Waste site (https://www2.golv.bc.ca/gov/content/environment/waste-management/hazardous-waste)
- Manifests (6-copy General Manifest Form) are required to track waste from the site (generator) to a disposal facility (consignee) as per the Transportation of Dangerous Goods federal regulations, and these records must be kept for two years
- If hazardous waste is stored on the site for a length of time until transported, specific requirements for protecting the environment and human health must be met (e.g., full enclosures, wetting the waste)
- The disposal site must have the proper authorizations to accept the waste and require proper procedures to be in place to manage the waste at the disposal site (e.g., asbestos)

WorkSafeBC Occupational Health and Safety Regulation (OHSR): Requires hazardous materials inspections prior to demolition and establishes worker safety requirements during demolition and abatement activities.

- For work that is in proximity to hazardous substances, including asbestos, lead, mould, radiation, or other biological or chemical agents that may expose workers to a significant risk of occupational disease, you need to file a Notice of Project–Hazardous substances (NOP–H).
- For more information, see OHS Regulation section 20.2.1 (1), Guideline G20.2.1(2)(c), and Guideline G20.2.2.1(2)(d).

BC Field Sampling Manual (BCFSM): Provides procedures for environmental sampling, quality assurance, and chain-of-custody requirements.

- Data derived from air, biological, solids, water and wastewater sampling can be considered to have been quality controlled and assured if the sampling is completed using the BCFSM: https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/monitoring/laboratory-standards-quality-assurance/bc-field-sampling-manual

Sunshine Coast Regional District (SCRD) Building Bylaw No. 779, 2025: As the DRSRF is located in the SCRD Electoral Area B, their bylaw requires that prior to demolishing a building or structure, the owner must ensure that all Regional District services are capped and terminated at the property line as required.

- Apply for a Building Permit and only start demolition after receipt of the Permit
- On completion of all procedures ensure:

- All debris and fill are cleared, and the site is levelled or graded as required
- Request an inspection from the SCRD
- Contact the Regional District to cancel or pause the water or sewer service and pay any associated fees

Agricultural Land Commission (ALC) Act and Regulations: the purpose of these regulations is to preserve agricultural land, encourage farming, and protect the agricultural land base for future food production.

- the ALR is a Provincial land use zone, and non-farm uses require approval from the ALC
- changing the use of property that is in the ALR from a non-farm use to a farm use may trigger agricultural remediation standards and protocols as per the CSR
- removal and placement of soil within the ALR requires ALC regulations be followed

Additional applicable guidance includes Canadian Council of Ministers of the Environment (CCME) petroleum hydrocarbon standards, Health Canada per- and polyfluoroalkyl substances (PFAS) drinking water objectives where relevant, and Fisheries and Oceans Canada erosion and sediment control guidance for work near water.

5. PROJECT GOVERNANCE AND RESPONSIBILITIES

The following project roles will be established prior to the commencement of field activities:

Owner / Project Authority: The District of Sechelt will act as project authority and will be responsible for approvals, contracting, communications, and acceptance of closure documentation.

Prime Contractor: The demolition contractor will be responsible for site safety, demolition sequencing, traffic management, subcontractor coordination, and waste handling.

Qualified Professional (QP): A qualified professional will oversee environmental site assessment, contamination assessment, remediation planning, environmental sampling, and closure reporting.

Hazardous Materials Qualified Person: A qualified hazardous materials consultant will perform hazardous materials surveys and confirm safe removal of hazardous materials prior to demolition.

6. PRE-DECOMMISSIONING TASKS

Prior to developing a tender or call for quote for demolition and decommissioning of the DRSRF a number of tasks should be completed as outlined in this section. The District has completed the first two items outlined below including assembling floor plans and drawings of the facility and conducting an environmental site assessment (see sections 6.1 and 6.2 below)

6.1 Assemble Floor Plans and Drawings of the Facility

The following plans and details are available and attached in Appendix A:

- Dusty Road Septage Receiving Station Plan Issued for Record, Urban Systems, July 2015
- Dusty Road Wastewater Treatment Plan Upgrade, Stanley Consulting, October 1999

6.2 Environmental Site Assessment by Trillium Environmental

As per the regulatory framework outlined above, Phase 1 and Phase 2 Environmental Site Assessments were completed to identify areas of potential environmental concern based on site history, records review, and site inspection and to evaluate potential impacts associated with wastewater and septage handling activities based on a test pitting process. The assessment results were analyzed based on the current use of the property and the CSR Industrial Land Use (IL) standards.

6.2.1 Phase 1 and Phase 2 Environmental Site Assessments

As required, and in order to identify areas of potential environmental concern (APECs) and associated potential contaminants of concern (PCOCs) at the site, an environmental site assessment (ESA) was conducted by Trillium Environmental for the District care of Sperling Hansen Associates as part of the District of Sechelt Septage Facility Long-Term Plan project, and an ESA Phase 1 report was submitted by their qualified professional in August, 2023, and an ESA Phase 2 report was submitted by their qualified professional in December 2023. Both reports are attached in Appendix B.

6.2.1.1 Phase 1 Report

As per Trillium's report executive summary, the historical review indicated that the site was initially developed in 1993 as a municipal wastewater treatment plant and has operated solely as a septage receiving facility since 2015. The treatment facility is classified as an aeration basin type secondary plant with disinfection facilities and sludge digestion, drying and handling facilities. The facilities consist of a receiving station, control building, three concrete basins (racetrack, clarifier, and chlorine contact chamber), two lined lagoons (aerated lagoon and storage lagoon), and a sludge drying pad. Load records from 2021 to March 2023 indicate that the incoming septage originated primarily from domestic septic systems, sewage holding tanks, porta-potties, campground pit toilets, and brewery wastes.

Based on regional geology, hydrogeology, and topography, groundwater at the site is expected to be present in a deep (>30 m) sand and gravel aquifer, with groundwater flow direction anticipated to be to the west towards Porpoise Bay.

The Phase 1 ESA indicated that there is potential for contaminants of concern to be present in the site soil, groundwater and/or soil vapour at concentrations above the applicable *British Columbia Contaminated Sites Regulation* standards. A Phase 2 ESA was recommended to assess the APECs and associated PCOCs listed in the table below.

Table 1: Summary of APECs and PCOCs

			PCOCs		
#	APEC	Activity	Soil	Groundwater	Vapour
1	Septage receiving station	Transfer of raw septage (1993-present), historical use of effluent water for washing trucks (1993-1999), and suspected diesel fuel release into treatment system (ca. 2010)	BTEXS, VPH, LEPH/HEPH, PAH, VOC, metals, nitrate, nitrite, sodium and chloride, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, fluoride, BPA	BTEXS, VPHw/VHw, LEPHw/HEPHw, EPH_{10-19}, PAH, VOC, dissolved metals, nitrate, nitrite, ammonia, sodium and chloride, sulphate, sulfide, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, monochloroacetic acid, fluoride, BPA, PFAS	BTEXS, VPHv, VOC
2	Aerated lagoon	Septage treatment and storage (1993-present) and suspected diesel fuel release into treatment system (ca. 2010)	Same as APEC 1	Same as APEC 1	Same as APEC 1
3	Septage storage lagoon	Septage treatment and storage (1993-present) and suspected diesel fuel release into treatment system (ca. 2010)	LEPH/HEPH, PAH, metals, nitrate, nitrite, sodium and chloride, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, fluoride, BPA	LEPHw/HEPHw, EPH_{10-19}, PAH, VOC, dissolved metals, nitrate, nitrite, ammonia, sodium and chloride, sulphate, sulfide, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, monochloroacetic acid, fluoride, BPA, PFAS	VOC
4	Sludge drying and storage	Digested sludge drying and storage (1993-present) and biosolids manufacturing (1993-2018)	Same as APEC 3	Same as APEC 3	VOC
5	Fill of unknown origin and quality	Imported fill likely used during facility construction (1993) and upgrades (1999)	LEPH/HEPH, PAH, metals	None	None
6	Racetrack	Municipal wastewater treatment and storage (1993-2015) and septage storage (2018-present)	Same as APEC 3	Same as APEC 3	VOC
7	Clarifier	Municipal wastewater treatment and storage (1993-2015) and septage storage (2018-present)	Same as APEC 3	Same as APEC 3	VOC

			PCOCs		
#	APEC	Activity	Soil	Groundwater	Vapour
8	Chlorine contact chamber	Chlorination/dechlorination of effluent (1993-2015) and septage storage (2018-present)	Same as APEC 3, haloacetic acids	Same as APEC 3, haloacetic acids	VOC
9	Biosolids spill	Dumping of mechanically stripped vegetation / soil from the storage lagoon onto road embankment (2023)	Same as APEC 3	Same as APEC 3	VOC

BTEXS – Benzene, Toluene, Ethylbenzene, Xylenes, Styrene
LEPH/HEPH – Light/Heavy Extractable Petroleum Hydrocarbons
PFAS – Per- and polyfluoroalkyl substances
BPA – Bisphenol A
VPH – Volatile Petroleum Hydrocarbons
PAH – Polycyclic Aromatic Hydrocarbons
VOC – Volatile Organic Compounds
BHT – Butylated Hydroxytoluene

In addition to conducting a Phase 2 ESA, Trillium recommended the following:

1. Inspect the concrete containment facilities following removal of the wastewater and sludge. If any cracks or evidence of leaks and/or seepage are found, additional investigation of these areas is recommended.
2. Dispose of the residual sludge/biosolids in accordance with the Organic Matter Recycling Regulation.
3. Dispose of the abandoned waste drum and storage tank at an off-site waste management facility. Following removal of the tank, if stained or odorous soils are encountered, additional investigation of this area is warranted.
4. Based on the age of the building and site infrastructure (post-1993), hazardous building materials are not anticipated to be present at the site. A hazardous building materials survey was beyond the scope of this assessment and should be conducted prior to any renovation or demolition projects.

6.2.1.2 Phase 2 Report

As per Trillium's executive summary, the Phase 2 ESA was completed on August 30, 2023, and consisted of advancing eight (8) test pits to depths ranging from 1.2 to 4 metres below ground surface (mbgs) to assess soil conditions in the area of the APECs. A total of 21 soil samples were analyzed for PCOCs including petroleum hydrocarbons, polycyclic aromatic hydrocarbons, volatile organic compounds, metals, anions and salinity. One (1) sample containing a thin layer of suspected post-treatment septage solids was analyzed for non-routine parameters that may be associated with non-point source septage: ethanolamines, phthalates, butylated hydroxytoluene, bisphenol A and nonylphenol and nonylphenol ethoxylates.

The analytical results indicated that all PCOCs analyzed were below the applicable CSR Industrial Land Use (IL) standards except for chloride, which was elevated in samples collected from TP23-04 at 0.1–0.3 m (510 µg/g) and 1.0–1.2 m (342 µg/g). Based on results from other parts of the site, we suspect the impacts are localized in the vicinity of the septage receiving station. A summary of outstanding COCs is provided in the table below.

Table 2: Summary of Outstanding Areas of Environmental Concern and Contaminants of Concern

AEC	Medium	COC	Maximum Concentration	Depth Range	Exceeding CSR Standard
AEC 1 - Septage	Soil	Chloride	510 ug/g	0.1 to >1.2 m	DW (100 ug/g)

AEC – Area of environmental concern
COC – Contaminant of concern
CSR – BC Contaminated Sites Regulation
DW – CSR standard protective of drinking water

Trillium recommends the following tasks should a certification document be pursued in the future:

1. Advance additional test pits or boreholes in the vicinity of the septage receiving station (AEC 1) to delineate the chloride exceedances in soil.
2. If facilities are decommissioned, advance additional boreholes beneath the lagoons, concrete basins and sludge drying and storage area (APECs 2, 3, 4, 6, 7, and 8) to assess soil and vapour quality relative to these APECs.
3. Assess groundwater PCOCs at the site.

6.2.2 Land Use Change and the Contaminated Sites Regulation

As introduced above in section 4, should the DRSRF property revert back to its zoned use (agricultural) from its long-term industrial use, and a certificate of compliance from the Ministry of Environment and Parks (ENV) is sought by the property owner and the District, the process under the CSR would likely include further site investigations, remediation to new, stricter standards, and management of the process by a Qualified Professional (QP). The key steps in the process typically include the following:

1. **Site Identification/Disclosure**: A Site Disclosure Statement is usually required when applying for a change in use including a demolition permit from local government.
2. **Phase 1 and 2 Preliminary Site Investigation (PSI**): A QP (like a P.Eng. or P.Geo.) conducts a historical review (Phase 1) and sampling (Phase 2) to identify contamination. This step has been conducted for areas of the property that were accessible.
3. **Detailed Site Investigation (DSI):** If contamination is found, a DSI delineates the size and volume of contamination to understand the cleanup required for agricultural use.
4. **Remediation Plan**: A plan must be developed to clean up the site to meet Agricultural (AL) land use standards as defined in the CSR.
5. **Remediation and Cleanup**: The site is cleaned up (soil removal, treatment, etc.).

6.3 Hazardous Materials Assessment

A Hazardous Building Materials (HBM) assessment is a mandatory inspection, usually required by WorkSafeBC, and is conducted before renovation or demolition to identify dangerous materials like asbestos, lead, mold, and PCBs. It involves visual inspection, sampling, and a final report to ensure worker safety, regulatory compliance, and proper disposal.

The Hazardous Building Materials Survey was conducted by Joma Environmental who conducted a survey of the buildings on site, specifically for the following materials:

- asbestos-containing materials
- lead-based paint
- PCB-containing electrical equipment
- mercury-containing components
- chemical storage residues
- biological hazards such as mould or guano

All identified materials must be safely removed prior to demolition.

6.3.1 Hazardous Building Materials Survey, Joma Environmental

As required, a hazardous building materials assessment (HMA) was conducted by Joma Environmental for the District care of Sperling Hansen Associates as part of the District of Sechelt Septage Facility Long-Term Plan project, and a report was submitted by their qualified professional, John Starchuk, PChem, AHERA, on May 16, 2023 and is attached to this Plan in Appendix C. The HMA was conducted to determine what, if any, hazardous building materials are present within the Dusty Road Septage Receiving Facility (DRSRF) structures for the purpose of liability assessment for deconstruction. Non-invasive sampling was used during the HMA to obtain the sample materials and sampling occurred on April 26, 2023.

Ten (10) bulk samples of building materials typically suspected to contain asbestos and/or lead-paint were collected from the building. Five (5) bulk samples were analyzed for asbestos fibres; Zero (0) samples were found to contain asbestos fibers.

Five (5) of the bulk samples collected were analyzed to determine Total Lead content. Three (3) **samples found to exceed the threshold limit of 100 mg/kg,** requiring paint removal or further analysis by Toxicity Characteristic Leaching Procedure (TCLP) for disposal considerations.

- S-02 - Septage Receiving Area - Yellow Barrier Pole - Yellow Paint - 61,500 mg/kg
- S-05 - Lift Station - Crane Arm - Red Paint - 2,560 mg/kg
- S-10 - Contact Chamber - Motor - Dark Blue Paint - 112 mg/kg

Contractors performing abatement and demolition work on the structures must have an appropriate worker exposure control plan in place prior to any demolition activities commence.

The results of the assessment are provided in the following table.

Table 3: Hazardous Material Assessment Observations and Results (Joma, 2023)

Hazardous Material	Type
Asbestos (confirmed)	No asbestos containing materials identified
Lead (confirmed)	• S-02 - Septage Receiving Area - Yellow Barrier Pole - Yellow Paint - 61,500 mg/kg • S-05 - Lift Station - Crane Arm - Red Paint - 2,560 mg/kg • S-10 - Contact Chamber - Motor - Dark Blue Paint - 112 mg/kg
Silica	Assumed to be present in plaster, stucco, grout, ceramic tile, and concrete
Mercury	Fluorescent Light Bulbs
Hanta-Virus - Rodent Feces	None Observed
Arsenic	None observed
Radioactive Materials	None observed
Mould	None observed
Polychlorinated Biphenyls (PCB)	None observed
Ozone Depleting Substances (ODS)	Household AC unit
Urea Formaldehyde Foam Insulation (UFFI)	None observed
Fuel/Oil Storage Tanks	None observed
Cleaners/Chemicals	Industrial holding tanks, household cleaners, paint, oil

Based on the findings of the HMA, the following recommendations are made:

1. The demolition contractor must have an exposure control plan in place for each hazardous substance identified in the report as being in the way of the planned work, including for lead, silica, mercury, ODS and cleaners/chemicals.
2. Provide copies of the report to site personnel, including contractors. A copy of the survey must be immediately available at the site whenever workers are present.
3. Hazardous materials must be handled according to the Transportation of Dangerous Goods Regulation (TDGR) and disposed of according to the BC Hazardous Waste Regulation (BCHWR).

6.4 Salvageable Equipment Inventory

An inventory of equipment and materials will be prepared prior to demolition to identify items with potential salvage or reuse value. Items such as pumps, electrical equipment, structural steel, and spare components may be reused or recycled where practical.

7. DECOMMISSIONING AND DEMOLITION PROCEDURE

The decommissioning process will follow a structured sequence of activities designed to prevent environmental releases and ensure worker safety.

7.1 Facility Shutdown and Site Security

Septage receiving operations will cease once the replacement facility becomes operational. Public access will be disabled, and the site will be secured with fencing, gates, and signage.

7.2 Utility Isolation

All electrical, water, and sewer connections will be safely isolated and locked out. Mechanical systems will be de-energized and secured.

7.3 Removal of Liquids and Residuals

All liquids and residual septage materials will be removed from tanks, piping, and basins using vacuum trucks or pumping equipment. Liquids will be transported to approved treatment facilities.

7.4 Cleaning and Decontamination

Process equipment and tanks will be flushed and cleaned to remove remaining residues prior to demolition.

7.5 Hazardous Materials Abatement

Hazardous materials identified in the survey will be removed by qualified contractors in accordance with regulatory requirements.

7.6 Removal of Equipment and Structures

Mechanical equipment, tanks, buildings, and foundations will be demolished and removed using conventional demolition methods. Materials will be segregated and exported off-site for recycling or disposal.

7.7 Removal of Underground Infrastructure

Buried pipelines, conduits, foundations, and other subsurface infrastructure will be removed unless otherwise approved.

7.8 Environmental Remediation

If contaminated soils are encountered, they will be excavated and transported to approved disposal facilities. Confirmation sampling will be conducted to verify that applicable standards have been achieved.

8. WASTE MANAGEMENT

All waste generated during demolition will be classified and transported to authorized receiving facilities.

Hazardous waste will be managed in accordance with the BC Hazardous Waste Regulation, including manifesting and recordkeeping requirements.

Waste tracking documentation will be maintained to demonstrate proper disposal of all materials removed from the site.

9. ENVIRONMENTAL PROTECTION MEASURES

Environmental protection measures will include:

- spill prevention and response procedures
- erosion and sediment control during soil disturbance
- dust suppression during demolition
- odour management during sludge removal
- traffic management and site access control

Environmental monitoring may be conducted during excavation activities to identify potential contamination.

10. SITE RESTORATION

Following demolition and environmental verification, the site will be restored to predevelopment conditions or as required by the property owner.

Restoration activities can include:

- backfilling excavations with clean material
- regrading the site to match natural contours
- replacing topsoil and restoring soil structure
- revegetation using native plant species appropriate to the local ecosystem
- invasive species management where necessary

If necessary, vegetation establishment will be monitored for several years following restoration to confirm successful site stabilization, or until the site becomes a gravel extraction operation.

11. FINAL CLOSURE DOCUMENTATION

A Final Closure Report will be prepared upon completion of the decommissioning project. The report will include:

- summary of decommissioning activities
- hazardous materials removal records
- waste disposal documentation and manifests
- environmental sampling results
- QA/QC and chain-of-custody documentation
- as-built drawings and photographs
- restoration documentation and monitoring results

The report will demonstrate that the site meets all regulatory requirements and that restoration objectives have been achieved.

12. TENDERING AND TRANSITION STRATEGY

The District has to the end of 2031 to commission a new septage receiving facility and complete the clean-up and regrading of the DRSRF site unless they can arrange a lease extension with the site owner. This window is tight for the amount of work that will be required. It is recommended that the District consider hiring additional staff that can focus on just this process until the projects are completed. The following strategy is recommended for tendering the pre-decommissioning and demolition work and transitioning to the new septage receiving facility. The timeline recommended provides at least 18 months of contingency time for delays.

Table 4: Tendering and Transition Strategy

#	Activity	Start Month	Year
1	Procure a site for the new facility based on the conceptual design footprint provided in TM4	Jue - Dec	2026
2	Tender the design of the new facility based on the conceptual design provided in TM4	Jan - Jun	2027
3	Complete the design of the new facility	Jul - Dec	2027
4	Order the long-lead time equipment for the new facility	Jan	2028
5	Conduct an inventory of salvageable equipment at the DRSRF	Jan	2028
6	Tender the construction and commissioning of the new facility	Feb - May	2028
7	Construct the new facility	Jun - Dec	2028
8	Commission the new facility and accept trucks	Jan	2029
9	Close the DRSRF and secure the site with fencing and signage	Feb	2029
10	Tender the decommissioning of existing buried infrastructure and solids dewatering (1,600 m3 assumed to place in geotubes at the site) and removal at the DRSRF – this could be done in conjunction with item 13 as stage 1 of the process	Feb - Apr	2029
11	Decommission buried infrastructure	May	2029
12	Manage and dispose of the existing solids that may include at least one year to complete with geotubes	May 2029 – Jun 2030	
13	Tender the salvage of equipment and demolition and disposal of structures at the DRSRF	Feb - Apr	2029
14	Salvage equipment	Jun - Jul	2029
15	Demolish and dispose of structures	Aug - Dec	2029
16	Tender the excavation of contaminated soil (assumed 300 mm over 20% of the site – 2,580 m3) and grade and restore site – this could be done in conjunction with item 13 as stage 3 of the process	Sep - Nov	2029

#	Activity	Start Month	Year
17	Excavate and dispose of soils and regrade site	Jan - Apr	2030
18	Complete the restoration of the site as requested by the property owner (hydroseed or clean gravel)	May - Jun	2030
19	Closure documentation	Jul	2030

13. COST ESTIMATE

The cost for decommissioning, demolishing and restoring the DRSRF site was estimated for the District's auditor in May 2024 at a Class C level. The following table summarizes these costs and includes a 5% higher project management cost and a 10% higher contingency. The cost escalation has been added for 2024 and 2025 based on Statistics Canada's website, specifically, their construction inflation cost summary.

Note that the process to obtain a Certificate of Completion from the ENV under the CSR to revert the property to agricultural use has not been included in the cost estimate. At this time there are too many unknowns with respect to what the property use will be once the District's lease expires.

Table 5: Summary of Demolition and Site Restoration Costs (2024)

Activity	Cost
Remove and Dispose of Septage Sludge	$ 485,000
Reinforced Concrete - Includes Building & Sidewalk Demo	$ 394,600
Building Roof Deconstruction & Disposal	$ 37,700
Decommission & Salvage Septage Receiving Station	$ 9,700
Building Decommission - Materials Salvage & Disposal	$ 57,400
Lagoons Decommission - Disposal	$ 110,700
Soil Removal From Site - Based on 300mm over 20% of site	$ 624,900
Demo Concrete Removal	$ 70,800
Soil Replacement	$ 569,200
Site Grading, Ditching & Sedimentation Control	$ 129,000
Remove Piping	$ 31,900
Sub Total	$2,520,900
Project Management - 15%	$ 378,100
Contingency - 30%	$ 756,300
Total	**$3,655,300**
2024 - 2025 cost escalation (6.95%)	**$3,909,300**

This estimate is considered a Class C estimate only and has been prepared based on limited project definition and available background information. Consistent with the EGBC-referenced ACEC-BC guideline, Class C estimates typically carry an expected accuracy range of approximately ±25% to ±40% and are intended for preliminary planning and budgetary purposes, not as a final construction cost commitment.

14. CONCLUSION

The decommissioning of the DRSRF represents the final phase of the District's transition to a modern septage management system. Through careful planning, environmental oversight, and adherence to regulatory requirements, the facility will be safely dismantled and the site restored to natural conditions.

Successful implementation of this Plan will ensure protection of public health and the environment, compliance with Crown land lease obligations, and completion of the project without long-term environmental liabilities.

15. LIMITATIONS

This report has been prepared by Sperling Hansen Associates (SHA) on behalf of the District of Sechelt in accordance with generally accepted engineering practices to a level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions in British Columbia, subject to the time limits and financial and physical constraints applicable to the services.

The report, which specifically includes all tables and figures, is based on engineering analysis by SHA staff of data compiled during the course of the project. Except where specifically stated to the contrary, the information on which this study is based has been obtained from external sources. This external information has not been independently verified or otherwise examined by SHA to determine its accuracy and completeness. SHA has relied in good faith on this information and does not accept responsibility for any deficiency, misstatements or inaccuracies contained in the reports as a result of omissions, misinterpretation and/or fraudulent acts of the persons interviewed or contacted, or errors or omissions in the reviewed documentation.

The report is intended solely for the use of the District of Sechelt. Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, is the responsibility of such third parties. SHA does not accept any responsibility for other uses of the material contained herein nor for damages, if any, suffered by any third party because of decisions made or actions based on this report. Copying of this intellectual property for other purposes is not permitted.

The findings and conclusions of this report are valid only as of the date of this report. The interpretations presented in this report and the conclusions and recommendations that are drawn are based on information that was made available to SHA during the course of this project. Should additional new data become available in the future, Sperling Hansen Associates should be requested to re-evaluate the findings of this report and modify the conclusions and recommendations drawn, as required.

15.1 Use of Artificial Intelligence in Report Preparation

This report was prepared by Sperling Hansen Associates (SHA) in accordance with generally accepted engineering practices and applicable quality management requirements. In the preparation of this report, limited use was made of artificial intelligence (AI) tools to assist with drafting, formatting, and refinement of written content.

AI tools were used strictly as productivity aids and were not relied upon to conduct engineering analysis, interpret data, develop technical conclusions, or exercise professional judgment. All engineering assessments, assumptions, calculations, findings, and recommendations contained in this report were independently developed, reviewed, and verified by a Professional Engineer registered with Engineers and Geoscientists British Columbia (EGBC).

The responsible professional has exercised independent judgment in accordance with the Engineers and Geoscientists Act, the EGBC Code of Ethics, and EGBC Quality Management

Guidelines. Consistent with EGBC guidance respecting the use of emerging technologies, SHA has maintained direct professional oversight of all report content and has applied appropriate review procedures to confirm technical accuracy and completeness.

The use of AI does not transfer or diminish professional responsibility. The undersigned professional retains full accountability for the contents of this report.

We appreciate the opportunity to work with the District of Sechelt on this project. Please do not hesitate to contact the undersigned if you have any questions.

Sincerely,

SPERLING HANSEN ASSOCIATES

Report prepared by:

Nicole Kohnert, P.Eng.
Senior Environmental Engineer

Report reviewed by:

Mircea L. Cvaci, P.Eng., MBA
Vice President and Civil Engineer

16. REFERENCES

Joma Environmental. Hazardous Materials Assessment Report, Dusty Road Wastewater Treatment Plant. May 2023

Trillium Environmental. Environmental Site Assessment, Phase 1 Report. August 2023

Trillium Environmental. Environmental Site Assessment, Phase 2 Report. December 2023

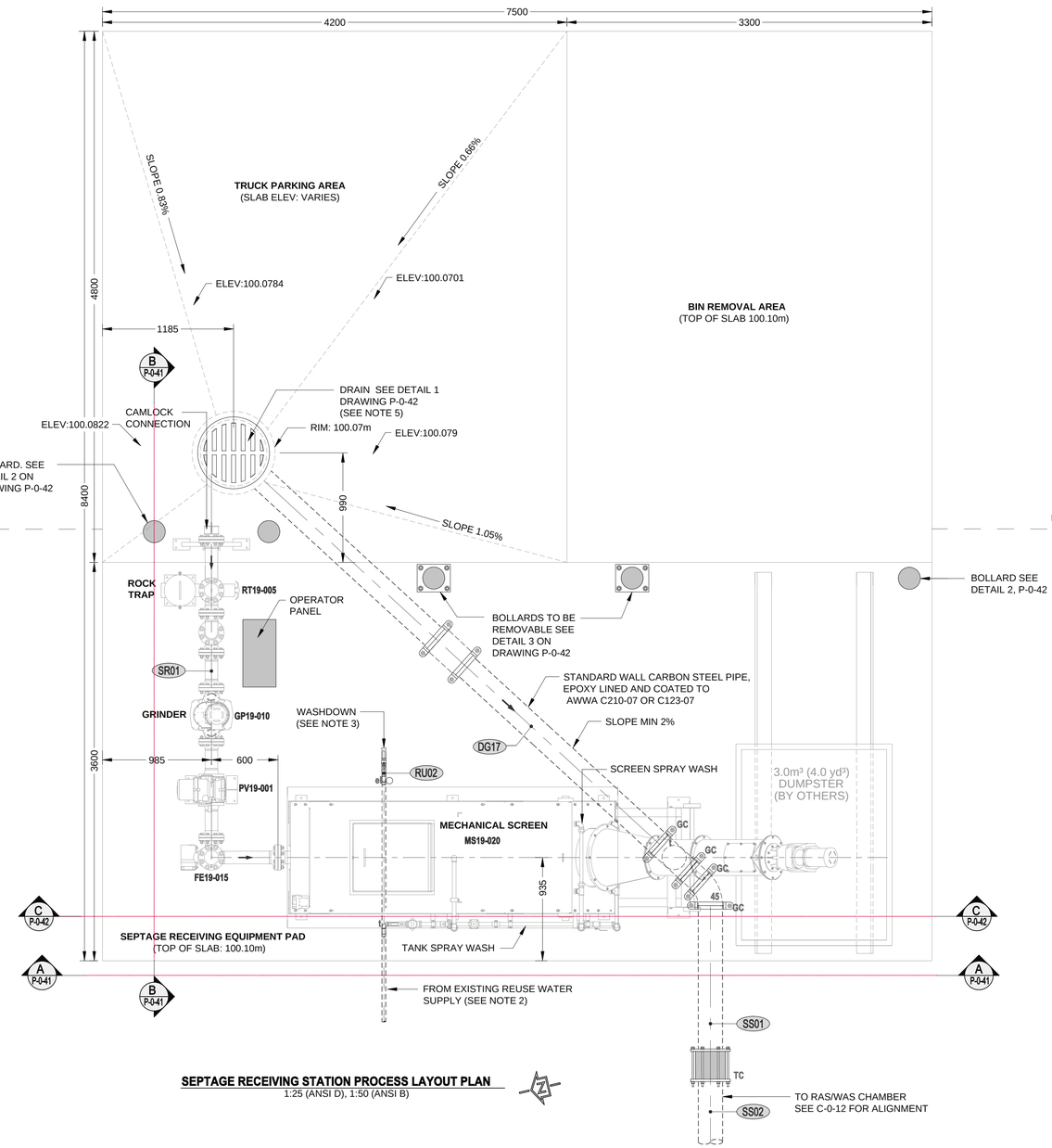
APPENDICES

APPENDIX A
Floor Plans and Drawings

PIPING IDENTIFICATION TABLE			
ID	SIZE	FUNCTION	MATERIAL
DG17	200Ø	DRAIN, GENERAL GRAVITY PIPING	STD STEEL EPOXY LINED AND COATED
RU02	25Ø	REUSE WATER PIPING	SCH40 SS
SR01	100Ø	SEPTAGE RECEIVING PIPING	SCH40 SS
SS01	200Ø	SCREENED SEPTAGE PIPING	STD STEEL EPOXY LINED AND COATED
SS02	200Ø	SCREENED SEPTAGE PIPING	SDR 35 PVC

PROCESS NOTES:

1. THE LIMITS OF THE EXISTING EDGE OF GRAVEL ROADWAY ARE APPROXIMATE ONLY.
2. CONNECTED TO EXISTING 50mm DIAMETER REUSE WATER MAIN LOCATED ON NORTH SIDE OF THE EXISTING SCREEN.
3. INSTALLED A 25mm DIAMETER WASHDOWN STATION, C/W INSULATION AND HEAT TRACE.



SEPTAGE RECEIVING STATION PROCESS LAYOUT PLAN
1:25 (ANSI D), 1:50 (ANSI B)

DISCLAIMER:
THIS DRAWING IS FOR INFORMATION ONLY. THE DISTRICT OF SECHELT ACCEPTS NO RESPONSIBILITY AS TO THE ACCURACY OF ANY PLANS OR ELEVATIONS. EXISTING UTILITY LOCATIONS ARE PROVIDED FOR INFORMATION ONLY AND MUST BE VERIFIED BY THE RESPECTIVE UTILITY COMPANY. THE DISTRICT OF SECHELT MAKES NO REPRESENTATION OR WARRANTY EXPRESSED OR IMPLIED, IN FACT OR IN LAW, WITH RESPECT TO THE ACCURACY, COMPLETENESS OR APPROPRIATENESS OF THE DATA CONTAINED OR REFERENCED HEREIN.

Sechelt

ISSUES

DESCRIPTION	DATE (yy/mm/dd)
FOR PRELIMINARY	13/09/04
FOR APPROVAL	13-09-10
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FOR RECORD	15/07/15
FOR ARCHIVE	–

ISSUED FOR RECORD JULY 15, 2015 URBAN systems

NO.	yy/mm day	DESCRIPTION	BY	APP'D
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REVISIONS

DES. JC/EP
DWN. EP
DATE 13/09/10
CHK. DN

P. ENG. D.NASH DATE 13/10/17
SCALE AS SHOWN

Maple Reinders
URBAN systems
VEOLIA WATER Solutions & Technologies

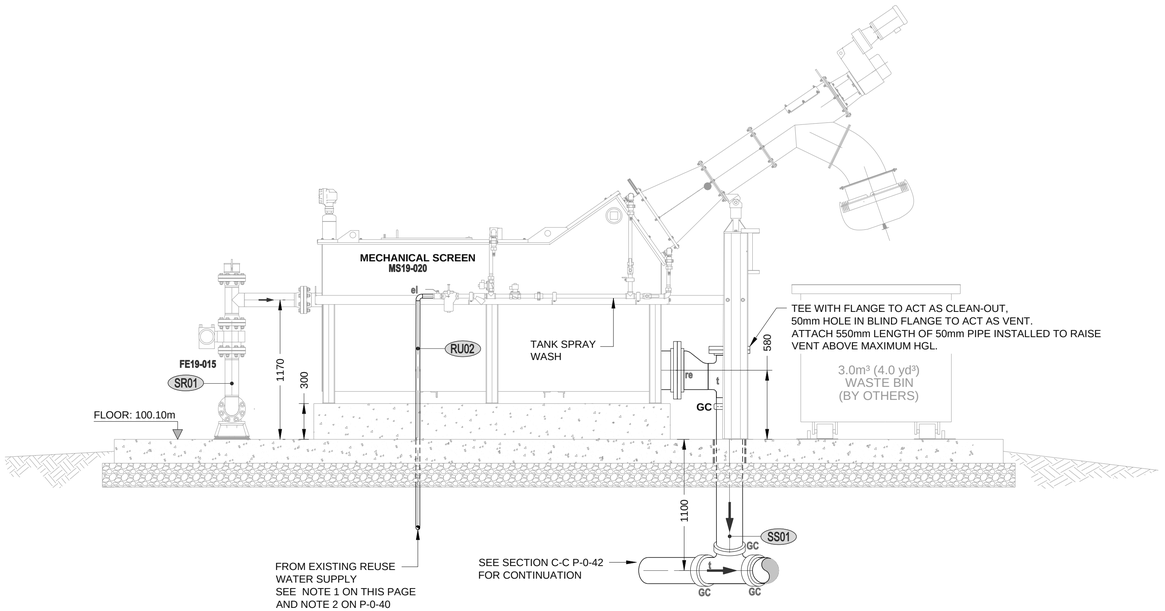
SECHELT WASTEWATER TREATMENT FACILITIES DESIGN BUILD

DUSTY ROAD SEPTAGE RECIEVING STATION PLAN

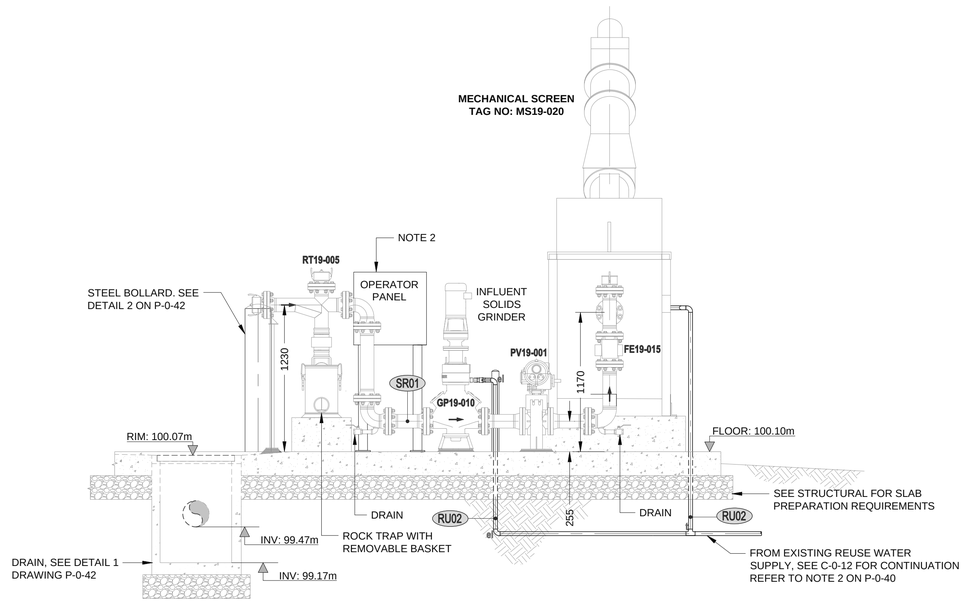
PROJECT No. 3032.0004.03
SHEET 40 OF 42
DRAWING No. P-0-40
DESTROY ALL PRINTS PRIOR TO R 0

PIPING IDENTIFICATION TABLE			
ID	SIZE	FUNCTION	MATERIAL
DG17	200Ø	DRAIN, GENERAL GRAVITY PIPING	STD STEEL EPOXY LINED AND COATED
RU02	25Ø	REUSE WATER PIPING	SCH40 SS
SR01	100Ø	SEPTAGE RECEIVING PIPING	SCH40 SS
SS01	200Ø	SCREENED SEPTAGE PIPING	STD STEEL EPOXY LINED AND COATED
SS02	200Ø	SCREENED SEPTAGE PIPING	SDR 35 PVC

EQUIPMENT MASS TABLE	
EQUIPMENT	MASS
AUGER AND TANK ASSEMBLY (EMPTY)	2023 KG (4450 LB)
INFLUENT GRINDER	250 KG (550LB)



A-A P-0-40 **SECTION - SEPTAGE RECEIVING STATION NORTH/SOUTH VERTICAL PROCESS LAYOUT**
1:25 (ANSI D), 1:50 (ANSI B)



B-B P-0-40 **SECTION - SEPTAGE RECEIVING STATION EAST/WEST VERTICAL PROCESS LAYOUT**
1:25 (ANSI D), 1:50 (ANSI B)

PROCESS NOTES:

1. EXISTING REUSE WATER SUPPLY WAS UTILIZED FOR SERVICE WATER, FOR SCREEN AND FOR CONCRETE RECEIVING PAD WASHDOWN ACTIVITIES.
2. OPERATOR PANEL INSTALLED WITHIN AN ELEVATED WEATHERPROOF ENCLOSURE.

DISCLAIMER:
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ISSUED FOR RECORD JULY 15, 2015 URBAN systems

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REVISIONS

DES. JC/EP
DWN. EP
DATE 13/09/10
CHK. DN

P. ENG. D.NASH DATE 13/10/17
SCALE AS SHOWN

Maple Reinders
URBAN systems
VEOLIA WATER Solutions & Technologies

SECHELT WASTEWATER TREATMENT FACILITIES DESIGN BUILD

DUSTY ROAD SEPTAGE RECEIVING STATION SECTIONS

PROJECT No. 3032.0004.03
SHEET 41 OF 42
DRAWING No. P-0-41
DESTROY ALL PRINTS PRIOR TO R 0

PROCESS NOTES:

1. ALL BURIED GROOVED COUPLINGS ARE FLEXIBLE TYPE, EPOXY COATED, AND COMPLETELY WRAPPED IN DENSO TAPE.

PIPING IDENTIFICATION TABLE

ID	SIZE	FUNCTION	MATERIAL
DG17	200Ø	DRAIN, GENERAL GRAVITY PIPING	STD STEEL EPOXY LINED AND COATED
RU02	25Ø	REUSE WATER PIPING	SCH40 SS
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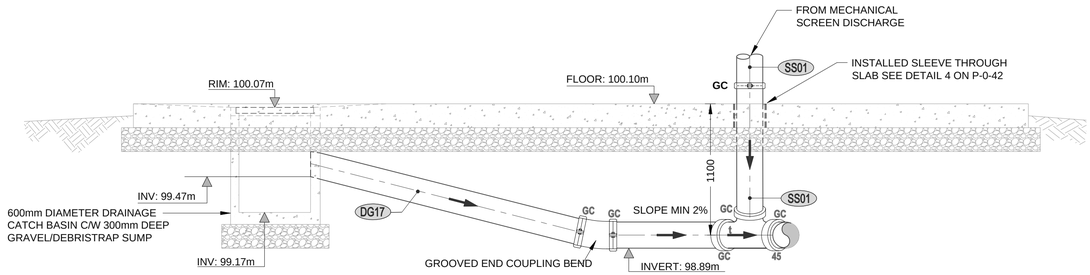
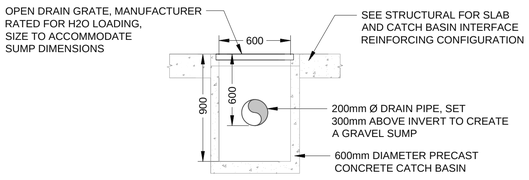
SS01	200Ø	SCREENED SEPTAGE PIPING	STD STEEL EPOXY LINED AND COATED
SS02	200Ø	SCREENED SEPTAGE PIPING	SDR 35 PVC

SECTION NOTE:

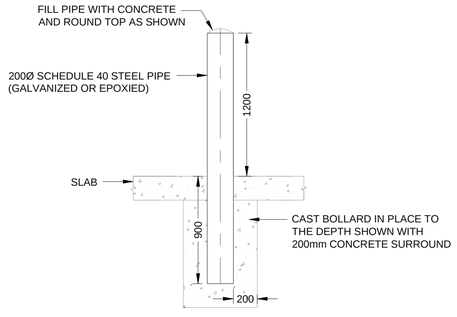
SIMPLIFIED SECTION TO CONVEY UNDERSLAB PIPING ARRANGEMENT ONLY. ABOVE SLAB EQUIPMENT HAS BEEN OMITTED. SEE SECTIONS A-A AND B-B ON P-0-41 FOR DETAILS.



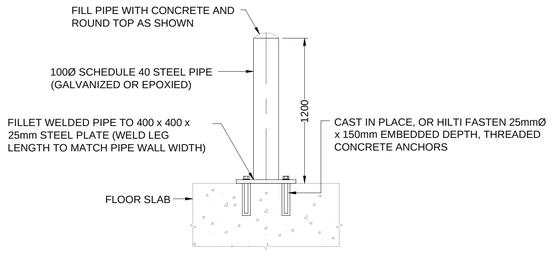
C-C P-0-40 **SECTION - SEPTAGE RECEIVING STATION NORTH EAST/SOUTH WEST VERTICAL UNDERSLAB LAYOUT**
1:25 (ANSI D), 1:50 (ANSI B)



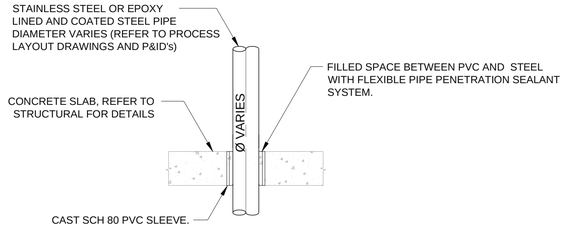
1 P-0-42 **DETAIL - SLAB DRAIN VERTICAL LAYOUT**
1:25 (ANSI D)



2 P-0-42 **DETAIL - STEEL BOLLARD VERTICAL LAYOUT**
1:25 (ANSI D)



3 P-0-42 **DETAIL - REMOVABLE STEEL BOLLARD VERTICAL LAYOUT**
(SCALE: NTS)



4 P-0-42 **DETAIL - CONCRETE FLOOR PROCESS PIPE PENETRATION**
SCALE: NTS

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REVISIONS

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DATE 13/09/10
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P. ENG. D.NASH DATE 13/10/17

SCALE AS SHOWN

Maple Reinders
URBAN systems
VEOLIA WATER Solutions & Technologies

SECHELT WASTEWATER TREATMENT FACILITIES DESIGN BUILD

DUSTY ROAD SEPTAGE RECEIVING STATION SECTION AND DETAILS

PROJECT No. 3032.0004.03

SHEET 42 OF 42

DRAWING No. P-0-42

DESTROY ALL PRINTS PRIOR TO R 0

APPENDIX B
Environmental Site Assessment, Trillium Environmental

Phase 1 Environmental Site Assessment
5297 Dusty Road, Sechelt, BC

Prepared for:
District of Sechelt c/o Sperling Hansen Associates Inc.
2nd Floor, 5797 Cowrie Street
Sechelt, BC V0N 3A0

Project No. 154-002-01
August 2023

trillium

Trillium Environmental Ltd.
126 Ingram Street, Unit 203
Duncan, BC

EXECUTIVE SUMMARY

Trillium Environmental ("Trillium") was retained by Sperling Hansen Associates Inc. on behalf of the District of Sechelt to complete a Phase 1 Environmental Site Assessment (ESA) for the Dusty Road Septage Receiving Facility (DRSRF) located at 5297 Dusty Road, Sechelt, BC (the "Site"). It is understood that the assessment was requested for due diligence purposes to evaluate known and potential environmental concerns in consideration of facility decommissioning.

The purpose of the Phase 1 ESA was to identify areas of potential environmental concern (APECs) and associated potential contaminants of concern (PCOCs) at the Site that may have resulted from existing and previous land uses or activities on and adjacent to the Site, and to identify any present conditions or practices that may represent significant environmental risks or liabilities.

The historical review indicated that the Site was initially developed in 1993 as a municipal wastewater treatment plant and has operated solely as a septage receiving facility since 2015. The treatment facility is classified as an aeration basin type secondary plant with disinfection facilities and sludge digestion, drying and handling facilities. The facilities consist of a receiving station, control building, three concrete basins (racetrack, clarifier, and chlorine contact chamber), two lined lagoons (aerated lagoon and storage lagoon), and a sludge drying pad. Load records from 2021 to March 2023 indicate that the incoming septage originated primarily from domestic septic systems, sewage holding tanks, porta-potties, campground pit toilets, and brewery wastes.

Based on regional geology, hydrogeology, and topography, groundwater at the Site is expected to be present in a deep (>30 m) sand and gravel aquifer, with groundwater flow direction anticipated to be to the west towards Porpoise Bay.

The Phase 1 ESA indicated that there is potential for contaminants of concern to be present in the Site soil, groundwater and/or soil vapour at concentrations above the applicable *British Columbia Contaminated Sites Regulation* standards. A Phase 2 ESA is recommended to assess the APECs and associated PCOCs listed in **Table E-1** below.

Table E-1: Summary of APECs and PCOCs

#	APEC	Activity	PCOCs		
			Soil	Groundwater	Vapour
On-site					
1	Septage receiving station	Transfer of raw septage (1993-present), historical use of effluent water for washing trucks (1993-1999), and suspected diesel fuel release into treatment system (ca. 2010)	BTEXS, VPH, LEPH/HEPH, PAH, VOC, metals, nitrate, nitrite, sodium and chloride, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, fluoride, BPA	BTEXS, VPHw/VHw, LEPHw/HEPHw, EPH_{10-19}, PAH, VOC, dissolved metals, nitrate, nitrite, ammonia, sodium and chloride, sulphate, sulfide, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, monochloroacetic acid, fluoride, BPA, PFAS	BTEXS, VPHv, VOC
2	Aerated lagoon	Septage treatment and storage (1993-present) and suspected diesel fuel release into treatment system (ca. 2010)	Same as APEC 1	Same as APEC 1	Same as APEC 1
3	Septage storage lagoon	Septage treatment and storage (1993-present) and suspected diesel fuel release into treatment system (ca. 2010)	LEPH/HEPH, PAH, metals, nitrate, nitrite, sodium and chloride, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, fluoride, BPA	LEPHw/HEPHw, EPH_{10-19}, PAH, VOC, dissolved metals, nitrate, nitrite, ammonia, sodium and chloride, sulphate, sulfide, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, monochloroacetic acid, fluoride, BPA, PFAS	VOC
4	Sludge drying and storage	Digested sludge drying and storage (1993-present) and biosolids manufacturing (1993-2018)	Same as APEC 3	Same as APEC 3	VOC
5	Fill of unknown origin and quality	Imported fill likely used during facility construction (1993) and upgrades (1999)	LEPH/HEPH, PAH, metals	None	None
6	Racetrack	Municipal wastewater treatment and storage (1993-2015) and septage storage (2018-present)	Same as APEC 3	Same as APEC 3	VOC
7	Clarifier	Municipal wastewater treatment and storage (1993-2015) and septage storage (2018-present)	Same as APEC 3	Same as APEC 3	VOC
8	Chlorine contact chamber	Chlorination/dechlorination of effluent (1993-2015) and septage storage (2018-present)	Same as APEC 3, haloacetic acids	Same as APEC 3, haloacetic acids	VOC
9	Biosolids spill	Dumping of mechanically stripped vegetation / soil from the storage lagoon onto road embankment (2023)	Same as APEC 3	Same as APEC 3	VOC

BTEXS – Benzene, Toluene, Ethylbenzene, Xylenes, Styrene
VPH – Volatile Petroleum Hydrocarbons
LEPH/HEPH – Light/Heavy Extractable Petroleum Hydrocarbons
PAH – Polycyclic Aromatic Hydrocarbons
PFAS – Per- and polyfluoroalkyl substances
VOC – Volatile Organic Compounds
BPA – Bisphenol A
BHT – Butylated Hydroxytoluene

In addition to conducting a Phase 2 ESA, Trillium recommendations the following:

- Inspect the concrete containment facilities following removal of the wastewater and sludge. If any cracks or evidence of leaks and/or seepage are found, additional investigation of these areas is recommended.
- Dispose of the residual sludge/biosolids in accordance with the Organic Matter Recycling Regulation.
- Dispose of the abandoned waste drum and storage tank at an off-site waste management facility. Following removal of the tank, if stained or odorous soils are encountered, additional investigation of this area is warranted.
- Based on the age of the building and site infrastructure (post-1993), hazardous building materials are not anticipated to be present at the Site. A hazardous building materials survey was beyond the scope of this assessment and should be conducted prior to any renovation or demolition projects.

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Appendix D Government Records
Appendix E BC ENV Site Registry Search
Appendix F Historical Analytical Reports
Appendix G Site Photographs

1.0 INTRODUCTION

Trillium Environmental ("Trillium") was retained by Sperling Hansen Associates Inc. (SHA) on behalf of the District of Sechelt to conduct a Phase 1 Environmental Site Assessment (ESA) for the Dusty Road Septage Receiving Facility (DRSRF) located at 5297 Dusty Road, Sechelt, BC (the "Site"). It is understood that the assessment was requested for due diligence purposes to evaluate known and potential environmental concerns at the Site in consideration of facility decommissioning.

The purpose of the Phase 1 ESA was to identify areas of potential environmental concern (APECs) and associated potential contaminants of concern (PCOCs) at the Site that may have resulted from existing and previous land uses or activities on and adjacent to the Site, and to identify any present conditions or practices that may represent significant environmental risks or liabilities.

1.1 Site Identification

The Site consists of one legally titled Crown parcel as described in **Table 1-1** below.

Table 1-1: Site Information

Descriptor	Details
Civic Addresses	5297 Dusty Road, Sechelt, BC
Current Registered Owner(s)	The Crown in right of British Columbia represented by the Minister of the Environment, Lands and Parks
Legal Description	LOT D DISTRICT LOT 7613 GROUP 1 NEW WESTMINSTER DISTRICT PLAN LMP22726
PID	025-062-921
Site ID	N/A
Current Zoning and Land Use	Not zoned / Industrial (IL) land use
Property Area (approximate)	43,038 m^2 (4.3 ha)
Latitude / Longitude	49°29'20.47"N, 123°44'8.19"W (approximate Site centroid)

The Site is located within the Sunshine Coast Regional District (SCRD), adjacent to the eastern boundary of the District of Sechelt. A map of the Site location and surrounding area are shown on the attached **Figures 1 and 2**, respectively. Copies of the current land title and legal plan are included in **Appendix A** and are further discussed in **Sections 3.2** and **3.3**.

1.2 Scope of Work

The scope of work for the Phase 1 ESA included the following tasks:

- Obtain and review land title(s) and legal plans;
- Review available historical records (*e.g.*, street directories, fire insurance maps, aerial photographs, municipal archives, government databases, *etc.*);
- Search the BC Ministry of Environment and Climate Change Strategy (BC ENV) Site Registry;
- Conduct a site visit with photographic documentation;
- Interview individuals with knowledge of past/present land use; and
- Prepare a Phase 1 ESA report documenting the records and findings.

Trillium conducted this work according to accepted assessment procedures, which reflect Canadian Standards Association (CSA) Z768-01 Phase 1 Environmental Site Assessment standards (CSA, 2022).

1.3 Regulatory Background

The legislation which dictates site investigation and remediation of site contamination in British Columbia is mandated by BC ENV under the *Environmental Management Act*. Specific environmental standards, protocols and guidance are provided in the Contaminated Site Regulation (CSR). The CSR provides concentration-based standards for soil, water, sediment, and soil vapour that, when warranted, are used to determine whether a site is contaminated.

Schedule 2 of the CSR specifies specific commercial and industrial activities that have the potential to cause contamination.

1.4 Study Limitations

Findings presented in this report are based upon (i) a limited visual review of accessible areas of the on-Site buildings and surrounding grounds, (ii) interviews with personnel familiar with Site activities, and (iii) a review of Site, environmental agency and historical archive records. Consequently, while findings and conclusions documented in this report have been prepared in a manner consistent with that level of care and skill normally exercised by other members of the environmental science and engineering profession practicing under similar circumstances in the area at the time of the performance of the work, this report is not intended nor is it able to provide a totally comprehensive

review of past or present Site environmental conditions. This report is intended to provide information to reduce, but not necessarily eliminate, uncertainty regarding the potential for contamination of a property.

This report has been prepared solely for the internal use of the District of Sechelt c/o Sperling Hansen Associates Inc. pursuant to the agreement between Trillium Environmental Ltd. and Sperling Hansen Associates Inc. By using the report, the abovementioned parties agree that they will review and use the report in its entirety. Any use which other parties make of this report, or any reliance on or decisions made based on it, are the responsibility of such parties. Trillium Environmental Ltd. accepts no responsibility for damages, if any, suffered by other parties as a result of decisions made or actions based on this report.

2.0 PHYSICAL SETTING

2.1 Site Description

The Site is comprised of a single, roughly rectangular, lot located in the SCRD, adjacent to the eastern boundary of the District of Sechelt. The Site is located on the south side of Dusty Road, approximately 850 m east of the intersection with Sechelt Inlet Road. The Site area encompasses the DRSRF and lands surrounding the facility. The DRSRF is located within a fenced area in the central portion of the Site and the surrounding lands are undeveloped and/or forested except for a gravel haul road associated with the adjacent gravel pit operation that intersects the east, south, and west portions of the Site. A Site plan showing the current configuration is provided on **Figure 3**.

2.2 Surrounding Land Use

Surrounding land use includes the following (see **Figure 2**):

- **North:** Dusty Road, undeveloped/forested parcel;
- **East**: Sechelt Sand and Gravel pit;
- **South:** Sechelt Sand and Gravel pit; and
- **West:** Road right-of-way, Sechelt Sand and Gravel pit

The area immediately bordering the Site to the south is an undeveloped, forested portion of the gravel pit property. To the west, a narrow road right-of-way is situated between the Site and the adjacent gravel pit.

2.3 Regional Geology and Topography

Surficial geology at the Site and surrounding area is mapped as Capilano Sediments comprising fluvial deltaic fan and channel deposits of cobbles, gravel, sand, and silt (McCammon, 1977). According to the BC Water Resource Atlas (WRA), bedrock beneath the Site and surrounding area is mapped as granodioritic intrusive rocks of the Late Jurassic Period (BC WRA, 2022).

The Site is situated approximately 117 m above sea level (masl) on a benched hillside. Regional topography slopes to the west towards Porpoise Bay. Per Google Earth, Site topography is moderately sloped to the west/northwest. The topography west of the Site slopes steeply towards an adjacent gravel pit. Stormwater run-off at the Site is expected to be captured in the lagoons/basins or infiltrate the subsurface.

2.4 Regional Hydrogeology and Hydrology

Groundwater flow direction is expected to generally follow regional topography flowing from areas of higher elevation to areas of lower elevation. Local groundwater flow direction may vary with topography, geology and the presence of drainage channels and buried utilities and is subject to confirmation with field measurements.

According to the BC WRA, the Site and surrounding area are underlain by the East Sechelt Delta aquifer (Aquifer #566) and the East Porpoise Bay aquifer (Aquifer #564). Aquifer details are included in **Appendix B**.

Aquifer #566 is an unconfined glacio-fluvial or ice contact sand and gravel aquifer covering an area of approximately 9.7 km^2. The aquifer is bound to the south and west by the coastlines of the Sechelt inlet and Strait of Georgia and extends inland to areas up to 100 masl in elevation. The aquifer is considered highly vulnerable to contamination based on overlying materials being predominately sand. The depth to the water table varies from <15 m to >60 m, with a median static water depth of approximately 10 m (Hammond and Hinell, 2018a).

Aquifer #564 is a bedrock aquifer comprised of fractured igneous intrusive, metamorphic, meta-sedimentary, meta-volcanic, or volcanic rocks. The aquifer spans an area of approximately 28.2 km^2 and is bound to the west and south by the Sechelt Inlet and Strait of Georgia and extends inland to areas up to 180 masl in elevation. The vulnerability of the aquifer ranges with elevation, with higher elevation areas having lower vulnerability due to the presence of a till (Vashon Till) and clay confining layer and lower elevation layers having higher vulnerability due to overlying materials

being absent (i.e., outcrop areas) or permeable sands and gravels (Capilano Sediments). The comprising bedrock is considered to have low permeability except for fracture zones which can facilitate rapid movement of groundwater. The depth to the water table varies from <15 to >60 m, with a median static water depth of approximately 18.3 m (Hammond and Hinell, 2018b). Elevated arsenic levels have been reported throughout the region and are suspected to originate from mineralized deposits within the fractured bedrock (Carmichael & Clarkson, 1994; Mattu & Schreiner, 2000).

There are currently no water licenses on record for wells within these aquifers (BC WRA, 2022); however, groundwater demand in the region is anticipated to increase due to the need for an alternative drinking water source (Associated Environmental [AE], 2019). Groundwater flow direction for both aquifers is to the west/southwest towards the Sechelt Inlet and Strait of Georgia (Hammond and Hinell, 2018a; 2018b).

A groundwater investigation was completed by AE (AE, 2019) on behalf of the SCRD to assess the suitability of a nearby well for drinking water supply. The District of Sechelt had a copy of this report which was provided to Trillium for review. The well (well tag 117295, located approx. 450 m west of the Site) was drilled in September 2018 to a depth of 85.3 mbgs using an air rotary drill rig. The investigation indicated that groundwater was situated at 30.9 mbgs within an unconfined sand and gravel aquifer that was approximately 50 m thick. The hydraulic conductivity of this unit was estimated at 9×10^{-5} m/s and pump test results indicated a sustained yield of 1,011 US gallons per minute. The laboratory results for a groundwater sample submitted for general parameters, nutrients, bacteriological, radiological, and total and dissolved metals did not indicate any elevated parameters relative to federal drinking water quality guidelines except for total iron which was attributed to sediment in the sample. An assessment of the local hydrology/hydrogeology indicated the Site was within the capture zone for this well. Water wells are discussed further in **Section 3.9.**

2.5 Surface Water and Potable Water

The nearest freshwater surface water body receptor is Irgens Creek which is located approximately 300 m north and cross-gradient of the Site, and discharges into Porpoise Bay approximately 980 m west of the Site.

The Chapman Water System supplies approximately 90% of the SCRD (including the District of Sechelt) with potable water sourced from Chapman Creek, located approximately 1.7 km south of

the Site (SCRD, 2015). There is no municipal potable water service at the Site. Drinking water wells are discussed in **Section 3.9**.

3.0 RECORDS REVIEW

3.1 Municipal Records and Archives

3.1.1 District of Sechelt Records

Historical records pertaining to the Site were requested from the District of Sechelt. Relevant records are discussed below and are presented in **Appendix C**.

Crown Land Occupancy Records

Several historical records relating to the historical occupancy were provided and are summarized below:

- A letter from the SCRD to the Ministry of Environment, dated December 23, 1991, indicates Construction Aggregates Ltd./Sechelt Aggregates Ltd. was the lessee of the Site's parent parcel (District Lot 7613) and endorsed the use of a portion of their existing lease for a "sludge treatment facility".
- A License to Cut, dated October 27, 1993, granted the SCRD permission to log the Site.
- A License of Occupation, dated October 26, 1994, granted the District of Sechelt permission to use the Site for "municipal sludge processing facility purposes" for a two-year term.
- A License of Occupation, dated September 20, 2000, granted the District of Sechelt permission to use the Site for "municipal sewage and sludge processing facility purposes" for a ten-year term.
- A Lease agreement, dated September 26, 2001, granted the District of Sechelt permission to use the Site for "municipal sewage and sludge disposal facility purposes" for a 30-year term (until September 26, 2031).

Facility Construction and Upgrades

A set of building plan drawings from 1993 show the construction designs for the initial wastewater and septage treatment facilities at the Site. The following information was noted:

- Sheet 3 includes a site plan showing the location of the facilities which included the control building, aerated basin (the racetrack), secondary sedimentation and chlorination/dechlorination tanks, sludge storage lagoon, digested sludge drying and storage area, and associated belowground piping and supply lines. The facilities are shown within a fenced area with a 30 m buffer zone opposite the fence.
- Sheet 4 shows an elevation profile of the wastewater and septage treatment systems including the basins, lagoons, and gravity-fed supernatant lines.
- Sheet 6 shows a plan of the aerated basin (racetrack) and indicates the concrete walls and base of the basin are 0.25 and 0.35 m thick, respectively.
- Sheet 8 shows a plan of the sedimentation and chlorination/dechlorination tank and indicates the concrete walls and base of the basin are 0.5 m thick.
- Sheet 11 shows a plan of the aerated sludge lagoon and indicates the base of the lagoon is lined with a clay liner that is a minimum of 0.5 m thick.
- Sheet 12 shows a plan of the control building which consists of an electrical room, chlorine room, and blowers room.
- Sheet 15 shows a detailed plan of the chlorine room including the chlorine and sulfur dioxide cylinder storage areas and chlorine and sulfur dioxide solution lines.

A set of building plan drawings from 1999 show the final design and process layout of the facility upgrades. The following information was noted:

- The upgrades included construction of the clarifier, a new receiving station, and an extension of the control building, as well as modifications to the racetrack and below-ground supply lines.
- Drawing No. C02 shows the configuration of the Site and facility upgrades
- Drawing No. C03 shows the location of the subsurface piping which includes sanitary, influent/effluent, water, chlorine solution, and sulfur dioxide solution lines.
- Drawing No. A01 and P03 show the plans for the control building extension and includes the proposed alkalinity solution storage room containing two alkalinity solution mixing tanks and associated feed lines, and the existing chlorination room containing the chlorine and sulfur dioxide feed systems.
- Drawing No. S02 shows a plan of the clarifier and indicates that the concrete base and walls of the basin are 0.5 m and 0.3 m thick, respectively.

A set of building plan drawings titled from 2013 show the design and process layout for the new septage receiving station that was installed in 2015. Drawing No. P-0-42 shows the configuration of the subsurface infrastructure for the new receiving station; the mechanical receiver sits on a concrete slab that drains into the aeration lagoon through a catch basin.

2019 Operational Report

A third-party report titled "District of Sechelt, Dusty Road Septage Receiving Facility Site Operations Review and Medium-Term Planning" prepared for the District of Sechelt by Alpine Water & Energy (Alpine) in 2019 (Alpine, 2019) was provided. Relevant information is summarized below:

- The Dusty Road WWTP was constructed in 1993 and operated until 2015, after which the Site functioned solely as a septage receiving facility (the DRSRF).
- The former WWTP processed approximately one third of Sechelt's municipal wastewater as well as septage from areas within the SCRD that are not connected to the sanitary sewer system.
- The DRSTF is the only domestic septage receiving facility on the Sunshine Coast. A 2019 census estimated that over half the population of the Sunshine Coast (approximately 18,000 people) were on septic systems.
- The facility pre-treats septage originating primarily from domestic systems and sewage holding tanks. Incoming septage is screened at the receiving station, piped to the aeration lagoon where it is treated aerobically, then transferred to the storage lagoon where solids are settled out. The treated effluent is returned to the municipal sewer system after being held in the racetrack, clarifier, and contact tank for further settling. The accumulated solids are dewatered and stored on the drying pad until they can be composted offsite. The dewatered solids meet the criteria of Class B biosolids.
- In 2018, a biosolids stockpile sloughed into the storage lagoon, causing it to overflow which resulted in the need to use the racetrack to store excess septage.
- According to 2019 records, the site processed an estimated 7,000 m^3 of septage and produced approximately 105 tonnes of solids.
- The southeast portion of the Site was used to dry and store biosolids.
- In 2019, an estimated 1,200 m^3 of sludge was removed from the storage lagoon, clarifier, and chlorine contact chamber, and placed in four 20 x 40 ft geotubes for dewatering. The

storage lagoon was only partially emptied, leaving approximately 0.5 m of sludge at the bottom while the contents of the clarifier and contact chamber were completely removed.

- Fill was imported to the Site in 2019 to create a level surface on the drying pad to store the filled geotubes for dewatering. The geotubes were placed on a polyethylene liner and a berm was constructed around the geotubes.
- As of 2019, there were no receiving sites for offsite disposal or recycling of the biosolids. The large volume of solids produced at the facility coupled with the lack of off-site disposal locations is one of the main operational challenges of the DRSTF.

2019-2023 Septage Load Records

Septage load records from 2017 to March 2023 were summarized by SHA and provided to Trillium for review. The average annual septage volume from 2017 to 2019 was approximately 5,400,000 L/year. Records of load types were available beginning in 2021 and indicated that the incoming septage from 2021 to March 2023 originated primarily from domestic septic systems, sewage holding tanks, porta-potties, campground pit toilets, and brewery waste from a local craft cidery and brewery. A copy of the septage load summary is provided in **Appendix C**.

3.1.2 Sechelt Community Archives

A response from Ann Watson of the Sechelt Community Archives was received on March 30, 2023, who provided limited historical information for the Site and surrounding area which is summarized below:

- The early settlers in the area were loggers and ranchers, including an individual named J. Irgens who is on record as owner of Lot 1556, west of the Site.
- The area was under the jurisdiction of the SCRD until 1990 when it was transferred to the District of Sechelt.
- The Swanson and Stockwell gravel pits, located approx. 375 m northwest of the Site, have operated in the area for several years.

A copy of the response is provided in **Appendix C**.

3.2 Legal Plans

A subdivision plan (LMP22726) for the Site property was retrieved from the Land Title and Survey Authority (LTSA) of BC and reviewed. The plan is dated April 20, 1995, and shows the current Site

boundaries being subdivided from a parent parcel described as Block A, District Lot 7613 as part of a lease application involving Sechelt Aggregates Ltd. The plan also shows a narrow 0.707 ha parcel adjacent to the west of the Site as being a road right-of-way.

3.3 Land Titles

The current land title was retrieved from the LTSA of BC and reviewed. Ownership information is summarized in **Table 1-1**. Leases, covenants, title transfers or easements related to site contamination issues were not listed; however, the title indicates that undersurface rights were granted to an unspecified party in 1988. A search of the associated Crown Grant (#GB103559) via the BC Government Access Tool for Online Retrieval (Government of BC, 2023) did not yield any results pertaining to the Crown Grant nor any other historical land occupancy information.

3.4 Aerial Photographs

Aerial photographs dated 1947 to 2003, obtained from UBC Geographic Information Centre, and aerial imagery dated 2006 to 2022 from the District of Sechelt or SCRD interactive web maps (District of Sechelt, 2022; SCRD, 2022) or Google Earth Pro were reviewed for information concerning historical physical features and land use on the Site and adjacent properties. A summary of the review is presented below in **Table 3-1** below.

Table 3-1: Aerial Photograph Summary

Date	Site	Surrounding Properties
1947	The Site is undeveloped, forested land.	The surrounding area is undeveloped, forested land. A network of suspected forestry roads is visible south and east of the Site.
1957	Unchanged.	Present day Dusty Road is visible north of the Site. A clearing with what appears to be a building is visible northwest of the Site, across Dusty Road.
1962	Unchanged.	The surrounding area appears similar to the 1952 photograph.
1967	Unchanged.	An access road extending south from Dusty Road to a small clearing appears immediately west of the Site.
1976	The clearing west of the Site has expanded and appears to overlap part of the west portion of the Site.	The forested areas south and east of the Site have been cleared and a network of suspected forestry roads is visible. A suspected commercial/light industrial development appears northwest of the Site.
1980	The on-site portion of the clearing appears to have regenerated or was reforested.	Unknown features (suspected vehicles or shacks) are visible within the clearing west of the Site
1985	Unchanged.	Vegetation has encroached further into the southwest portion of the clearing west of the Site and the unknown features are no

Date	Site	Surrounding Properties
		longer visible. A linear disturbance leading to a small clearing is visible northwest of Dusty Road. The previously cleared area south of the Site appears to have grown in and the suspect forestry roads are no longer visible. The cleared area east of the Site is not covered in this aerial photograph.
1990	Unchanged.	The clearing west of the Site has regenerated entirely. A large disturbance (suspected beginnings of the Stockwell gravel quarry) is visible northwest of the Site. A network of roads is visible in the clearing east of the Site
1994	The Site is developed, and the wastewater treatment plant infrastructure is visible.	A large disturbance (suspected beginnings of the Sechelt Sand and Gravel quarry) is visible southeast of the Site.
1998	Unchanged.	The footprint of the quarry southeast of the Site appears to have expanded. A road connecting the Site to the quarry is visible in the south portion of the Site.
2003	The present-day clarifier is visible in the northeast portion of the Site.	The footprint of the quarry has expanded further into the area southeast of the Site.
2006 & 2012	A suspected storage container appears in the northeast portion (*later confirmed to be used for storage of miscellaneous non-hazardous items*) and unknown features are visible in the southeast portion. A road appears in the south and west portions.	The footprint of the quarry has expanded further into the area immediately west of the Site. The area north of the Site, across Dusty Road has been cleared and a road is visible in the clearing.
2018	A large stockpile (suspected biosolids) is visible in the southeast portion, where the unknown features from 2006-2012 were located.	A large pit containing pooled water appears immediately west of the Site.
2021	Four linear stockpiles appear east of the lagoons and the stockpile in the southeast portion is no longer visible.	The area immediately east of the Site has been cleared and the gravel quarry has expanded its footprint into the clearing. The gravel pit west of the Site appears to have expanded.
2022	Unchanged.	The footprint of the quarry has expanded, and a new road appears in the cleared area east of the Site.

3.5 Street Directories

Street directories were not available for the Site or surrounding properties.

3.6 Fire Insurance Plans

Fire insurance maps were not available for the Site or surrounding properties.

3.7 Government Databases

A search of various publicly available government databases was conducted for information regarding historical or current activities at the Site and surrounding area. The search results are summarized in the following sections and included in **Appendix D**.

3.7.1 Federal Contaminated Sites Inventory

The Federal Contaminated Sites Inventory (FCSI) database (Government of Canada, 2023) contains information on known or potential contaminated sites on federal land. A search of the FCSI database via the online Map Navigator tool did not identify any active or suspect federal contaminated sites within 500-m of the Site.

3.7.2 Natural Resource Compliance and Enforcement Database

The BC ENV Natural Resource Compliance and Enforcement Database (NRCED) (BC ENV, 2023a) contains records of past environmental violations in BC. A search of all NRCED records containing "Sechelt" in the location descriptor did not yield any records within 500-m of the Site.

3.7.3 BC ENV Authorizations Management System

The BC ENV Authorizations Management System (AMS) (BC ENV 2023b) contains records of authorizations and discharges under the Waste Discharge Regulation. A search of all AMS records with "Sechelt" listed as the nearest municipality yielded several records for the Site and surrounding properties within 500-m which are summarized in **Table 3-2**.

Table 3-2: Summary of BC ENV Authorizations

Location	Record #	Company / Facility	Date / Type	Description
Site	4088	District of Sechelt Dusty Road Wastewater Treatment Plant and Ebbtide Plant	Apr 2, 1976 (Waste Discharge Regulation Permit)	A copy of the permit was not available through the AMS database but was provided by the District of Sechelt. The permit authorizes an existing facility (Ebbtide plant) and a future sewage treatment plant (the Site) to operate and discharge effluent into marine waters. The Site is described as consisting of a 6,000

Location	Record #	Company / Facility	Date / Type	Description
				m^3 capacity aerated basin, secondary sedimentation tank, chlorine contact tank, dechlorination facility, and a sludge treatment facility consisting of an aerated digester and one or two lined sludge drying basins. A site plan showing the proposed configuration of the Site is attached.
			Oct 2, 2008 (amendment)	Authorizes the discharge of secondary effluent from the Dusty Road treatment plant (the Site) and the Ebbtide plant into marine waters. The Dusty Road plant is described as an aeration basin type secondary plant with disinfection facilities and sludge digestion, drying and handling facilities. A site plan showing the configuration of the Site was attached.
			Feb 28, 2018 (cancellation)	Cancellation of existing waste discharge permit
	106667	Same as above	Sep 23, 2013 (Municipal Wastewater Regulation Permit)	Authorizes the discharge of treated effluent from the Dusty Road treatment plant into marine waters via the new Ebbtide plant. States that the Dusty Road plant will pre-treat septage prior to piping to the Ebbtide plant for further treatment, and that the "thickened solids" generated at the Site will be transported off-site for compost production
5378 Allen Road (approx. 375-m NW of the Site)	106325	Stockwell Enterprises Ltd. concrete plant	Nov 7, 2012 (Waste Discharge Regulation Permit)	Registration of unspecified waste discharge in accordance with the Code of Practice for the Concrete and Concrete Products Industry)

Copies of the above permits and related documents are included in **Appendix D**.

3.8 BC ENV Site Registry

The BC ENV Site Registry contains information regarding contaminated or potentially contaminated sites in BC. An area search centred on 49° 29' 20.47" N and 123° 44' 8.19" W (approximate Site centroid) did not yield any results within a 0.5 km^2 radius of the Site. The Site Registry search results and a map of environmental remediation sites in the area is included in **Appendix E**.

3.9 Water Wells

A water well search was conducted using the BC Water Resource Atlas interactive web map (BC WRA, 2022) on March 14, 2023. The search identified seven water wells within a 500 m radius of the Site centroid and three additional water wells just outside of the 500 m radius, all of which were situated downgradient of the Site. Well tag #101785 and #93003 (located >500 m from the Site) are listed as private domestic water supply wells, and well tag #117295 (located along Dusty Road, 450 m west of the Site) is listed as a monitoring well. The remaining wells are situated on the gravel pit property west of the Site and are listed as having an unknown use. The wells were drilled to depths ranging from 240 to 343 feet below ground level (ft bgl) with static water levels ranging from 92 to 237 ft bgl. The stratigraphy across the well network varies slightly by location but generally consists of cobbles, sands, and gravels from surface to the end of hole, with a saturated zone present within a deep sand and/or gravel layer, and silts and/or clays and/or fractured granite bedrock underlying the water-bearing unit.

The above information is consistent with the regional geology and hydrogeology described in **Sections 2.3 and 2.4** and suggests that groundwater at the Site may be situated in a deep (>30 m) sand and/or gravel aquifer overlying fractured bedrock. Well records and a map of the water wells are included in **Appendix B**.

3.10 Historical Analytical Reports

Previous analytical reports containing total metals results for one soil sample collected from the storage lagoon and four biosolids samples collected from the geotubes in 2019 were provided. Trillium compared the results against the CSR Industrial Land Use (IL) standards to characterize the material and determine the types of PCOCs expected in at the Site. The analytical results indicated elevated concentrations of total copper, sodium, and zinc relative to the IL standards. The historical laboratory reports are included in **Appendix F**.

4.0 SITE RECONNAISSANCE

A Site visit was conducted on April 4, 2023, to observe operations and conditions at the Site, confirm surrounding land use, and assess the potential for contamination at the Site. Ms. Christine Miller and Richard Crampton of the District of Sechelt were present during the Site visit. The findings of the Site reconnaissance are summarized in the following sections and select photographs taken during the Site reconnaissance are included in **Appendix G**. A site plan showing relevant site

features is provided on **Figure 3**. A summary of the interviews/conversations held with the above staff is included in **Section 5.0**.

4.1 Grounds Survey

Infrastructure at the time of the Site visit included three concrete basins (the racetrack, clarifier, and contact chamber) and a steel storage container in the north portion of the Site; the control building, septage receiving station, and aeration lagoon in the central portion of the Site; and the sludge storage lagoon and sludge drying pad located in the south portion of the Site. A graveled access road rounds the perimeter of the facilities, and a chain-link fence encompasses the entire facility. A forested windrow lies between the gravel pit property and the east, south, and west portions of the Site. A gravel haul road intersects the east, south, and west portions of the Site.

The following observations of the grounds were made during the Site reconnaissance:

- Most of the site is unpaved except for the exterior of the control building, drying pad, and receiving station. The remaining portions of the Site are either graveled, bare ground, or vegetated.
- The concrete basins (racetrack, contact chamber, and clarifier) contained supernatant water and/or sludge.
- A 200-L drum with unknown contents was observed on the southwest side of the storage lagoon and an empty, insulated storage tank (estimated 5,000-L capacity) was observed in the south portion of the Site. No stains, sheens, or odorous soils were noted in their vicinity. The staff were not aware of the origin or original contents of these items.
- Four 300 m^3 geotubes filled with biosolids were situated on the drying pad. Excess water from the dewatering process was draining from the pad into the storage lagoon.
- Two fill stockpiles were observed in the vicinity of the drying pad.
- Stressed vegetation was not observed except for some sparse vegetation growing along the perimeter of the access road and treatment facilities.
- A pile of stripped vegetation mixed with what appeared to be biosolids was observed on the access road embankment south of the storage lagoon (*this was later confirmed in the interviews to be overgrown vegetation that was removed from the perimeter of the storage lagoon with an excavator and dumped over the bank).*
- Various debris including rags and plastic were observed along the perimeters of the septage lagoons.

- No stains or sheens were observed on the ground surface except for a white substance near the northwest side of the storage lagoon. The staff indicated that the substance was a polymer/water mixture that had spilled to the ground.
- The storage container in the northeast portion of the Site was not accessible, but the staff noted that it is used by the Sechelt & District Chamber of Commerce to store miscellaneous items and that no chemicals were stored inside.
- Three pole-top transformers were observed west of the control building. Based on the year of Site development (1993), polychlorinated biphenyls (PCBs) are not anticipated to be present at the Site.

4.2 Building Survey

- The control building is the only on-site building. The building is of cement brick construction with a slab-on-grade foundation, concrete floors, and a flat roof.
- The building consists of six rooms which include (from north to south): alkalinity solution room, washroom, office, electrical room, maintenance room (former chlorination room), and blower room. A single floor drain was present in each of the rooms.
- Two 1,200-gallon plastic tanks labelled “alkali solution” were present in the water storage room and are currently used to store non-potable water.
- Two gasoline jerry cans (<20 L) and small quantities of Round-Up, aerosols, and various household cleaning chemicals were observed inside the maintenance room. The jerry cans were stored on the concrete floor and the other containers were stored on a shelf.
- A garbage container containing road salt was observed inside the blower room.
- The interior and exterior of the building were kept in an orderly fashion and no evidence of spills was observed except for minor staining on the concrete floor in the vicinity of a portable pump that was stored in the maintenance room.
- Fluorescent light ballasts were observed inside the control building.
- Based on the age of the building (1993), hazardous building materials such as asbestos, lead (e.g., lead in paint, lead solder, and/or lead in service lines), mercury, PCBs, and urea formaldehyde foam insulation (UFFI) were not anticipated to be present. However, it is noted that intrusive investigation for hazardous building materials was beyond the scope of this assessment.
- Other special attention substances such as ozone depleting substances or radioactive materials were not observed.

4.3 Current Adjacent Properties

The following was observed on the surrounding properties:

- The Sechelt Sand and Gravel pit occupies the properties immediately east and south of the Site. A narrow road right-of-way separates the Site and gravel pit property to the west. Dusty Road borders the Site to the north. The parcel north of Dusty Road is undeveloped forested land.
- No infrastructure or activities of concern were observed on the areas of the gravel pit property that were visible from the Site.
- Other surrounding properties of interest include a gravel pit (Stockwell Sand and Gravel pit) and the District of Sechelt Public Works yard, located approximately 350 and 280 m northwest and cross- or downgradient of the Site, respectively, and the SCRD's Sechelt Landfill, approximately 1.4 km east and upgradient of the Site.

5.0 INTERVIEWS

Interviews were conducted with persons with past or present knowledge of the Site and surrounding area and are summarized below.

Mr. Richard Crampton, Septic Receiving Operator with the District of Sechelt from 2022 to present, was interviewed in person during the Site visit on April 4, 2023, and by phone on April 17, 2023. Mr. Crampton indicated the following:

- The receiving operator keeps detailed logs of incoming septage loads; information including the date, trucking company, septage quantity, and load type are recorded for each load.
- Most of the debris in the septage is removed by the receiver. The debris is gathered in a bin and disposed off-site at the Sechelt landfill.
- Vegetation at the Site is manually/mechanically controlled. Round-up is stored in limited quantities on-site but has not been used during his tenure.
- There is no natural gas or potable water service at the Site. Heat is provided to the building by electric radiant heaters and potable water is trucked to the Site.
- A single application of calcium chloride was applied to the gravel road in 2022 as a dust control measure and road salts are applied to the gravel road during winter months as needed.

- Mr. Crampton was not aware of any environmental concerns with respect to the DRSRF and surrounding area.

Ms. Christine Miller, Manager of Wastewater with the District of Sechelt (2018 to present), was interviewed in person during the Site visit on April 4, 2023, with additional conversations held by phone and email between April 5 and 17 2023. Ms. Miller indicated the following:

- The facility was unsupervised with no process for screening the septage until late 2019. Since then, the facility is only open during scheduled hours and incoming septage is screened by the receiving operator.
- The incoming septage originates from residential septic tanks, porta potties, campground pit toilets, and a local cidery and craft brewery.
- In 2019, a cationic polymer called "Spinpro 464/52" was temporarily used at the Site for sludge dewatering. The polymer was stored on-site in three [1000-L] plastic totes. A spill of approximately 500-L of a mixture of the polymer and water occurred north of the storage lagoon in early 2023. The safety data sheet indicates that the substance has a petroleum odour but does not specify the chemical composition (**Appendix C**).
- Fill materials were imported to the Site in 2019 to level out the drying pad for geotube storage. The imported material was "crusher dust" that was sourced locally from Sechelt Sand and Gravel.
- The drying pad and vicinity were previously used by Salish Soils (a third-party composting operation) to manufacture compost using solids from the Site and the Water Resource Centre (former Ebbtide plant) until circa 2019.
- A groundwater monitoring well was installed downgradient of the Site by the SCRD to assess groundwater quality in the area. (*This report was provided to Trillium and is discussed in **Section 2.4***)
- In 2019, samples of lagoon solids and geotube biosolids were collected and submitted for laboratory analysis. (The analytical results for these samples were provided to Trillium and are discussed in **Section 3.9**).

Mr. Doug Kopp, former Chief Operator and Manager of Wastewater Department with the District of Sechelt (1994 to 2015) was interviewed by phone on April 17, 2023. Mr. Kopp indicated the following:

- Chlorine and sulfur dioxide gas were the major chemicals used in the chlorination/dechlorination process while the Site operated as a wastewater treatment plant. The sulfur dioxide dechlorination system was abandoned during the 1999 facility upgrades and moved to the Ebbtide facility. After this time, dechlorination was no longer conducted at the Site.
- An enzyme product called Actizyme was injected into the storage lagoon once per week to assist in sludge digestion.
- Mr. Kopp was not aware of any landfills or buried waste at the Site but noted the presence of an abandoned storage tank in the south portion of the Site. The origin of the tank or its contents were unknown.
- Mr. Kopp was not aware of any deficiencies, leaks, breaches, or seepage from the basins, lagoons, and associated supply lines during his tenure.
- Prior to the 1999 facility upgrades, effluent was used to hose off the septage trucks at the receiving station as there was no potable water stored on-site.
- The drying pad and the area southeast of the storage lagoon were previously used by Salish Soils to manufacture biosolids until 2019. The manufacturing process involved mixing the lagoon solids with imported wood chips and sand and stockpiling the material in windrows.
- The racetrack was emptied and inspected for its integrity during the 1999 facility upgrades.
- In ca. 2010, a septage truck dumped a load containing suspected diesel fuel through the receiving system into the aeration lagoon.
- Aside from the above, Mr. Kopp was not aware of any environmental issues pertaining to the Site or surrounding lands.

6.0 SUMMARY AND DISCUSSION

A Phase 1 ESA was completed for the Site based on a review of historical information, a site visit, and interviews with knowledgeable parties. The assessment indicated the following:

- The Site was initially developed in 1993 as a municipal wastewater treatment plant and has operated solely as a septage receiving facility since 2015.
- Prior to the construction of the treatment plant, the Site was undeveloped forested land with some minor logging activities noted in the vicinity. The surrounding area remained mostly undeveloped until the 1990s when the Sechelt Sand and Gravel pit was developed.

- The treatment facility at the Site is classified as an aeration basin type secondary plant with disinfection facilities and sludge digestion, drying and handling facilities. The treatment facilities include a receiving station, control building, three concrete basins (racetrack, clarifier, and chlorine contact chamber), two lined lagoons (aerated lagoon and storage lagoon), and a sludge drying pad.
- Load records from 2021 to March 2023 indicate that the incoming septage originates primarily from domestic septic systems, sewage holding tanks, porta-potties, campground pit toilets, and brewery waste from a local craft cidery and brewery.
- Major chemicals used in the treatment process were chlorine and sulfur dioxide gas. Minor amounts of gasoline, Round-up, and various household cleaning chemicals are stored inside the maintenance room. An enzyme product called Actizyme was historically used to assist with solids digestion and a polymer called Spinpro 464/52 was temporarily used during the sludge dewatering program in 2019. A spill of approximately 500 L of water mixed with the polymer occurred north of the Storage lagoon in early 2023.
- Portions of the Site have been backfilled and/or leveled with imported fill or material that was excavated during facility construction and upgrades. Although the source of the fill used to level the drying pad in 2019 is known, there is potential for other fill materials of unknown origin and quality to be present in other areas of the Site.
- Based on the age of the building and site infrastructure (post-1993), hazardous building materials are not anticipated to be present at the Site. A hazardous building materials survey was beyond the scope of this assessment and should be conducted prior to any renovation or demolition projects.
- Based on regional geology, hydrogeology, and topography, groundwater at the Site is expected to be present in a deep (>30 m) sand and gravel aquifer with groundwater flow direction anticipated to be to the west towards Porpoise Bay.
- Based on the historical review, the following CSR Schedule 2 Activities were identified at the Site:

    - H-16 Septic tank pumpage storage or disposal;
    - H-17 Sewage lagoons or impoundments; and
    - H-19 Sludge drying or composting.

APECs and PCOCs for the Site were determined based on information from the records review, interviews, site reconnaissance, and literature, as well as the presence of CSR Schedule 2 uses. For

off-site APECs, historical or current uses/activities of concern for surrounding properties beyond 200-m from the Site boundaries were considered low risk and were not carried forward as APECs requiring further investigation.

6.1 Potential On-Site Sources of Contamination

The following on-site APECs were identified:

6.1.1 APEC 1: Septage Receiving Station

The receiving station functions as the initial receiving point for incoming raw septage. Prior to the 1999 facility upgrades, effluent water was reportedly used to hose off the septage trucks in this area. In circa 2010, a load of septage suspected to contain diesel fuel was released into the septage receiving system. Septic tank pumpage storage or disposal is listed as a Schedule 2 activity. Further investigation of this area is warranted to confirm or refute potential contamination arising from these activities.

6.1.2 APEC 2: Aerated Lagoon

The aerated lagoon has functioned to treat and contain septage since the Site was first constructed. According to the building plan drawings, the lagoon is lined with a 0.5 m thick layer of clay; however, given the lack of available inspection or maintenance records, the current condition of the liner is unknown. Septic tank pumpage storage or disposal and sewage lagoons or impoundments are listed as Schedule 2 activities. Further investigation of this area is warranted to confirm or refute potential seepage of contaminants to underlying soil and groundwater.

6.1.3 APEC 3: Septage Storage Lagoon

The septage storage lagoon has been used to treat and store septage since the Site was first constructed. The lagoon is lined with a geosynthetic liner and was partially emptied in 2019. Given the lack of available inspection or maintenance records, the current condition of the liner is unknown. Septic tank pumpage storage or disposal and sewage lagoons or impoundments are listed as Schedule 2 activities. Additionally, a 500-L spill of a polymer (Spinpro 464/52) was reported to have occurred north of the lagoon in 2023 and an abandoned steel drum was observed south east of the pond during the site visit. Further investigation of this area is warranted to confirm or refute potential seepage of contaminants to underlying soil and groundwater.

6.1.4 APEC 4: Sludge Drying and Storage

The paved drying pad east of storage lagoon and the unpaved area south of the drying pad were used to dry and store digested sludge and to manufacture biosolids. An estimated 1,200 m^3 of biosolids containing elevated metals (copper and zinc) concentrations relative to CSR IL standards currently remains in four 20 x 40 ft geotubes on the drying pad. Aerial imagery from 2018 shows a large stockpile (suspected biosolids) situated in the unpaved area south of the drying pad. Sludge drying and composting is listed as a Schedule 2 activity. Further investigation of this area is warranted to investigate potential contamination arising from these activities.

6.1.5 APEC 5: Fill of Unknown Origin and Quality

Portions of the Site have been backfilled and/or leveled with imported fill or material that was excavated during facility construction and upgrades. Although the source of the fill used to level the drying pad in 2019 is known, there is potential for fill material of unknown origin and quality to be present in other areas of the Site.

6.1.6 APEC 6: Racetrack

The racetrack was previously used to contain and aerobically treat municipal wastewater from 1993 to 2015 and more recently to store septage overflow from the lagoons from 2018 to present. Based on the historical drawings, the containment facility is constructed of concrete ranging from 0.25 to 0.35 m thick. There were no records of the racetrack ever being dewatered or inspected. Potential contamination to underlying soils and groundwater may exist should there be any deficiencies (e.g., cracks, breaches, leaks in the base or walls etc.). Further investigation is warranted to assess potential seepage of contaminants to underlying soil and groundwater.

6.1.7 APEC 7: Clarifier

The clarifier was previously used to contain municipal wastewater from 1999 to 2015 and more recently to store septage overflow from the lagoons from 2018 to present. Based on the historical drawings, the containment facility is constructed of concrete ranging from 0.3 to 0.5 m. The facility was partially dewatered in 2019 but there were no records of these facilities being inspected at that time. Potential contamination to underlying soils and groundwater may exist should there be any deficiencies (e.g., cracks, breaches, leaks in the base or walls etc.). Further investigation is warranted to assess potential seepage of contaminants to underlying soil and groundwater.

6.1.8 APEC 8: Chlorine Contact Chamber

The chlorine contact chamber was previously used as a disinfection facility to treat effluent via chlorination/dechlorination from 1993 to 2015 and more recently to store septage overflow from the lagoons from 2018 to present. Based on the historical drawings, the containment facility is constructed of concrete that is 0.5 m thick. The facility was partially dewatered in 2019 but there were no records of these facilities being inspected at that time. Potential contamination to underlying soils and groundwater may exist should there be any deficiencies (e.g., cracks, breaches, leaks in the base or walls etc.). Further investigation is warranted to assess potential seepage of contaminants to underlying soil and groundwater.

6.1.9 APEC 9: Biosolids Spill

A pile of stripped vegetation mixed with what appeared to be biosolids was observed on the access road embankment south of the septage storage lagoon during the site visit. According to the site representative, the vegetation was removed from the perimeter of the storage lagoon with an excavator and dumped over the bank. Based on this information, it is suspected that the pile contains septage and/or biosolids. Further investigation of this area is warranted to assess potential impacts resulting from septage/biosolids application to the ground.

6.1.10 Other Areas of Environmental Interest

In addition to the above APECs, the following areas of environmental interest are discussed:

- The empty insulated storage tank discovered in the south portion of the Site was not carried forward for further investigation as no records or evidence (e.g., staining, odour) of it being used to store chemicals or other hazardous substances at the Site were encountered during the assessment. Based on its features (exterior insulation, access hatch, faucet etc.) the tank may be associated with an industrial boiler.

6.2 Potential Off-Site Sources of Contamination

No off-site APECs were identified during the Phase 1 ESA. However, the following off-site properties of interest within 200-m of the Site are discussed:

- **Sechelt Sand and Gravel (adjacent property to the east, south and west):** an active gravel pit has occupied and continued to expand into the areas east, south, and west of the Site

since the early 1990s. The Phase 1 ESA did not identify any activities of concern such as historical spills or storage and handling of explosives, fuel, or other chemicals on the areas of this property within 200-m of the Site boundaries. Based on this information, there is a low to negligible risk of contamination arising from the adjacent property and further investigation of this area is not warranted.

7.0 CONCLUSION AND RECOMMENDATIONS

It is concluded that there is potential for contaminants of concern to be present in the Site soil, groundwater and/or soil vapour at concentrations above the applicable BC CSR standards. A Phase 2 ESA is warranted to investigate whether PCOCs associated with the APECs identified in **Section 6.1** are present at the Site. The identified APECs and associated PCOCs are summarized in **Table 7-1** below.

Table 7-1: Summary of APECs and associated PCOCs

#	APEC	Activity	PCOCs		
			Soil	Groundwater	Vapour
On-site					
1	Septage receiving station	Transfer of raw septage (1993-present), historical use of effluent water for washing trucks (1993-1999), and suspected diesel fuel release into treatment system (ca. 2010)	BTEXS, VPH, LEPH/HEPH, PAH, VOC, metals, nitrate, nitrite, sodium and chloride, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, fluoride, BPA	BTEXS, VPHw/VHw, LEPHw/HEPHw, EPH_{10-19}, PAH, VOC, dissolved metals, nitrate, nitrite, ammonia, sodium and chloride, sulphate, sulfide, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, monochloroacetic acid, fluoride, BPA, PFAS	BTEXS, VPHv, VOC
2	Aerated lagoon	Septage treatment and storage (1993-present) and suspected diesel fuel release into treatment system (ca. 2010)	Same as APEC 1	Same as APEC 1	Same as APEC 1
3	Septage storage lagoon	Septage treatment and storage (1993-present) and suspected diesel fuel release into treatment system (ca. 2010)	LEPH/HEPH, PAH, metals, nitrate, nitrite, sodium and chloride, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, fluoride, BPA	LEPHw/HEPHw, EPH_{10-19}, PAH, VOC, dissolved metals, nitrate, nitrite, ammonia, sodium and chloride, sulphate, sulfide, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, monochloroacetic acid, fluoride, BPA, PFAS	VOC
4	Sludge drying and storage	Digested sludge drying and storage (1993-present) and biosolids manufacturing	Same as APEC 3	Same as APEC 3	VOC

		(1993-2018)			
5	Fill of unknown origin and quality	Imported fill likely used during facility construction (1993) and upgrades (1999)	LEPH/HEPH, PAH, metals	None	None
6	Racetrack	Municipal wastewater treatment and storage (1993-2015) and septage storage (2018-present)	Same as APEC 3	Same as APEC 3	VOC
7	Clarifier	Municipal wastewater treatment and storage (1993-2015) and septage storage (2018-present)	Same as APEC 3	Same as APEC 3	VOC
8	Chlorine contact chamber	Chlorination/dechlorination of effluent (1993-2015) and septage storage (2018-present)	Same as APEC 3, haloacetic acids	Same as APEC 3, haloacetic acids	VOC
9	Biosolids spill	Dumping of mechanically stripped vegetation / soil from the storage lagoon onto road embankment (2023)	Same as APEC 3	Same as APEC 3	VOC
Off-site - None					

BTEXS – Benzene, Toluene, Ethylbenzene, Xylenes, Styrene
VPH – Volatile Petroleum Hydrocarbons
LEPH/HEPH – Light/Heavy Extractable Petroleum Hydrocarbons
PAH – Polycyclic Aromatic Hydrocarbons
PFAS – Per- and polyfluoroalkyl substances
VOC – Volatile Organic Compounds
BPA – Bisphenol A
BHT – Butylated Hydroxytoluene

In addition to conducting a Phase 2 ESA, Trillium recommends the following:

- Inspect the concrete containment facilities (racetrack, clarifier, and contact chamber) following removal of the wastewater and sludge. If any cracks or evidence of leaks and/or seepage are found, additional investigation of these areas is recommended.
- Dispose of the residual sludge/biosolids in accordance with the Organic Matter Recycling Regulation.
- Dispose of the waste drum and storage tank at an approved off-site waste management facility. Following removal of these items, if stained or odorous soils are encountered, additional investigation is warranted.
- Based on the age of the building and site infrastructure (post-1993), hazardous building materials are not anticipated to be present at the Site. A hazardous building materials survey was beyond the scope of this assessment but should be conducted prior to any renovation or demolition projects.

8.0 CLOSURE

We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact Trillium.

Yours truly,

TRILLIUM ENVIRONMENTAL LTD.

Prepared by:
Paul Antonelli, M.Sc., P.Ag.
Environmental Scientist

Reviewed by:
Stefan Quaglia, R.P.Bio., CSAP
Project Director

9.0 REFERENCES

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Figures

LEGEND

Subject Site

Notes: All measurements are approximate. No guarantee is made as to the accuracy

DRAWING BASE SOURCE:
BC Water Resource Atlas (2022), accessed Apr 5, 2023

Approx Scale
1:28,700

0 150 600
meters

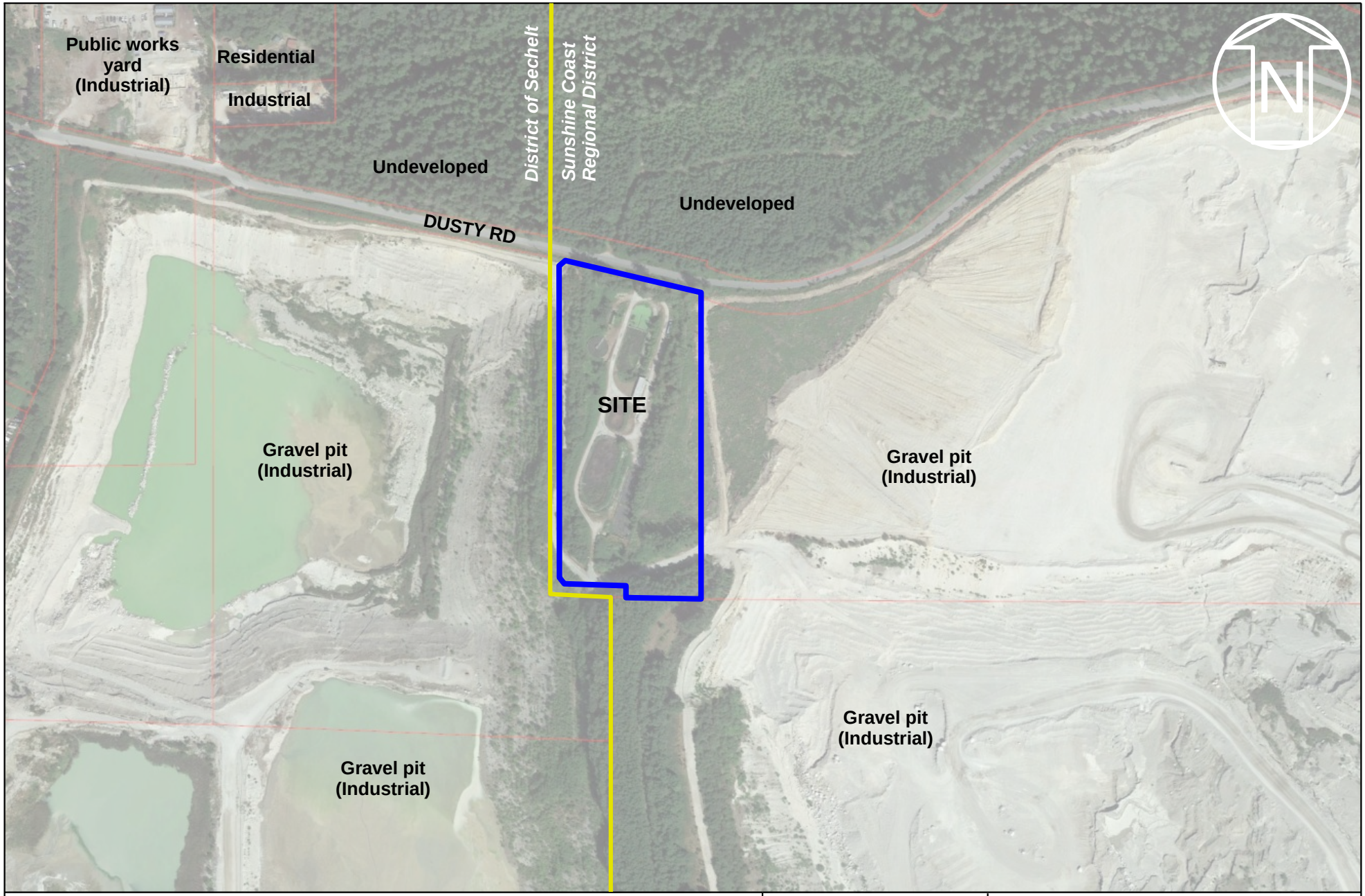
trillium

CLIENT:
Distict of Sechelt c/o
Sperling Hansen Associates Inc.

PHASE 1 ESA
5297 DUSTY ROAD, SECHELT, BC

SITE LOCATION PLAN

PROJECT No.		
154-002-01	AUG 2023	FIGURE 1



LEGEND

Subject Site | Parcel Boundaries | Municipal Boundary

Notes: All measurements are approximate. No guarantee is made as to the accuracy

DRAWING BASE SOURCE:
Google Earth (2022), accessed Apr 5, 2023 (parcel data from District of Sechelt)

Approx Scale
1:5,620

0 25 100
meters

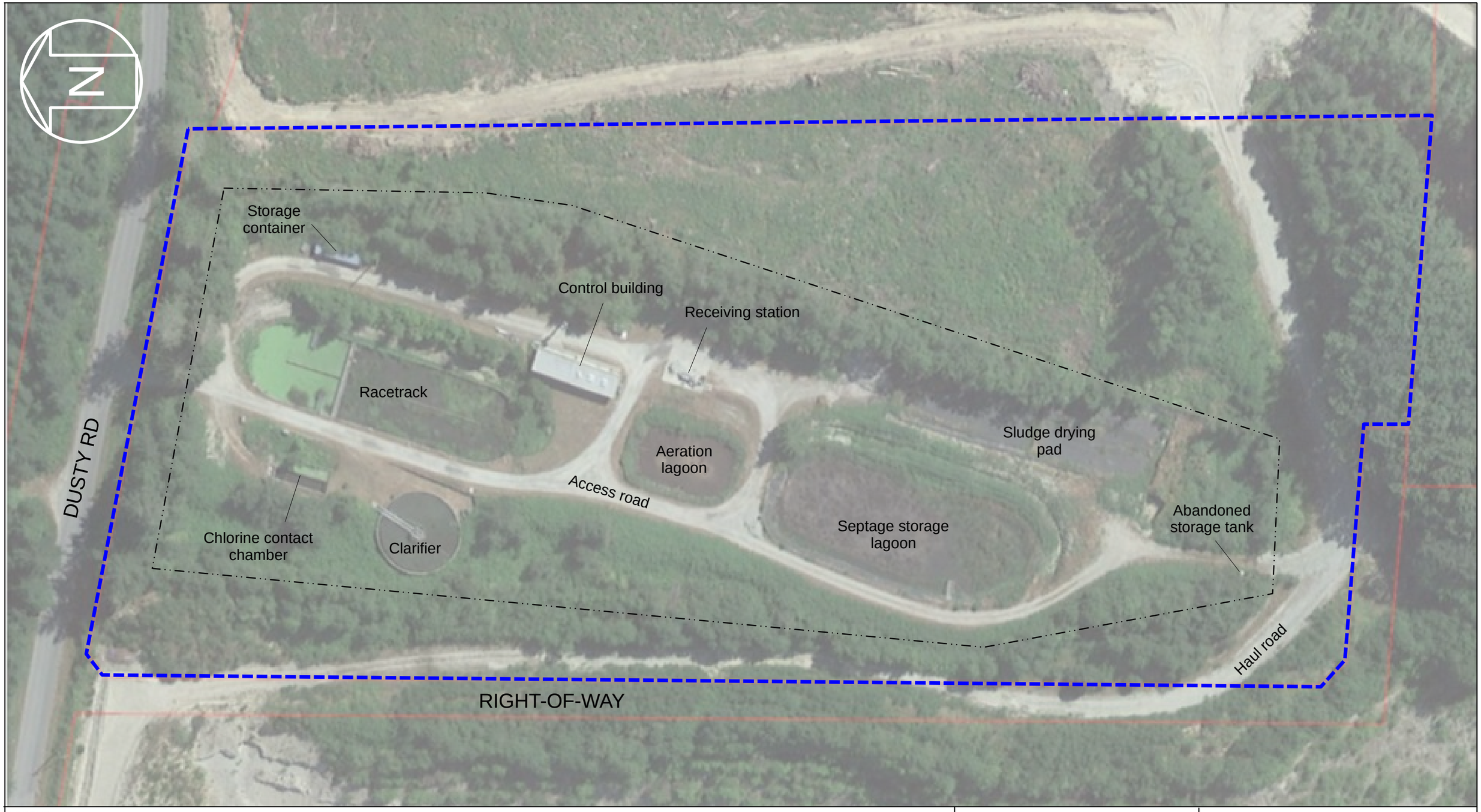
trillium

CLIENT:
Distict of Sechelt c/o
Sperling Hansen Associates Inc.

PHASE 1 ESA
5297 DUSTY ROAD, SECHELT, BC

SURROUNDING LAND USE

PROJECT No.		
154-002-01	AUG 2023	FIGURE 2



LEGEND

- Site
- Parcel Boundary
- Fence line

DRAWING BASE SOURCE:
Google Earth, 2022 (accessed Mar 31, 2023)

Approx Scale 1:910

0 5 20
metres

Notes: All measurements are approximate.
No guarantee is made as to the accuracy.

trillium

CLIENT:
District of Sechelt c/o
Sperling Hansen Associates Inc.

PHASE 1 ESA
5297 DUSTY ROAD, SECHELT BC

SITE PLAN

PROJECT No.		
154-002-01	AUG 2023	FIGURE 3

N

DUSTY RD

APEC 1: Septage receiving station

APEC 5: Fill of unkown origin and quality

APEC 6: Racetrack

APEC 2: Aerated lagoon

APEC 4: Sludge drying and storage

APEC 3: Septage storage lagoon

APEC 8: Chlorine contact chamber

APEC 7: Clarifier

APEC 9: Biosolids spill

RIGHT-OF-WAY

LEGEND

- Site
- Parcel Boundary
- Fence line

DRAWING BASE SOURCE:
Google Earth, 2022 (accessed Mar 31, 2023)

Approx Scale 1:910

0 5 20
metres

Notes: All measurements are approximate.
No guarantee is made as to the accuracy.

trillium

CLIENT:
District of Sechelt c/o
Sperling Hansen Associates Inc.

PHASE 1 ESA
5297 DUSTY ROAD, SECHELT BC

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

PROJECT No.		
154-002-01	APR 2023	FIGURE 4

Appendix A

Land Titles and Legal Plans

TITLE SEARCH PRINT 2023-03-30, 12:54:07

File Reference: Requestor: Stefan Quaglia

CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN

Title Issued Under	SECTION 98 LAND TITLE ACT
Land Title District	VANCOUVER
Land Title Office	VANCOUVER
Title Number	BJ115941
From Title Number	GB103559
Application Received	1995-04-20
Application Entered	2001-06-19

Registered Owner in Fee Simple

Registered Owner/Mailing Address: THE CROWN IN RIGHT OF BRITISH COLUMBIA REPRESENTED BY THE MINISTER OF ENVIRONMENT, LANDS AND PARKS
PARLIAMENT BUILDINS
VICTORIA, BC
V8V 1X4

Taxation Authority North Shore - Squamish Valley Assessment Area

Description of Land

Parcel Identifier: 025-062-921

Legal Description:

LOT D DISTRICT LOT 7613 GROUP 1 NEW WESTMINSTER DISTRICT PLAN LMP22726

Legal Notations

SUBJECT TO PROVISOS, SEE CROWN GRANT GB103559

Charges, Liens and Interests

Nature:	UNDERSURFACE AND OTHER EXC & RES
Registration Number:	GB103560
Registration Date and Time:	1988-09-13 08:24
Remarks:	INTER ALIA SECTION 47, LAND ACT, SEE CROWN GRANT GB103559

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers NONE

Pending Applications NONE

Status: Filed Plan #: LMP22726 App #: N/A Ctrl #: RCVD: 1995-04-20 RQST: 2023-03-30 12.54.06

PLAN LMP 22726

Deposited in the Land Title Office at New Westminster, B.C., this 20 day of APRIL 19 95.

REF. # BJ115941

Deputy Jim Small-Loc. Registrar

Approved under the Land Title Act, this 17th day of Feb. 1995.

Approving Officer – Ministry of Transportation and Highways.

This plan lies within the Sunshine Coast Regional District.

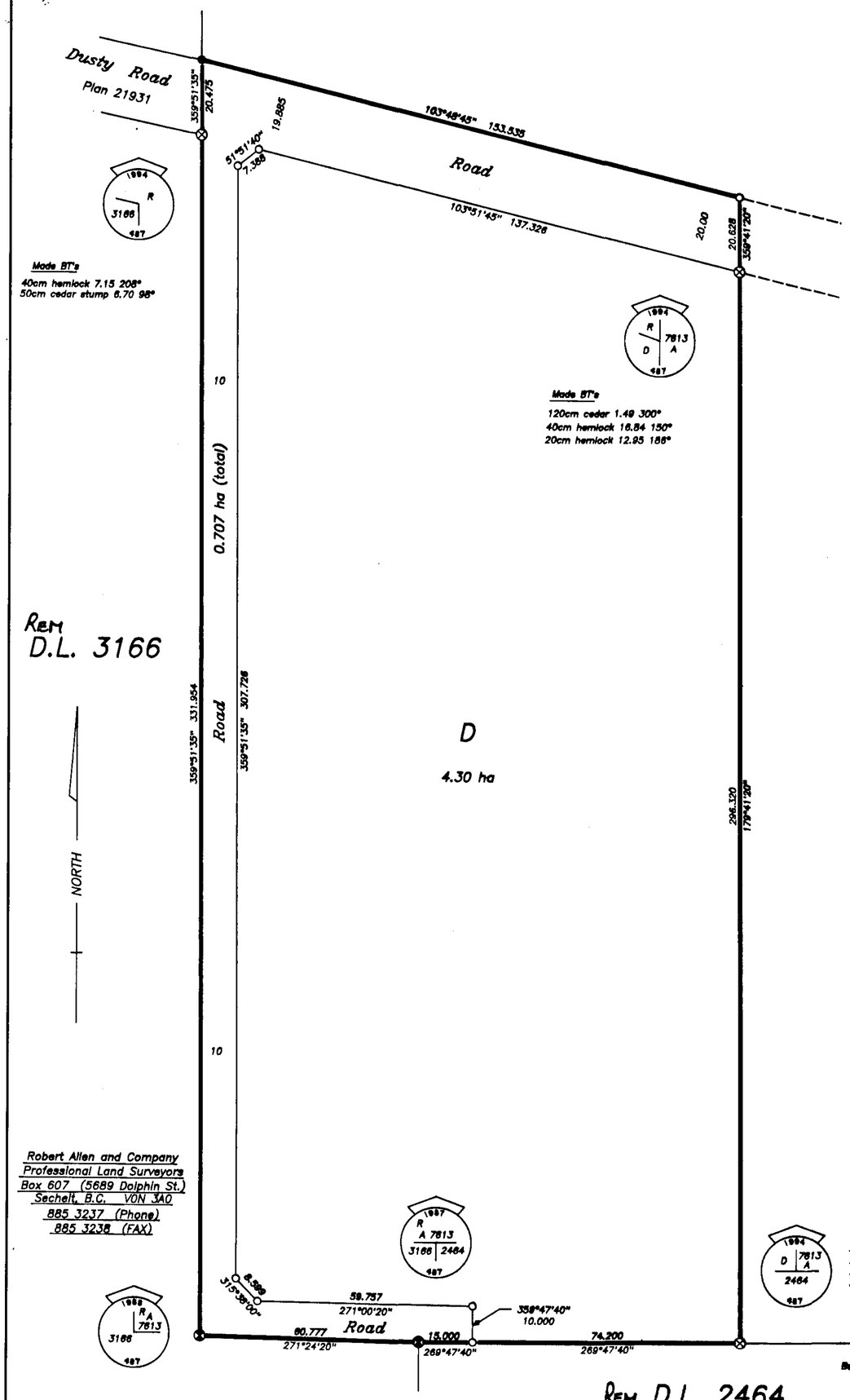
M.O.T.H. 04-005-11104

Subdivision Plan of Part of Block A, D.L. 7613, Gp. 1, N.W.D.

20 0 20 40 60

Scale – 1:1000 (metres)

B.C.G.S. 92G .042



As to pending Lease Application GB139602.
SECHELT AGGREGATES LTD.

Authorized Signatory - R. Harper

Authorized Signatory - R. Collier

E. Callaghan
Witness E. Callaghan

3783 Gordon Grove Dr. Bby
Address

Admin. Assistant
Occupation

Robert Allen and Company
Professional Land Surveyors
Box 607 (5689 Dolphin St.)
Sechelt, B.C. V0N 3A0
885 3237 (Phone)
885 3238 (FAX)

Legend

Bearings are astronomic and were derived from the official survey plan of D.L. 7613.

- denotes a standard capped post found.
- denotes a standard iron post found.
- denotes a standard iron post set.
- denotes a standard capped post set.

SEE FIELD NOTES FOR DL 7613 & DL 2464

All distances are in metres.

Bearings to bearing trees are magnetic.

SEE SURVEY OF GB139602

I, Robert W. Allen, a British Columbia Land Surveyor, of the District of Sechelt, in British Columbia, certify that I was present at and personally superintended the survey represented by this plan, and that the survey and plan are correct. The survey was completed on the 16 day of December 19 94.

Robert W. Allen, B.C.L.S.

CRD 299-92 SCR 299-92SD

I hereby certify that this is the Official Plan of the Lands shown outlined hereon.

For Deputy Surveyor General
Victoria, B.C. March 29, 1995

37tube1671

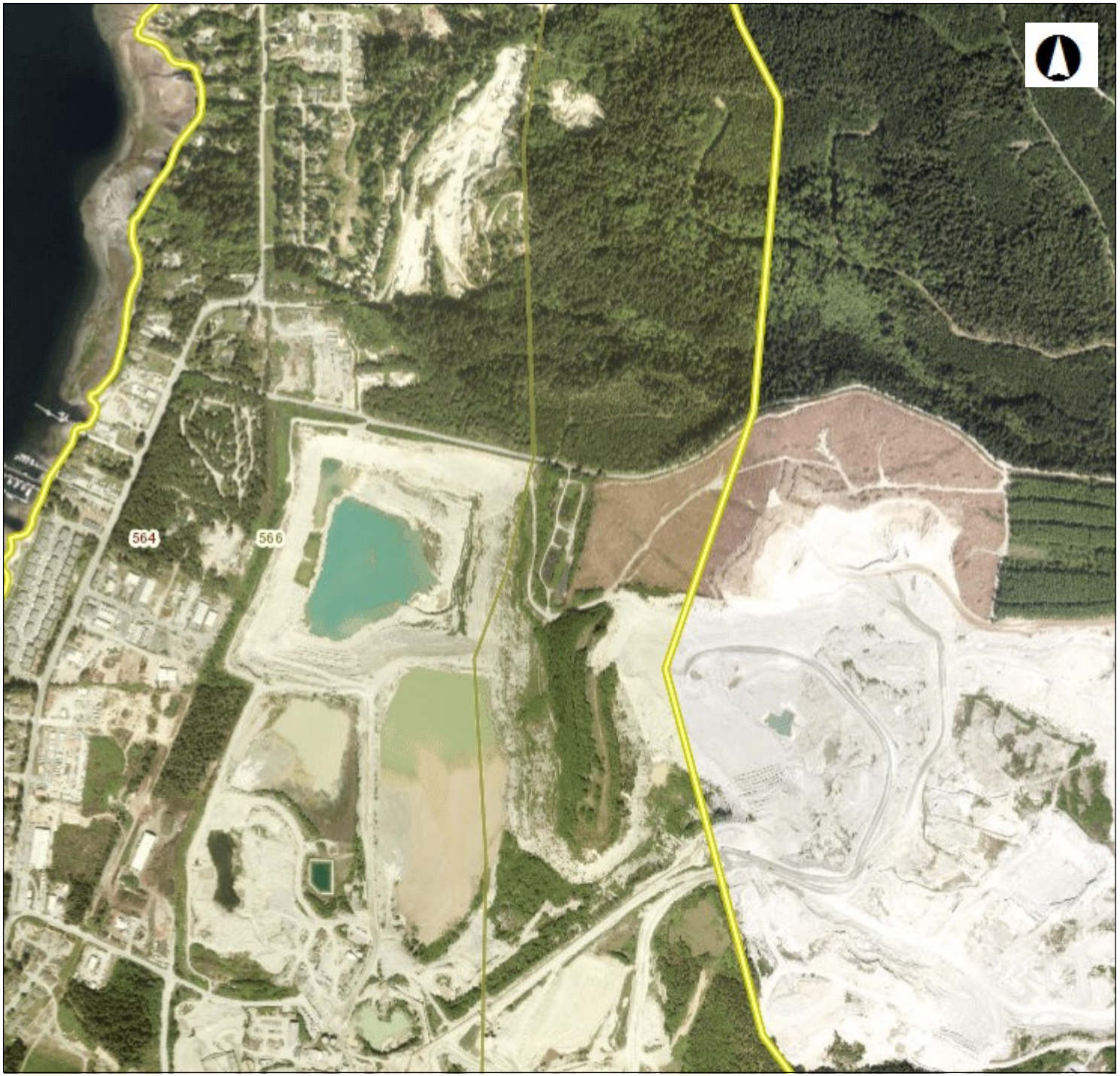
299-92/1107

Page 1 of 1

Appendix B

Aquifer and Water Well Information

Aquifer Information



BRITISH COLUMBIA

Water Resources Atlas

Legend

Aquifers - All

MATERIAL

- Unconsolidated
- Bedrock

0 0.37 0.73 km

1: 18,056

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Datum: NAD83

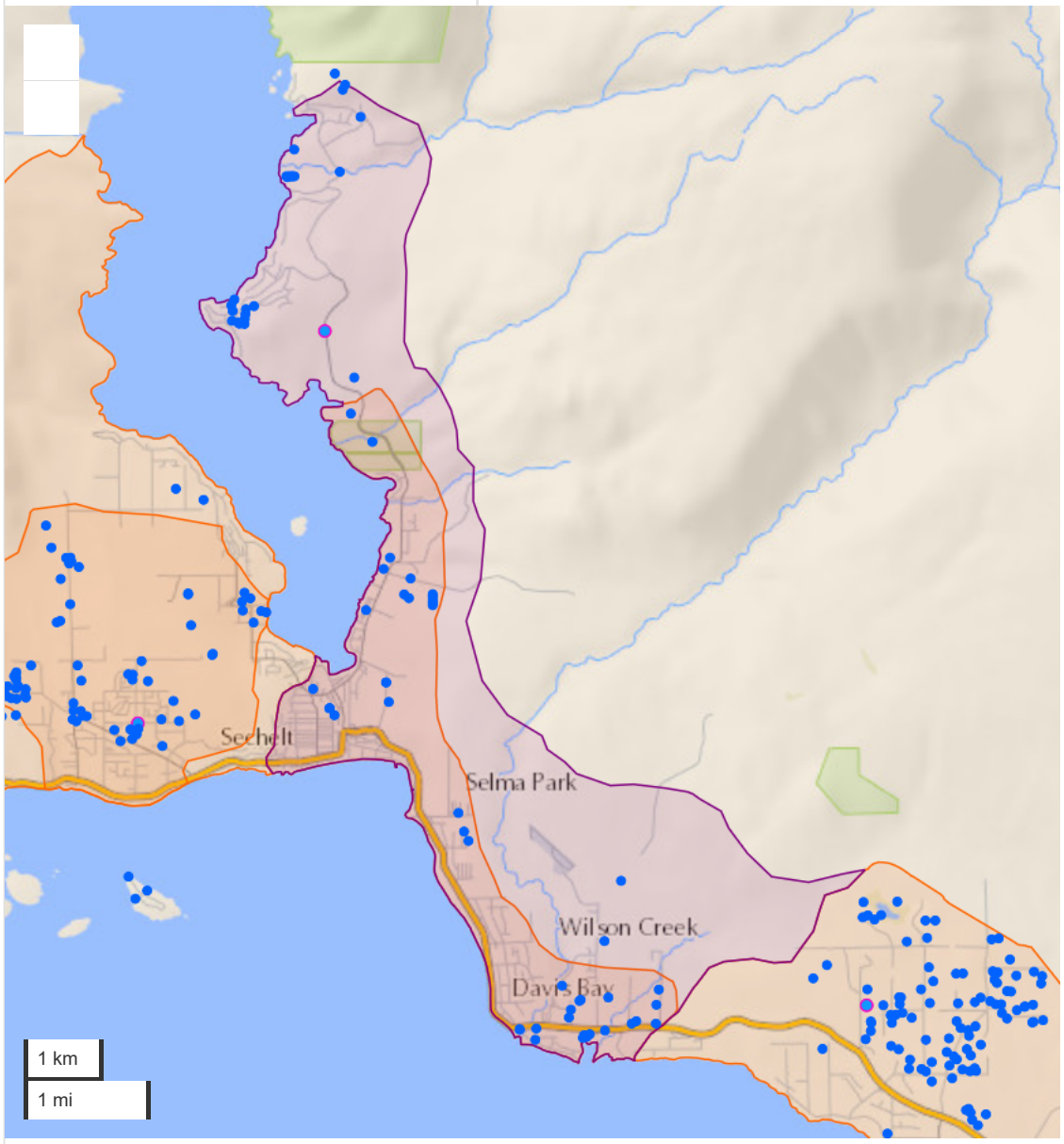
Projection: BC Albers

Key Map of British Columbia

Groundwater Wells and Aquifers

Aquifer 564 Summary

Aquifer number	564	**Year of mapping**	2018
Aquifer name	East Porpoise Bay	**Litho stratigraphic unit**	Granodioritic/Dioritic
Descriptive location	Sunshine Coast	**Vulnerability**	Moderate
Material type	Bedrock	**Subtype**	Fractured crystalline bedrock
Quality concerns	Local	**Productivity**	
Size (km²)	28.2	**Calculated well density**	



Well Information

Number of wells correlated to the aquifer	27
Number of uncorrelated wells within mapped aquifer extent	13
Flowing artesian wells	1 artesian wells in aquifer

Well info last updated 10/20/2022

Documentation

Factsheets

- AQ_00564_Aquifer_Factsheet.pdf

Other Documents

- AQ_00564_0564_Aquifer_Mapping_Report_2019.pdf

Licensing Information

The licensing summaries should be considered estimates. Total volume is likely more than what is indicated in charts due to domestic use and unprocessed licence applications. Due to complexities in the structure of the licensing data, reported values should be confirmed through the e-licensing portal (https://j200.gov.bc.ca/pub/ams/Default.aspx?PossePresentation=AMSPublic&PosseObjectDef=o_ATIS_DocumentSearch&PosseMenuName=WS_Main) .

Number of groundwater licences	0
Water withdrawal volume (annual)	No information available.

Licensing information is obtained from the Water Rights Licence - Public data layer (https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public) .

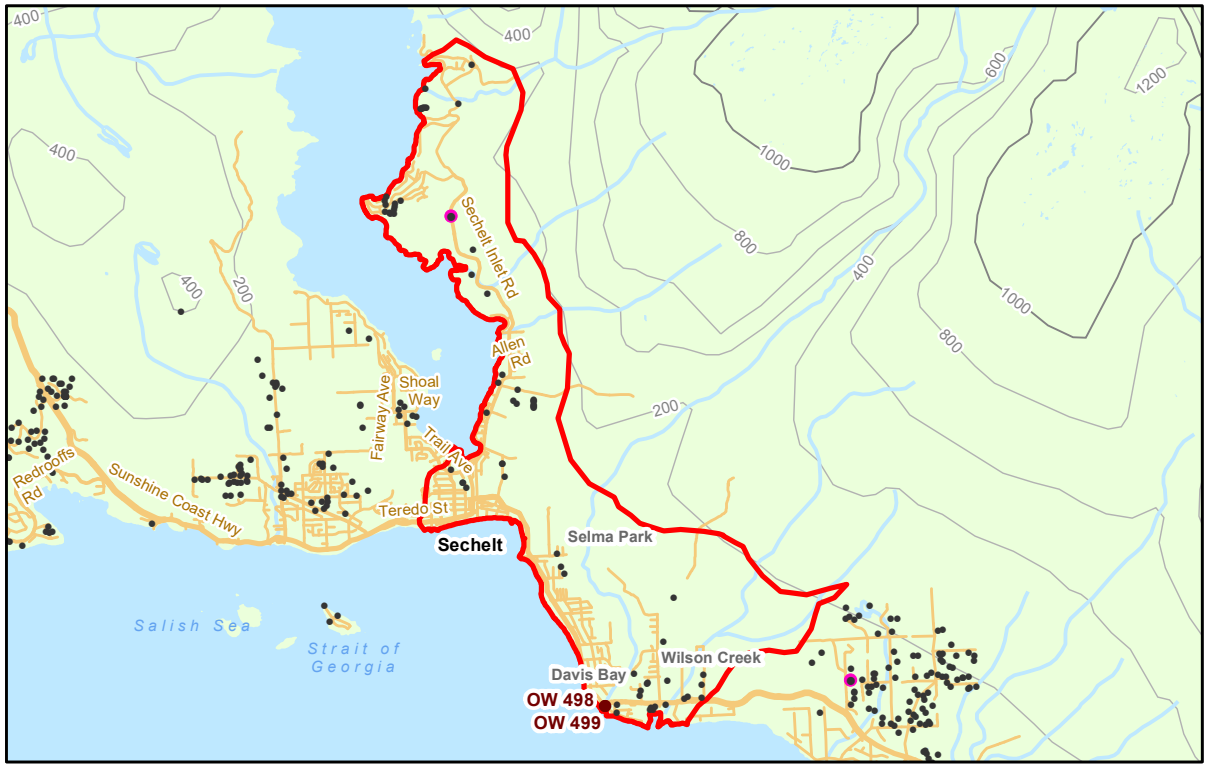
Unique licenses are counted once for each aquifer that they are associated with.

The total licensed volume is counted once for each licence (the total volume may be shared between wells if there are multiple wells in a licence). In cases where specific volumes are licensed for multiple purposes, individual volumes are summed.

Knowledge Indicators

Advanced mapping	No information available.
Drilling & operation advisory	No information available.
Observation wells	No information available.
Numerical Model	No information available.
Aquifer notations	No notation currently assigned.
Water Budget	No information available.
Water quality information	8 wells with an EMS ID
Hydraulically connected (screening level)	See Guidance on Determining Likelihood of Hydraulic Connection
Groundwater Surface Water Interactions	No information available.
Other information	No information available.

Aquifer #564
East Porpoise Bay



Legend
- Registered Water Well - Artesian
- Registered Water Well
- Active Observation Well
- Aquifer Boundary

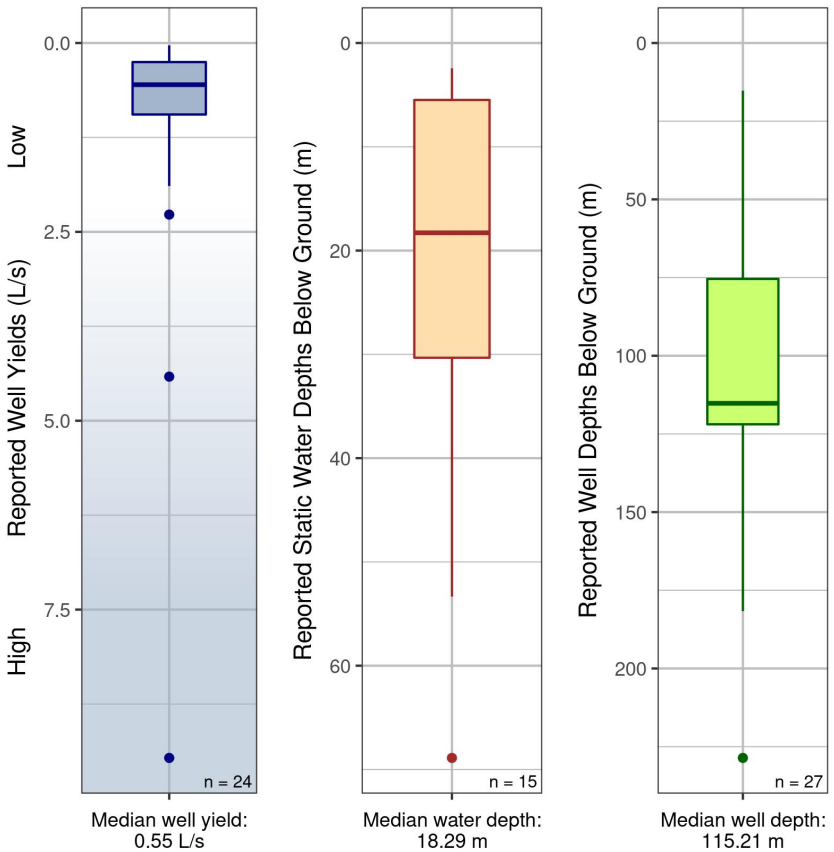
0 1.5 3 km

N

Aquifer Description (Mapping Report - 2018): Fractured crystalline (igneous intrusive or metamorphic, meta-sedimentary, meta-volcanic, volcanic) rock aquifer (subtype = 6b).

Aquifer Details	
Region	South Coast
Water District	Vancouver
Aquifer Area	28.2 km^2
No. Wells Correlated	27
Vulnerability to Contamination	Moderate
Productivity	Unknown
Aquifer Classification	Unknown
Hydraulic Conductivity *	Unknown
Transmissivity *	Unknown
Storativity *	Unknown
No. Water Licences Issued to Wells	Unknown
Observation Wells (**Active**, Inactive)	None

* min - max
For Hydraulic Connection see guidance document



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Detailed methods for all figures are described in the companion document (Aquifer Factsheet - Companion Document.pdf).
Factsheet generated: 2022-07-27. Aquifers online: https://apps.nrs.gov.bc.ca/gwells/aquifers.

1. AQUIFER MAPPING REPORT: AQUIFER 0564

Aquifer Name: East Porpoise Bay

Date of Mapping: December 2018

Authors: Zidra Hammond, P.Eng., Andrew Hinnell, P.Geo.

1.1 Conceptual Understanding of Hydrostratigraphy

1.1.1 Aquifer Extents

The aquifer is located along the Sunshine Coast, east of Porpoise Bay. The upper part of the western boundary follows Sechelt Inlet. The middle western boundary is based on bedrock outcrops where an erosional discontinuity is inferred. The southern boundary follows the coastline (Strait of Georgia). Topographic divides were used to define the south eastern and northern extents (TRIM 1:20,000). The eastern boundary is constrained by an elevation of 180 m generally based on where slopes become more steeply sloping. The elevation of 180 m also corresponds with the elevation limit for marine deposits (McCammon 1977).

1.1.2 Geologic Formation (Overlying Materials)

The bedrock is typically bare or covered by fluvial deposits that have formed deltas during glacial melt (McCammon 1977). Till is typically covered by glaciomarine, marine, and fluvial deposits at higher elevations. The thickest deposits occur near the base of the mountain slope where deltaic sands and gravels are more common.

1.1.3 Geologic Formation (Aquifer) – Sub-type 6b Fractured Crystalline Rock

The bedrock consists of granodioritic and dioritic intrusive rocks (Cui et al. 2017). Well lithologies indicate predominantly granitic rock. No faults have been mapped within the aquifer extents (Cui et al. 2017).

1.1.4 Vulnerability - Moderate

Bedrock outcrops exist predominantly in the northern portion of the aquifer. Till and clay act as confining materials at higher elevation in the southern half of the aquifer while permeable sand and gravel dominate as overlying materials at lower elevation. Water-bearing fracture zones are typically 120 m deep. The permeability of the aquifer is assumed to be low but relatively quick movement of groundwater can occur along fractures. Based on this description, the vulnerability of the aquifer to surface contamination is moderate.

The coastal setting of the aquifer also makes it vulnerable to saltwater intrusion.

1.2 Conceptual Understanding of Flow Dynamics

1.2.1 Groundwater Levels and Flow Direction

The depth to the water table ranges from shallow (<15 m) to deep (>60 m) and is typically moderately shallow (15 to 30 m) based on the median value of existing water depths . Assuming near-surface flow within the bedrock and ignoring geologic complexities, groundwater flow is inferred to move from areas of higher elevation to areas of lower elevation. Groundwater flows predominantly to the west and southwest, towards the Strait of Georgia or Sechelt Inlet, through bedrock deformities like fractures.

1.3 Recharge

Recharge is likely to occur where precipitation infiltrates directly into bedrock deformities or from the overlying unconsolidated deposits.

1.3.1 Potential for Hydraulic Connection

Groundwater could be hydraulically connected with unconsolidated aquifer AQ0566 and bedrock aquifer AQ0555. Additional studies are required to confirm/determine surface water-groundwater interactions with drainage features in the area. There is potential for hydraulic connection with the coastal waters of the Straight of Georgia and Sechelt Inlet.

1.4 Additional Information on Water Use and Management

The need to supplement surface water with groundwater as a reliable, long-term drinking water source is increasing groundwater demand in the area (SCRD, 2018). Groundwater protection planning was initiated by the Sunshine Coast Regional District in 1996 (Dayton & Knight Ltd., 1996). This was driven by the need to protect water supply sources, reduce surface water pollution, preserve land stability, and preserve land productivity.

A study conducted in 1994 identified high arsenic concentrations in groundwater within the Sunshine Coast region (Carmichael and Clarkson 1994). In general, arsenic concentrations are variable both spatially and temporally with no significant correlation between arsenic levels and well depth. Mineralized deposits in fractures that are present in the bedrock are believed to be the source of arsenic (Mattu and Schreier 2000). Arsenic dissolves and becomes mobilized as groundwater flows through the fracture network. Dissolved arsenic was not detected in wells completed in unconsolidated material.

1.5 Additional Assessments or Management Actions:

No water availability or water budget studies have been completed.

1.6 Aquifer References

Carmichael V. and Clarkson L., 1994. Well Water Survey for Arsenic in the Powell River and Sunshine Coast Communities of British Columbia – March to June 1994. Prepared by the B.C. Ministry of Health. https://www.healthspace.ca/Clients/VCHA/CoastGaribaldi/CoastGaribaldi_Website.nsf

Cui, Y., Miller, D., Schiarizza, P., and Diakow, L.J., 2017. British Columbia digital geology. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2017-8, 9p.

Dayton & Knight Ltd. 1996. Aquifer Protection Plan. Prepared for the Sunshine Coast Regional District. http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=17038

Fairbanks, B.D., and Faulkner, R.L., 1992. Geothermal Resources of British Columbia. Geological Survey of Canada, Open File 2526, map, scale 1:2,000,000.

Fulton R.J., Clague J.J., and Ryder J.M., 1982. Surficial Geology, Vancouver Island and adjacent Mainland, British Columbia, map, scale 1:1,000,000. Geological Survey of Canada, Open File 837.

Geographic datasets from the BC Data Catalogue, accessed February 2017 https://data.gov.bc.ca/

Hammond, Z.M. and Hinnell, A.C., March 2019. Stage 1 Foundational Mapping: Hope, Moresby Island, Sunshine Coast, and Ucluelet. Prepared for the Ministry of Environment and Climate Change Strategy. Available through EcoCat (https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/libraries-publication-catalogues/ecocat).

Mattu G. and Schreier H., 2000. An Investigation of High Arsenic Levels in Wells in the Sunshine Coast and Powell River Regions of B.C. Prepared for the Coast Garibaldi Community Health Services Society. https://www.healthspace.ca/Clients/VCHA/CoastGaribaldi/CoastGaribaldi_Website.nsf

McCammon 1977. Surficial Geology and Sand and Gravel Deposits of Sunshine Coast, Powell River, and Campbell River Areas. Bulletin 65 Ministry of Energy, Mines, and Petroleum Resources. http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/BulletinInformation/BulletinsAfter1940/Pages/Bulletin65.aspx

Russell J.R.L. 1987. Crowston Lake Assessment. Reconnaissance report prepared for Fisheries Assessment and Improvement. http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=5754

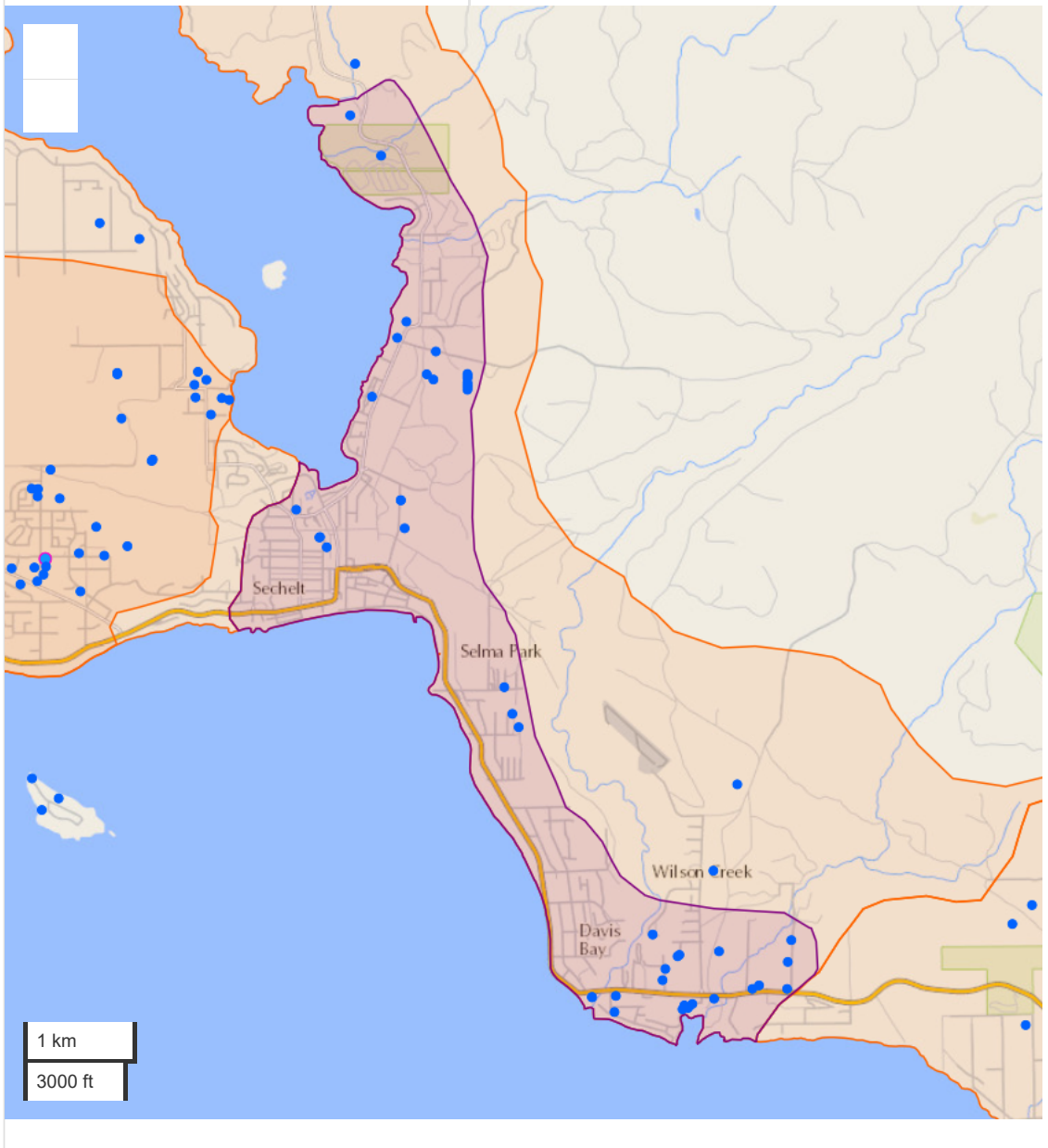
Sunshine Coast Regional District (SCRD) 2018. Regional Groundwater Task Force Consultation Report. Prepared for the Planning and Community Development Committee. http://www.scrd.ca/files/File/Infrastructure/Water/2018-MAR-08_Regional_Groundwater_Task_Force_Consultation_Report.pdf

Groundwater Wells and Aquifers

Aquifer Search / Aquifer Summary

Aquifer 566 Summary

Aquifer number	566	**Year of mapping**	2018
Aquifer name	East Sechelt Delta	**Litho stratigraphic unit**	Salish Sediments
Descriptive location	Sunshine Coast	**Vulnerability**	High
Material type	Sand and Gravel	**Subtype**	Unconfined sand and gravel - late glacial outwash
Quality concerns	Local	**Productivity**	
Size (km^2)	9.7	**Calculated well density**	



Well Information

Number of wells correlated to the aquifer	25
Number of uncorrelated wells within mapped aquifer extent	10
Flowing artesian wells	0 artesian wells in aquifer

Well info last updated 3/20/2022

Documentation

Factsheets

- AQ_00566_Aquifer_Factsheet.pdf

Other Documents

- AQ_00566_0566_Aquifer_Mapping_Report_2019.pdf

Licensing Information

The licensing summaries should be considered estimates. Total volume is likely more than what is indicated in charts due to domestic use and unprocessed licence applications. Due to complexities in the structure of the licensing data, reported values should be confirmed through the e-licensing portal (https://j200.gov.bc.ca/pub/ams/Default.aspx?PossePresentation=AMSPublic&PosseObjectDef=o_ATIS_DocumentSearch&PosseMenuName=WS_Main) .

Number of groundwater licences	0
Water withdrawal volume (annual)	No information available.

Licensing information is obtained from the Water Rights Licence - Public data layer (https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public) .

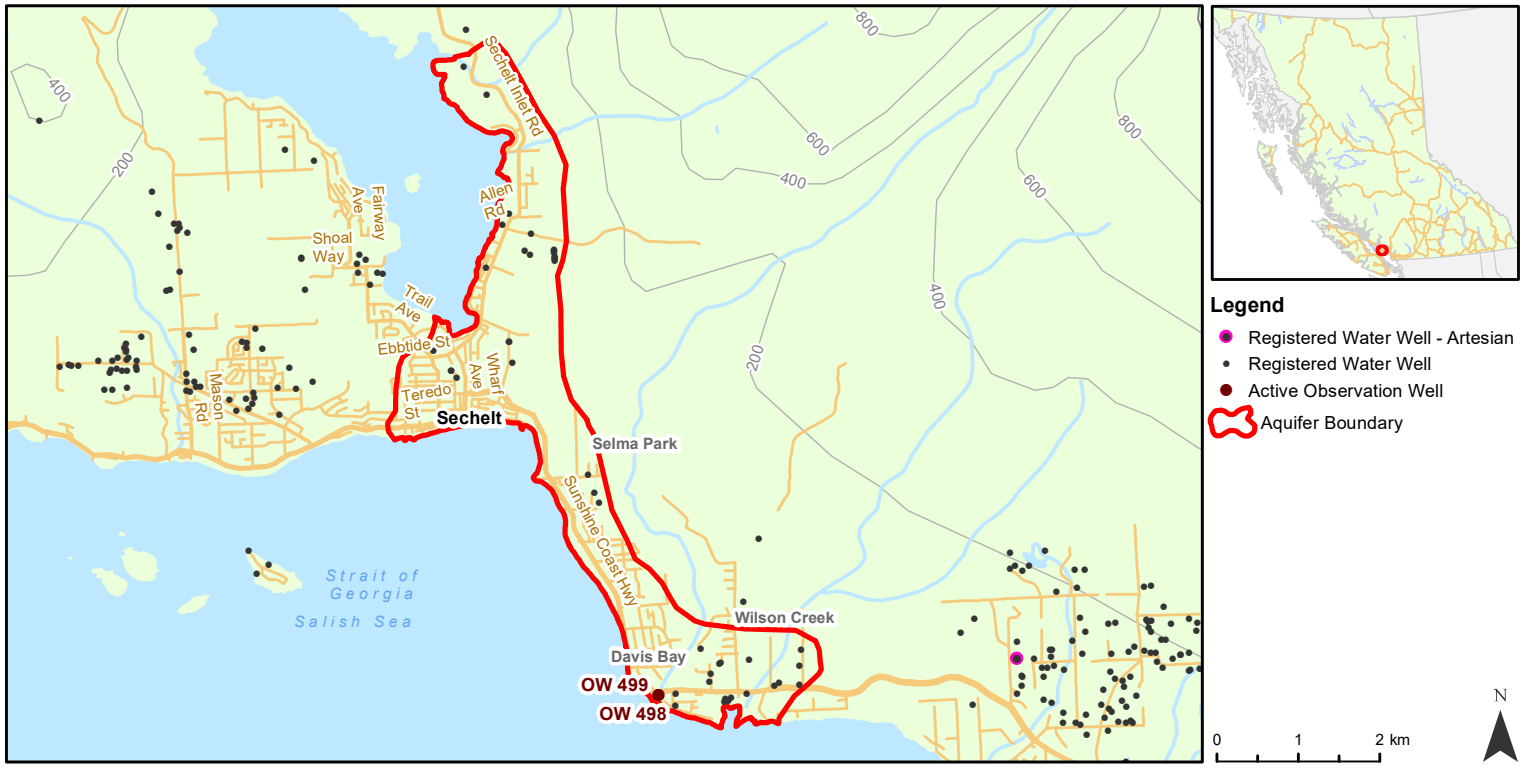
Unique licenses are counted once for each aquifer that they are associated with.

The total licensed volume is counted once for each licence (the total volume may be shared between wells if there are multiple wells in a licence). In cases where specific volumes are licensed for multiple purposes, individual volumes are summed.

Knowledge Indicators

Advanced mapping	No information available.
Drilling & operation advisory	No information available.
Observation wells	Active ◦ 498 (https://governmentofbc.maps.arcgis.com/apps/webappviewer/index.html?id=b53cb0bf3f6848e79d66ffd09b74f00d&find=OBS WELL 498) ◦ 499 (https://governmentofbc.maps.arcgis.com/apps/webappviewer/index.html?id=b53cb0bf3f6848e79d66ffd09b74f00d&find=OBS WELL 499)
Numerical Model	No information available.
Aquifer notations	No notation currently assigned.
Water Budget	No information available.
Water quality information	2 wells with an EMS ID
Hydraulically connected (screening level)	See Guidance on Determining Likelihood of Hydraulic Connection
Groundwater Surface Water Interactions	No information available.
Other information	No information available.

Aquifer #566
East Sechelt Delta

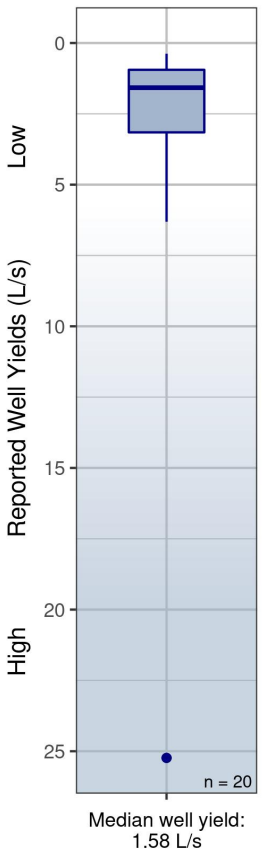


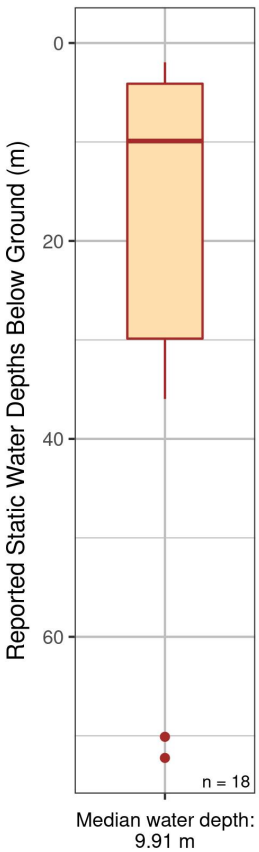
Aquifer Description (Mapping Report - 2018): Unconfined glacio-fluvial outwash or ice contact sand and gravel aquifers generally formed near or at the end of the last period of glaciation (sub-type = 4a).

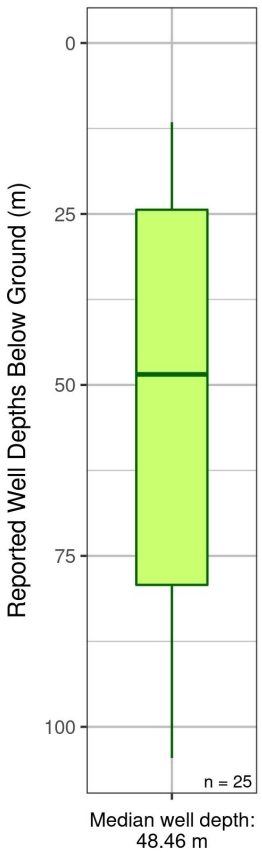
Aquifer Details

Region	South Coast
Water District	Vancouver
Aquifer Area	9.7 km^2
No. Wells Correlated	25
Vulnerability to Contamination	High
Productivity	Unknown
Aquifer Classification	Unknown
Hydraulic Conductivity *	Unknown
Transmissivity *	Unknown
Storativity *	Unknown
No. Water Licences Issued to Wells	Unknown
Observation Wells (**Active**, Inactive)	**498**, **499**

* min - max
For Hydraulic Connection see guidance document







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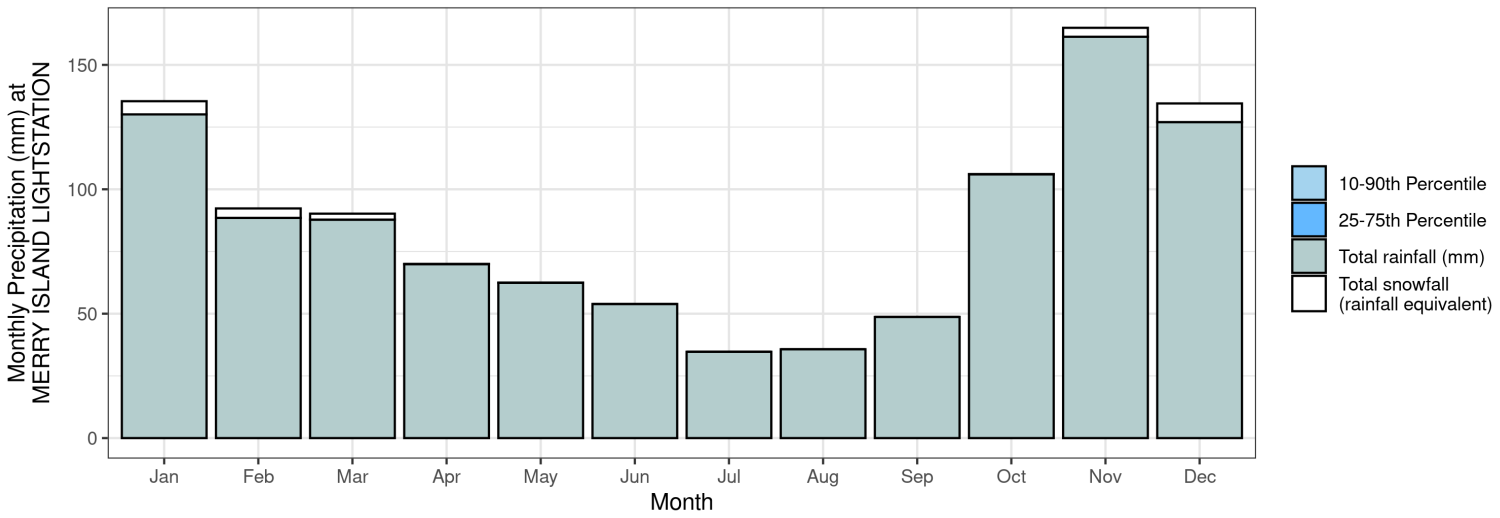
Detailed methods for all figures are described in the companion document (Aquifer Factsheet - Companion Document.pdf).
Factsheet generated: 2022-07-27. Aquifers online: https://apps.nrs.gov.bc.ca/gwells/aquifers.

Monthly Groundwater Level[1] with Precipitation from Climate Normals[2]

[1] No Monthly Water Level Summary (only 1 years of data; 2021-2022)
[2] Climate Normals Based on MERRY ISLAND LIGHTSTATION Environment Canada Weather Station (1981-2010)

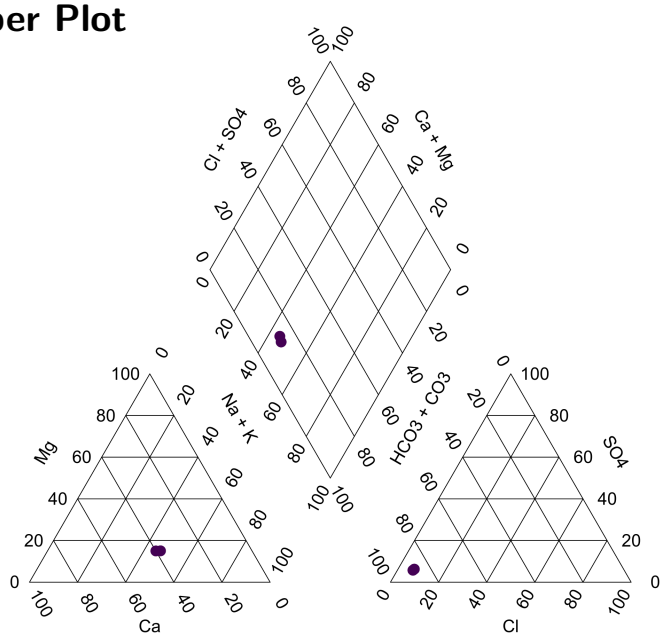


Groundwater Levels and Long-term Trend

Graph not available
(Not enough data)

For more information regarding trends in groundwater levels see Environmental Reporting BC

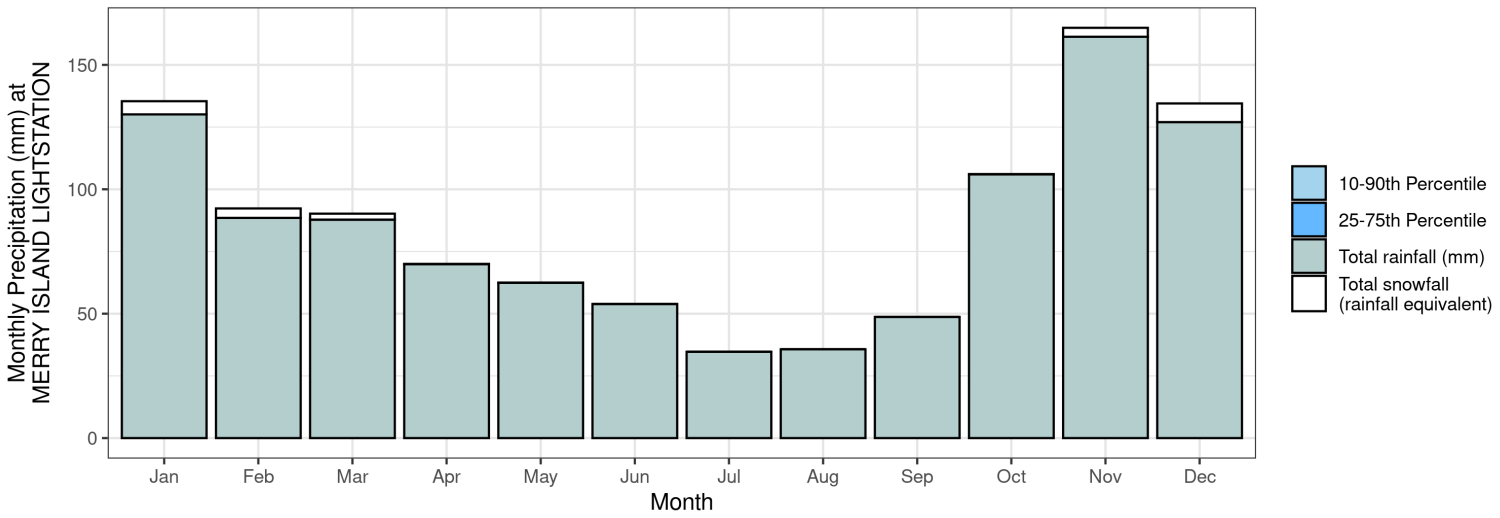
Piper Plot



The groundwater samples are typically of the Ca-Na-HCO3 type. The fact that HCO3 is the dominating anion shows the source is dominantly recent precipitation in the unconfined sand and gravel aquifer #566. Na enrichment could be attributed to anthropogenic activities such application of chemical fertilizers, sewage effluents, and/or indiscriminate house hold solid wastes disposal in the area. For EMS water chemistry data, see EMS ID E324515.

Monthly Groundwater Level[1] with Precipitation from Climate Normals[2]

[1] No Monthly Water Level Summary (only 1 years of data; 2021-2022)
[2] Climate Normals Based on MERRY ISLAND LIGHTSTATION Environment Canada Weather Station (1981-2010)

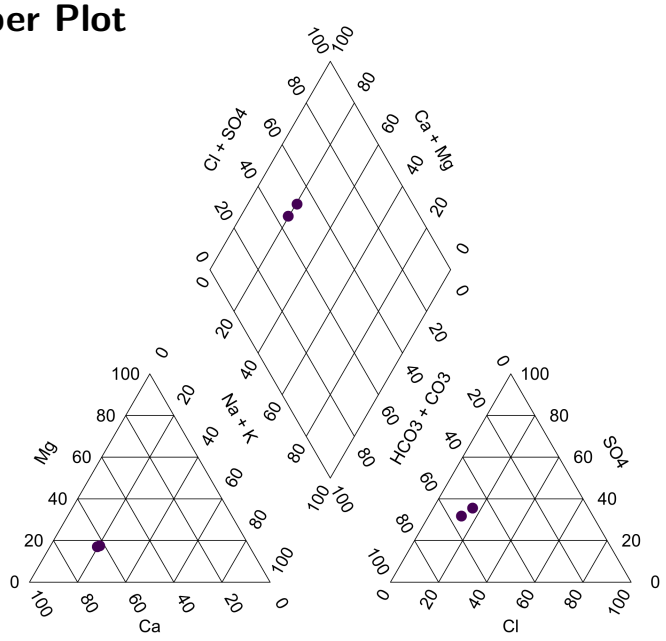


Groundwater Levels and Long-term Trend

Graph not available
(Not enough data)

For more information regarding trends in groundwater levels see Environmental Reporting BC

Piper Plot



The groundwater samples are typically of the Ca-Na-HCO3 type. The fact that HCO3 is the dominating anion shows the source is dominantly recent precipitation in the unconfined sand and gravel aquifer #566. SO4 enrichment could be attributed to anthropogenic activities such application of chemical fertilizers, sewage effluents, and/or indiscriminate house hold solid wastes disposal in the area. For EMS water chemistry data, see EMS ID E324516.

1. AQUIFER MAPPING REPORT: AQUIFER 0566

Aquifer Name: East Sechelt Delta

Date of Mapping: December 2018

Authors: Zidra Hammond, P.Eng., Andrew Hinnell, P.Geo.

1.1 Conceptual Understanding of Hydrostratigraphy

1.1.1 Aquifer Extents

The aquifer is located along the Sunshine Coast, east of Sechelt. The most westerly extents coincide with bedrock outcrop mapping (McCammon 1977). The aquifer boundary follows the coastlines along the Strait of Georgia as well as within the Sechelt Inlet. The eastern and northern boundaries of the aquifer are based on Capilano fluvial, deltaic deposits mapped by McCammon (1977) but are constrained at an elevation of about 100 m based on well lithology records.

The former AQ0556 is included within the current aquifer extents.

1.1.2 Geologic Formation (Overlying Materials)

Overlying materials include Capilano fluvial deposits that have formed a delta left by streams during glacial melt (McCammon 1977). The thickest deposits occur near the base of the mountain slope. Permeable deposits found at surface are underlain by till and clay in some areas; however, most wells within the mapped aquifer extents appear to have overlying fine sand based on well lithology records. Several gravel pits have been identified within the area (McCammon 1977).

1.1.3 Geologic Formation (Aquifer) – Sub-type 4a Unconfined Glaciofluvial/3 Alluvial Fan

The aquifer material consists of sands and gravels inferred as deltaic or glaciofluvial deposits. Unconfined conditions are inferred based on overlying materials that are predominantly fine sand.

1.1.4 Vulnerability - High

The aquifer is unconfined based on overlying materials that are predominantly fine sand. The water table depth is typically moderately shallow (See Section 1.2.1). Based on this description, the vulnerability of the aquifer to surface contamination is high.

The coastal setting of the aquifer also makes it vulnerable to saltwater intrusion.

1.2 Conceptual Understanding of Flow Dynamics

1.2.1 Groundwater Levels and Flow Direction

The depth to the water table ranges from shallow (<15 m) to deep (>60 m) and is typically moderately shallow (15 to 30 m) based on the median value of existing water depths. Groundwater flow is inferred to move from areas of higher elevation to areas of lower elevation. Groundwater is assumed to flow in a west to southwest direction towards the Strait of Georgia or Sechelt Inlet.

1.3 Recharge

Recharge occurs primarily from precipitation infiltrating into the subsurface. Upgradient of the aquifer, perched groundwater conditions may exist within deposits overlying till or clay. This perched water may also contribute to recharge where the underlying till or clay layer becomes discontinuous.

1.3.1 Potential for Hydraulic Connection

Groundwater could be hydraulically connected with bedrock aquifer AQ0564 as well as unconsolidated deposits upgradient of the aquifer mapped by McCammon (1977). The downstream end of Chapman Creek could also be hydraulically connected. Additional studies are required to confirm/determine surface-ground water interactions with drainage features in the area.

1.4 Additional Information on Water Use and Management

The need to supplement surface water with groundwater as a reliable, long-term drinking water source is increasing groundwater demand in the area (SCRD, 2018). Groundwater protection planning was initiated by the Sunshine Coast Regional District in 1996 (Dayton & Knight Ltd., 1996). This was driven by the need to protect water supply sources, reduce surface water pollution, preserve land stability, and preserve land productivity.

A study conducted in 1994 identified high arsenic concentrations in groundwater throughout the region (Carmichael and Clarkson 1994). In general, arsenic concentrations are variable both spatially and temporally with no significant correlation between arsenic levels and well depth. Mineralized deposits in fractures that are present in the bedrock are believed to be the source of arsenic (Mattu and Schreier 2000). Arsenic dissolves and becomes mobilized as groundwater flows through the fractured network. Dissolved arsenic was not detected in wells completed in unconsolidated material.

1.5 Additional Assessments or Management Actions:

No water availability or water budget studies have been completed.

1.6 Aquifer References

Carmichael V. and Clarkson L., 1994. Well Water Survey for Arsenic in the Powell River and Sunshine Coast Communities of British Columbia – March to June 1994. Prepared by the B.C. Ministry of Health. https://www.healthspace.ca/Clients/VCHA/CoastGaribaldi/CoastGaribaldi_Website.nsf

Cui, Y., Miller, D., Schiarizza, P., and Diakow, L.J., 2017. British Columbia digital geology. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2017-8, 9p.

Dayton & Knight Ltd. 1996. Aquifer Protection Plan. Prepared for the Sunshine Coast Regional District. http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=17038

Fairbanks, B.D., and Faulkner, R.L., 1992. Geothermal Resources of British Columbia. Geological Survey of Canada, Open File 2526, map, scale 1:2,000,000.

Fulton R.J., Clague J.J., and Ryder J.M., 1982. Surficial Geology, Vancouver Island and adjacent Mainland, British Columbia, map, scale 1:1,000,000. Geological Survey of Canada, Open File 837.

Geographic datasets from the BC Data Catalogue, accessed February 2017 https://data.gov.bc.ca/

Hammond, Z.M. and Hinnell, A.C., March 2019. Stage 1 Foundational Mapping: Hope, Moresby Island, Sunshine Coast, and Ucluelet. Prepared for the Ministry of Environment and Climate Change Strategy. Available through EcoCat (https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/libraries-publication-catalogues/ecocat).

Mattu G. and Schreier H., 2000. An Investigation of High Arsenic Levels in Wells in the Sunshine Coast and Powell River Regions of B.C. Prepared for the Coast Garibaldi Community Health Services Society. https://www.healthspace.ca/Clients/VCHA/CoastGaribaldi/CoastGaribaldi_Website.nsf

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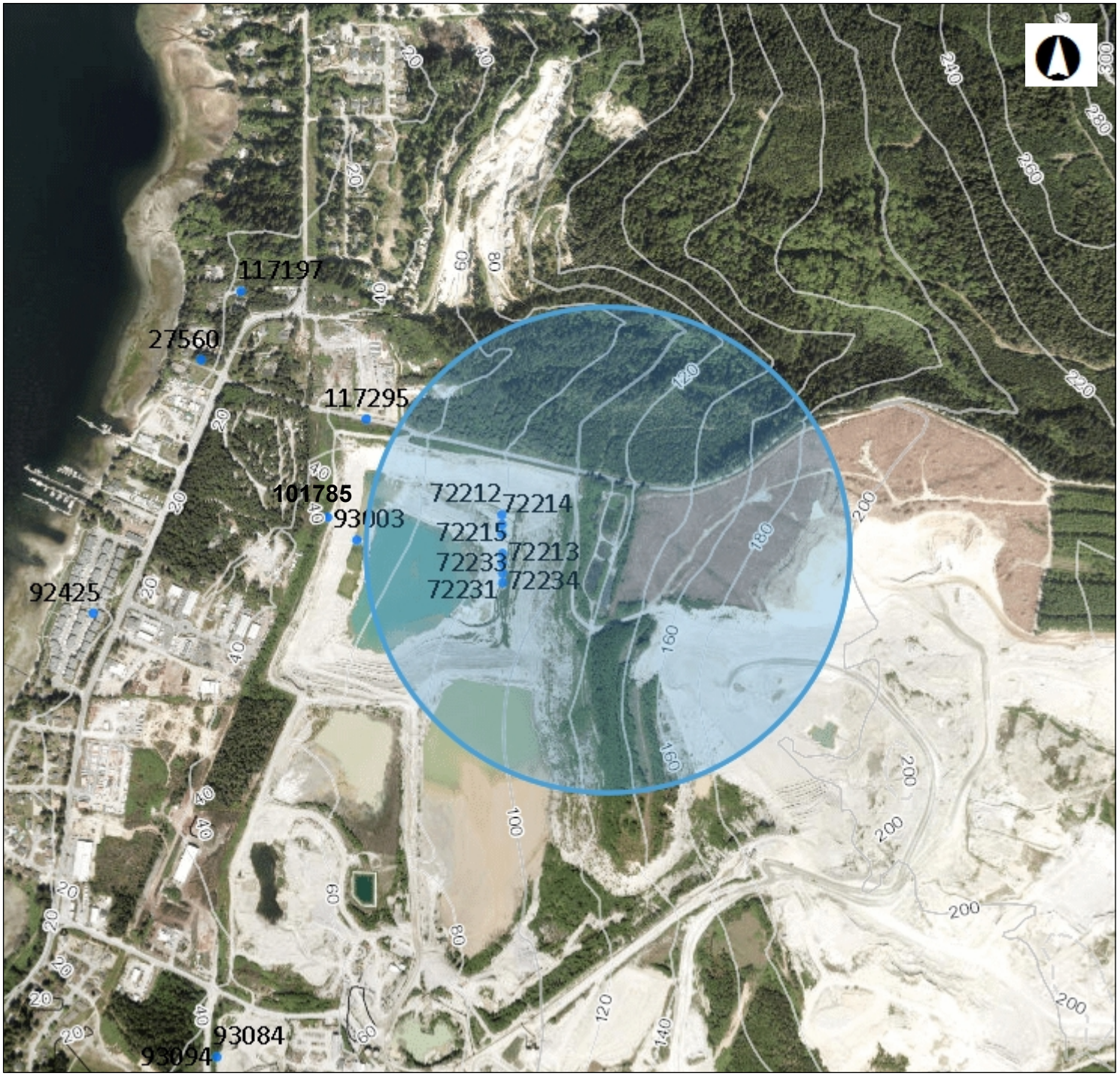
Sunshine Coast Regional District (SCRD) 2018. Regional Groundwater Task Force Consultation Report. Prepared for the Planning and Community Development Committee. http://www.scrd.ca/files/File/Infrastructure/Water/2018-MAR-08_Regional_Groundwater_Task_Force_Consultation_Report.pdf

Water Wells Search



BRITISH COLUMBIA

Water Resources Atlas

Legend

Groundwater Wells - All

ARTESIAN_COND

- Reported Artesian Well
- Well

Contours - 20K

FCODE

- Contour - Index
- Contour - Index Indefinite
- Contour - Index Depression
- Contour - Index Depression Inde
- Contour - Intermediate
- Contour - Intermediate Indefinite
- Contour - Intermediate Depressi
- Contour - Intermediate Depressi

0 0.37 0.73 km

1: 18,056

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Datum: NAD83

Projection: BC Albers

Key Map of British Columbia

Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 72212
Well Identification Plate Number:
Owner Name: CONST AGGREGATES LTD
Intended Water Use: Not Applicable
Artesian Condition: No

Well Status: New
Well Class: Unknown
Well Subclass:
Aquifer Number: 566
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: DUSTY ROAD - GRAVEL PIT
Town/City: SECHELT

Legal Description:

Lot	
Plan	
District Lot	3166
Block	
Section	
Township	
Range	
Land District	37
Property Identification Description (PID)	

Description of Well Location:

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.489718 **Longitude:** -123.738721
UTM Easting: 446500 **UTM Northing:** 5482160
Zone: 10
Coordinate Acquisition Code: unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	1994-08-11	1994-08-17	Nor-West Drilling	August 13th 2003 at 9:07 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
1994-08-11	1994-08-17				

Well Completion Data

Total Depth Drilled:
Finished Well Depth: 332 ft bgl
Final Casing Stick Up:
Depth to Bedrock:
Ground elevation:
Estimated Well Yield: 400 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method:
Method of determining elevation: Unknown
Static Water Level (BTOC): 237 feet btoc
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	0	WET COMPACT SILT SOME SAND						
0	18	FINE SAND SOME GRAVEL LAYERS						
18	36	COURSE GRAVEL & COBBLES						
36	41	FINE SAND						
41	116	COURSE GRAVEL & COBBLES LAYERS OF SAND						
116	154	SAND WITH LAYERS OF GRAVEL						
154	188	GRAVEL COBBLES & BOULDERS						
188	229	FINE SAND						
229	240	SAND WITH GRAVEL LAYERS						
240	300	SILTY FINE WET BROWN SAND						
300	304	GRAY SILTY FINE SAND WET						
304	315	TILLY SHARP SAND & GRAVEL						
315	332	WATER BEARING GRAVEL						

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
There are no records to show						

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:
Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:
Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material:
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
There are no records to show				

Well Development

Developed by:
Development Total Duration:

Well Yield

Estimation Method:
Estimation Rate:
Estimation Duration:
Static Water Level Before Test:
Drawdown:
Hydrofracturing Performed: No
Increase in Yield Due to Hydrofracturing:

Well Decommission Information

Reason for Decommission:
Method of Decommission:
Sealant Material:
Backfill Material:
Decommission Details:

Comments

CASING 2.0 TO 318.2, STAINLESS STEEL,

Documents

- WTN 72212_Well Record.pdf

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 72213
Well Identification Plate Number:
Owner Name: CONST AGGREGATES LTD
Intended Water Use: Not Applicable
Artesian Condition: No

Well Status: New
Well Class: Unknown
Well Subclass:
Aquifer Number: 566
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: DUSTY ROAD - GRAVEL PIT
Town/City: SECHELT

Legal Description:

Lot	
Plan	
District Lot	3166
Block	
Section	
Township	
Range	
Land District	37
Property Identification Description (PID)	

Description of Well Location:

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.489359 **Longitude:** -123.738716
UTM Easting: 446500 **UTM Northing:** 5482120
Zone: 10
Coordinate Acquisition Code: unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	1994-08-07	1994-08-11	Nor-West Drilling	August 13th 2003 at 9:07 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
1994-08-07	1994-08-11				

Well Completion Data

Total Depth Drilled:
Finished Well Depth: 284 ft bgl
Final Casing Stick Up:
Depth to Bedrock:
Ground elevation:

Estimated Well Yield: 0 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method:
Method of determining elevation: Unknown

Static Water Level (BTOC):
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	0	BLACK BOULDER						
0	0	ABANDONED DRY HOLE						
0	18	FINE SAND SOME GRAVEL LAYERS						
18	36	COURSE GRAVEL & COBBLES						
36	41	FINE SAND						
41	116	COURSE GRAVEL & COBBLES LAYERS OF SAND						
116	154	SAND WITH LAYERS OF GRAVEL						
154	163	SAND GRAVEL & COBBLES TIGHT LAYERS OF SA						
163	284	SAND GRAVEL & COBBLES TIGHT LAYERS OF SA						

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
There are no records to show						

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:

Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:
Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material:
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
There are no records to show				

Well Development

Developed by:
Development Total Duration:

Well Yield

Estimation Method:
Static Water Level Before Test:
Hydrofracturing Performed: No
Estimation Rate:
Drawdown:
Increase in Yield Due to Hydrofracturing:
Estimation Duration:

Well Decommission Information

Reason for Decommission:
Method of Decommission:
Sealant Material:
Backfill Material:
Decommission Details:

Comments

CASING 3.0 TO 163.0,

Documents

- WTN 72213_Well Record.pdf

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 72214
Well Identification Plate Number:
Owner Name: CONSTRUCTION AGGREGA
Intended Water Use: Not Applicable
Artesian Condition: No

Well Status: New
Well Class: Unknown
Well Subclass:
Aquifer Number: 564
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: DUSTY ROAD - GRAVEL PIT
Town/City: SECHELT

Legal Description:

Lot	
Plan	
District Lot	3166
Block	
Section	
Township	
Range	
Land District	37
Property Identification Description (PID)	

Description of Well Location:

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.489539 **Longitude:** -123.738719
UTM Easting: 446500 **UTM Northing:** 5482140
Zone: 10
Coordinate Acquisition Code: unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	1994-08-04	1994-08-07	Nor-West Drilling	August 13th 2003 at 9:07 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
1994-08-04	1994-08-07				

Well Completion Data

Total Depth Drilled:
Finished Well Depth: 290 ft bgl
Final Casing Stick Up:
Depth to Bedrock:
Ground elevation:
Estimated Well Yield: 0 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method:
Method of determining elevation: Unknown
Static Water Level (BTOC):
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	0	DRY HOLE						
0	2	SILTY FINE BROWN SAND						
2	24	FINE SAND & LAYERS OF GRAVEL						
24	47	GRAVEL & COBBLES						
47	56	SAND						
56	64	GRAVEL & COBBLES						
64	78	GRAY GRANITE						
78	84	PINK GRANITE						
84	212	GRAY GRANITE WITH LAYERS OF GREEN GRANIT						
212	237	HARD BLACK GRANITE						
237	270	MULTI COLOURED GRANITE FRACTURED						
270	290	GRAY GRANITE						

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
There are no records to show						

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:
Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:
Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material:
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
There are no records to show				

Well Development

Developed by:
Development Total Duration:

Well Yield

Estimation Method:
Static Water Level Before Test:
Hydrofracturing Performed: No
Estimation Rate:
Drawdown:
Increase in Yield Due to Hydrofracturing:
Estimation Duration:

Well Decommission Information

Reason for Decommission:
Method of Decommission:
Sealant Material:
Backfill Material:
Decommission Details:

Comments

CASING 3.7

Documents

Loading documents...

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 72215
Well Identification Plate Number:
Owner Name: CONSTRUCTION AGGREAT
Intended Water Use: Not Applicable
Artesian Condition: No

Well Status: Abandoned
Well Class: Unknown
Well Subclass:
Aquifer Number: 566
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: GRAVEL PIT- DUSTY ROAD
Town/City: SECHELT

Legal Description:

Lot	
Plan	
District Lot	3166
Block	
Section	
Township	
Range	
Land District	37
Property Identification Description (PID)	

Description of Well Location:

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.488999 **Longitude:** -123.73871
UTM Easting: 446500 **UTM Northing:** 5482080
Zone: 10
Coordinate Acquisition Code: unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	1994-08-18	1994-08-27	Nor-West Drilling	August 13th 2003 at 9:07 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
1994-08-18	1994-08-27				

Well Completion Data

Total Depth Drilled:
Finished Well Depth: 343 ft bgl
Final Casing Stick Up:
Depth to Bedrock:
Ground elevation:

Estimated Well Yield: 0 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method:
Method of determining elevation: Unknown

Static Water Level (BTOC):
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	14	SILTY SAND						
14	23	SILTY SAND & GRAVEL TILLY						
23	72	COBBLES & GRAVEL WITH LAYERS OF BROWN SA						
72	84	COBBLES & BOULDERS						
84	146	BROWN SAND 7 LAYERS OF GRAVEL & COBBLES						
146	201	GRAVEL COBBLES & BOULDERS						
201	230	BROWN SAND & GRAVEL						
230	250	MOIST BROWN SILTY SAND & GRAVEL						
250	278	WATER BEARING BROWN SILTY SAND & GRAVEL						
278	298	GRAY SAND 7 GRAVEL WATER BEARING LAYERS						
298	306	GRAY TILL						
316	333	WATER BEARING SAND & GRAVEL						
333	335	TIGHT PACKED SILT						
335	343	WATER BEARING SAND						
343	350	FINE SAND					DIRTY, WB	
350	440	CLAY WITH SILT LENSES						

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
There are no records to show						

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:

Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:

Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material:
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
There are no records to show				

Well Development

Developed by:

Development Total Duration:

Well Yield

Estimation Method:
Estimation Rate:
Estimation Duration:
Static Water Level Before Test:
Drawdown:
Hydrofracturing Performed: No
Increase in Yield Due to Hydrofracturing:

Well Decommission Information

Reason for Decommission:
Method of Decommission:
Sealant Material:
Backfill Material:
Decommission Details:

Comments

CASING 2.6 TO 316.8, STAINLESS STEEL,

Documents

- WTN 72215_Well Record.pdf

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 72231
Well Identification Plate Number:
Owner Name: CONSTRUCTION AGGREAT
Intended Water Use: Not Applicable
Artesian Condition: No

Well Status: New
Well Class: Unknown
Well Subclass:
Aquifer Number: 566
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: DUSTY ROAD - GRAVEL PIT
Town/City: SECHELT

Legal Description:

Lot	
Plan	
District Lot	3166
Block	
Section	
Township	
Range	
Land District	37
Property Identification Description (PID)	

Description of Well Location:

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.488639 **Longitude:** -123.738705
UTM Easting: 446500 **UTM Northing:** 5482040
Zone: 10
Coordinate Acquisition Code: unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	1996-01-29	1996-02-07	Nor-West Drilling	August 13th 2003 at 9:07 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
1996-01-29	1996-02-07				

Well Completion Data

Total Depth Drilled:
Finished Well Depth: 322 ft bgl
Final Casing Stick Up:
Depth to Bedrock:
Ground elevation:

Estimated Well Yield: 0 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method:
Method of determining elevation: Unknown

Static Water Level (BTOC):
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	0	PULLED OUT 260 FEET OF 8 INCH CASING						
0	8	SILT COMPACT SAND & GRAVEL GRAY						
8	36	COMPACT SAND 7 LAYERS OF GRAVEL						
36	94	SAND GRAVEL & COBBLES						
94	118	LOOSE SAND LAYERS WITH GRAVEL						
118	150	SILTY FINE SAND WITH CLAY						
150	270	TILLY SAND & GRAVEL SOME LAYERS OF COBBL						
270	293	TIGHT SILTY SAND						
293	322	SAND & COBBLES						

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
There are no records to show						

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:

Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:

Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material:
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
There are no records to show				

Well Development

Developed by:

Development Total Duration:

Well Yield

Estimation Method:
Static Water Level Before Test:
Hydrofracturing Performed: No

Estimation Rate:
Drawdown:
Increase in Yield Due to Hydrofracturing:

Estimation Duration:

Well Decommission Information

Reason for Decommission:
Method of Decommission:
Sealant Material:
Backfill Material:
Decommission Details:

Comments

CASING

Documents

- WTN 72231_Well Record.pdf

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 72233
Well Identification Plate Number:
Owner Name: CONSTRUCTION AGGREGA
Intended Water Use: Not Applicable
Artesian Condition: No

Well Status: New
Well Class: Unknown
Well Subclass:
Aquifer Number: 564
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: DUSTY ROAD - GRAVEL PIT
Town/City: SECHELT

Legal Description:

Lot	
Plan	
District Lot	3166
Block	
Section	
Township	
Range	
Land District	37
Property Identification Description (PID)	

Description of Well Location:

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.488459 **Longitude:** -123.738702
UTM Easting: 446500 **UTM Northing:** 5482020
Zone: 10
Coordinate Acquisition Code: unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	1996-02-01		Nor-West Drilling	August 13th 2003 at 9:07 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
1996-02-01					

Well Completion Data

Total Depth Drilled:
Finished Well Depth: 240 ft bgl
Final Casing Stick Up:
Depth to Bedrock:
Ground elevation:

Estimated Well Yield: 0 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method:
Method of determining elevation: Unknown

Static Water Level (BTOC):
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	23	SILTY SAND GRAVEL & COBBLES						
23	37	GRAVEL & COBBLES WATER BEARING						
37	45	BROWN SILT SAND & SOME GRAVEL						
45	50	HARD GRAY SILT						
50	105	GRAY SILT & GRAVEL STONEY HARDPAN WET LA						
105	130	BROWN SAND WITH LAYERS OF GRAVEL						
130	205	HARD PACKED SILT SAND & SOME GRAVEL						
205	221	COARSE SAND & GRAVEL						
221	230	PINK GRANITE LAYERS OF MULTI COLOURED GR						
230	240	LAYERS OF PINK & GREEN GRANITE						

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
There are no records to show						

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:

Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:

Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material:
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
There are no records to show				

Well Development

Developed by:

Development Total Duration:

Well Yield

Estimation Method:
Static Water Level Before Test:
Hydrofracturing Performed: No

Estimation Rate:
Drawdown:
Increase in Yield Due to Hydrofracturing:

Estimation Duration:

Well Decommission Information

Reason for Decommission:
Method of Decommission:
Sealant Material:
Backfill Material:
Decommission Details:

Comments

CASING 2.0 TO 222.0,

Documents

- WTN 72233_Well Record.pdf

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 72234
Well Identification Plate Number:
Owner Name: CONSTRUCTION AGGREGA
Intended Water Use: Not Applicable
Artesian Condition: No

Well Status: New
Well Class: Unknown
Well Subclass:
Aquifer Number: 564
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: DUSTY ROAD - GRAVEL PIT
Town/City: SECHELT

Legal Description:

Lot	
Plan	
District Lot	3166
Block	
Section	
Township	
Range	
Land District	37
Property Identification Description (PID)	

Description of Well Location:

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.488819 **Longitude:** -123.738708
UTM Easting: 446500 **UTM Northing:** 5482060
Zone: 10
Coordinate Acquisition Code: unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	1995-12-13	1996-01-10	Nor-West Drilling	August 13th 2003 at 9:07 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
1995-12-13	1996-01-10				

Well Completion Data

Total Depth Drilled:
Finished Well Depth: 245 ft bgl
Final Casing Stick Up:
Depth to Bedrock:
Ground elevation:
Estimated Well Yield: 30 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method:
Method of determining elevation: Unknown
Static Water Level (BTOC): 92 feet btoc
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	3	STONEY SOILS						
3	8	SILTY SAND & GRAVEL						
8	21	SILTY FINE SAND WATER BEARING						
21	108	COMPACT SILT & FINE SAND SOME COBBLES						
108	120	SAND LAYERS OF GRAVEL						
120	138	WET SAND						
138	141	WATER BEARING SAND						
141	147	WATER BEARING GRAVEL						
147	150	WATER BEARING SAND						
150	158	WATER BEARING SAND						
158	192	COMPACT SAND WITH STRINGERS OF GRAVEL						
192	222	GRAVE & SAND						
222	227	GRAY & PINK GRANITE						
227	245	GREEN GRANITE						

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
There are no records to show						

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:
Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:
Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material:
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
There are no records to show				

Well Development

Developed by:
Development Total Duration:

Well Yield

Estimation Method:
Estimation Rate:
Estimation Duration:
Static Water Level Before Test:
Drawdown:
Hydrofracturing Performed: No
Increase in Yield Due to Hydrofracturing:

Well Decommission Information

Reason for Decommission:
Method of Decommission:
Sealant Material:
Backfill Material:
Decommission Details:

Comments

CASING 2.7 TO 222.0,

Documents

- WTN 72234_Well Record.pdf

Disclaimer

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 93003
Well Identification Plate Number:
Owner Name: CONSTRUCTION AGGREGATES LTD
Intended Water Use: Private Domestic
Artesian Condition: No

Well Status: New
Well Class: Water Supply
Well Subclass: Not Applicable
Aquifer Number: 566
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

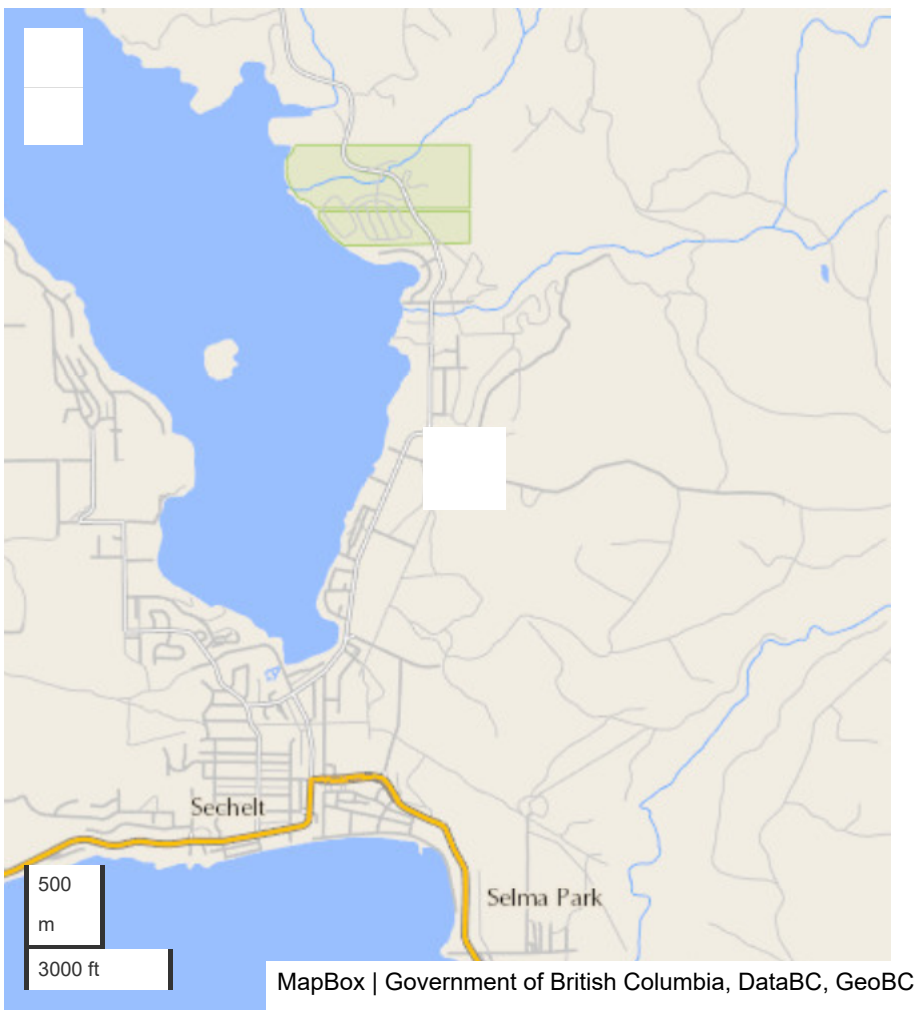
Location Information

Street Address:
Town/City:

Legal Description:

Lot	
Plan	
District Lot	1438
Block	
Section	
Township	
Range	
Land District	37
Property Identification Description (PID)	

Description of Well Location: WELL #11. APPROX 100 YARDS N OF HOLE #10.



Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.48925 **Longitude:** -123.74286
UTM Easting: 446200 **UTM Northing:** 5482111
Zone: 10
Coordinate Acquisition Code: (unknown, accuracy based on parcel size) No ICF cadastre, poor or no location sketch; site located in center of primary parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	2004-06-25	2004-07-09	Nor-West Drilling	February 26th 2008 at 6:44 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
2004-06-25	2004-07-09				

Well Completion Data

Total Depth Drilled: 260 ft bgl
Finished Well Depth: 260 ft bgl
Final Casing Stick Up: 30 inches
Depth to Bedrock:
Ground elevation:
Estimated Well Yield: 100 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method:
Method of determining elevation: Unknown
Static Water Level (BTOC): 118 feet btoc
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	12	SAND & GRAVEL						
12	84	FINE SAND WITH GRAVEL LAYERS						
84	96					Loose		
96	102	COBBLES & BOULDERS						
102	147	SAND & GRAVEL, SOME COBBLES						
147	230	SAND & GRAVEL, SOME COBBLES					WET	
230	256	SAND & GRAVEL	water-bearing					
256	260	SAND & GRAVEL, SOME CLAY LENSES	water-bearing					

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
0	237			8		Not Installed

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:
Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:
Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material:
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
234.50	242.00		SCREEN	100.00
242.00	249.00		SCREEN	80.00
249.00	256.00		SCREEN	60.00

Well Development

Developed by:
Development Total Duration:

Well Yield

Estimation Method:
Static Water Level Before Test:
Hydrofracturing Performed: No
Estimation Rate: 100 USgpm
Drawdown: 225 ft (btoc)
Increase in Yield Due to Hydrofracturing:
Estimation Duration:

Well Decommission Information

Reason for Decommission:
Method of Decommission:
Sealant Material:
Backfill Material:
Decommission Details:

Comments

RIG #: AR#1. PUMP TEST TO BE DONE FOR ACCURATE FLOW.

Documents

Loading documents...

Disclaimer

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 101785
Well Identification Plate Number:
Owner Name: CONSTRUCTION AGGREGATES LTD
Intended Water Use: Private Domestic
Artesian Condition: No

Well Status: New
Well Class: Water Supply
Well Subclass: Not Applicable
Aquifer Number: 566
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: UNKNOWN
Town/City: UNKNOWN

Legal Description:

Lot	
Plan	
District Lot	
Block	
Section	
Township	
Range	
Land District	
Property Identification Description (PID)	011918586

Description of Well Location: GRAVEL PIT - PORPOISE BAY ROAD, DIST. LOT 1438

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.489669 **Longitude:** -123.743691
UTM Easting: 446140 **UTM Northing:** 5482158
Zone: 10
Coordinate Acquisition Code: unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Legacy record	2001-03-26	2001-03-26	Nor-West Drilling	March 4th 2010 at 1:18 AM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
2001-03-26	2001-03-26				

Well Completion Data

Total Depth Drilled: 252 ft bgl
Finished Well Depth: 252 ft bgl
Final Casing Stick Up: 36 inches
Depth to Bedrock:
Ground elevation:

Estimated Well Yield: 50 USgpm
Well Cap:
Well Disinfected Status: Not Disinfected
Drilling Method: Air Rotary
Method of determining elevation: Unknown

Static Water Level (BTOC): 117 feet btoc
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	28	BROWN SAND WITH GRAVEL & COBBLE LAYERS						
28	47	TILLY SAND, GRAVEL & COBBLES						
47	64	SOME GRAVEL			brown			
64	75	GRAVEL & COBBLES, SOME SMALL BOULDERS						
75	82	SAND & GRAVEL, SOME COBBLES						
82	104	SOME GRAVEL			brown			
104	118	GRAVEL & COBBLES						
118	134	SAND & GRAVEL LAYERS						
134	152	WET, SOME GRAVEL						
152	198	WATERBEARING, SOME GRAVEL						
198	209	TIGHT WATER BEARING SAND & GRAVEL						
209	252	WATERBEARING SAND & GRAVEL						

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
0	235			8		Not Installed

Surface Seal and Backfill Details

Surface Seal Material:
Surface Seal Installation Method:
Surface Seal Thickness:
Surface Seal Depth:

Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:

Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method:
Type:
Material: Stainless Steel
Opening:
Bottom:

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
229.00	251.00		K_PACKER	80.00

Well Development

Developed by: Other

Development Total Duration:

Well Yield

Estimation Method: Other
Static Water Level Before Test:
Hydrofracturing Performed: No
Estimation Rate:
Drawdown:
Increase in Yield Due to Hydrofracturing:
Estimation Duration:

Well Decommission Information

Reason for Decommission:
Sealant Material:
Decommission Details:
Method of Decommission:
Backfill Material:

Comments

No comments submitted

Documents

- WTN 101785_Well Record.pdf

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Groundwater Wells and Aquifers

Well Summary

Well Tag Number: 117295
Well Identification Plate Number: 54929
Owner Name: Sunshine Coast Regional District
Intended Water Use: Not Applicable
Artesian Condition: No

Well Status: New
Well Class: Monitoring
Well Subclass: Permanent
Aquifer Number:
Technical Report: N/A

Observation Well Number:
Observation Well Status:
Environmental Monitoring System (EMS) ID:
Alternative specs submitted: No

Licensing Information

Licensed Status: Unlicensed

Licence Number:

Location Information

Street Address: Dusty Road
Town/City: Sechelt

Legal Description:

Lot	
Plan	
District Lot	
Block	
Section	
Township	
Range	
Land District	
Property Identification Description (PID)	

Description of Well Location: ST. ROW near PID: 027-271-820

Geographic Coordinates - North American Datum of 1983 (NAD 83)
Latitude: 49.49149 **Longitude:** -123.74259
UTM Easting: 446222 **UTM Northing:** 5482360
Zone: 10 **Coordinate Acquisition Code:**

Well Activity

Activity	Work Start Date	Work End Date	Drilling Company	Date Entered
Construction report	2018-09-20	2018-09-23	Drillwell Enterprises Ltd.	April 24th 2019 at 12:24 PM

Well Work Dates

Start Date of Construction	End Date of Construction	Start Date of Alteration	End Date of Alteration	Start Date of Decommission	End Date of Decommission
2018-09-20	2018-09-23				

Well Completion Data

Total Depth Drilled: 280 ft bgl
Finished Well Depth: 274 ft bgl
Final Casing Stick Up: 30 inches
Depth to Bedrock:
Ground elevation: 102 feet

Estimated Well Yield: 300 USgpm
Well Cap: welded lid
Well Disinfected Status: Disinfected
Drilling Method: Dual Rotary
Method of determining elevation: GPS

Static Water Level (BTOC): 100 feet btoc
Artesian Flow:
Artesian Pressure (head):
Artesian Pressure (PSI):
Orientation of Well: VERTICAL

Lithology

From (ft bgl)	To (ft bgl)	Raw Data	Description	Moisture	Colour	Hardness	Observations	Water Bearing Flow Estimate (USGPM)
0	6	sand	medium		brown	Loose		
6	17	gravel, coarse with cobbles			brown	Medium		
17	127	gravel	sandy		brown	Loose		
127	166	gravel, very colored	sandy	Wet	red	Medium		
166	276	gravel, clean, coarse	sandy	Wet	tan	Medium		
276	280	silt, till			grey	Hard		

Casing Details

From (ft bgl)	To (ft bgl)	Casing Type	Casing Material	Diameter (in)	Wall Thickness (in)	Drive Shoe
0	16.5	Steel Removed		10		Not Installed
0	280	Production casing	Steel	6	0.219	Installed

Surface Seal and Backfill Details

Surface Seal Material: Bentonite clay
Surface Seal Installation Method: Poured
Surface Seal Thickness: 2 inches
Surface Seal Depth: 16.5 feet

Backfill Material Above Surface Seal:
Backfill Depth:

Liner Details

Liner Material:
Liner Diameter:
Liner from:

Liner Thickness:
Liner to:

Liner perforations

From (ft bgl)	To (ft bgl)
There are no records to show	

Screen Details

Intake Method: Screen
Type: Telescope
Material: Stainless Steel
Opening: Continuous Slot
Bottom: Plug

Installed Screens

From (ft bgl)	To (ft bgl)	Diameter (in)	Assembly Type	Slot Size
259.00	261.00	5.00	K_RISER	
261.00	265.50	5.00	SCREEN	80.00
265.50	270.00	5.00	SCREEN	100.00
270.00	274.00	5.00	SCREEN	80.00

Well Development

Developed by: Air lifting

Development Total Duration: 7 hours

Well Yield

Estimation Method: Air Lifting
Static Water Level Before Test:
Hydrofracturing Performed: No

Estimation Rate:
Drawdown:
Increase in Yield Due to Hydrofracturing:

Estimation Duration:

Well Decommission Information

Reason for Decommission:
Sealant Material:
Decommission Details:

Method of Decommission:
Backfill Material:

Comments

No comments submitted

Documents

No additional documentation available for this well.

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Appendix C

Municipal Records and Archives

District of Sechelt Records -

Crown Land Occupancy Records

SUNSHINE COAST REGIONAL DISTRICT

5477 Wharf Road
Box 800, Sechelt
British Columbia
Canada V0N 3A0

Tel: (604) 885 2261
Tel: (604) 687 5753 (Vanc. Toll Free)

Fax: (604) 885 7909

2/0 3723

RECEIVED
JAN 0 2 1997

December 23, 1991

MINISTRY OF LANDS AND PARKS
LANDS OPERATIONS

DEC 3 0 1991

#401 - 4603 KINGSWAY
BURNABY, B.C. V5H 4M4

Ministry of Environment
Lands & Parks
#401-4603 Kingsway
Burnaby, B.C.
V5H 4M4

Attention: Larry Sorken

Dear Sir:

Re: District Lot 7613
Lease for Off-site Municipal Sludge Processing Site

Please find enclosed a map outlining the area recently discussed and field inspected with Mr. Lorne Eve of Sechelt Aggregates Ltd., for the proposed off-site sludge treatment facility.

The proposed area for the facility is situated on the southwest corner of D.L. 7613 (Crown Land), and as Mr. Eve indicated, is not suitable for future gravel extraction.

During an earlier discussion with your Ministry in regard to obtaining a lease for this area, the option we would like to act on is to have Sechelt Aggregates endorse the project and adjust their lease to include the sludge facility. We have enclosed a letter of support for this project from Construction Aggregates Ltd./Sechelt Aggregates Ltd., and would like information on how to proceed with the lease adjustment in regards to your Ministry's requirements.

If you have any further questions in regard to this request, please call 885-2261 or 687-5753 (Vancouver).

Yours truly,

S.K. Lehmann
Superintendent of Public Works
SKL/nm

CC: C.J. Merritt
S.A. Roik
L.D. Eve

Province of
British Columbia

LICENCE TO CUT

No. L40835

THIS LICENCE, made as of October 27, 1993,

BETWEEN:

THE DISTRICT MANAGER , on behalf of
HER MAJESTY THE QUEEN IN RIGHT OF
THE PROVINCE OF BRITISH COLUMBIA,
7077 Duncan Street
Powell River, British Columbia
V8A 1W1

(the "Licensor")

OF THE FIRST PART,

AND:

SUNSHINE COAST REGIONAL DISTRICT
P.O. Box 800
Sechelt, British Columbia
VON 3A0
(the "Licensee")

OF THE SECOND PART.

WITNESSES that, under Section 47 of the *Forest Act*, the parties agree as follows:

1.00 GRANT OF RIGHTS, LICENCE AREA AND TERM

1.01 The Licensee represents and warrants to the Licensor that the Licensee lawfully occupies the Licence Area pursuant to Licence of Occupation No. 235138.

1.02 Subject to this Licence, and in consideration of the Licensee's covenants in it, the Licensor grants to the Licensee the right, during the term of this Licence, to cut or remove, or both, Crown timber on the Licence Area.

1.03 The Licence Area is the Crown land shown outlined by the bold black line on the map(s) or plan(s) attached as Exhibit 'A' to this Licence, except land that is excluded in notations made on the map(s) or plan(s) and/or restricted by the terms of this Licence, including the Schedule attached to this Licence.

1.04 The term of this Licence begins on **October 27, 1993** and ends on the earlier of:

(a) the day upon which the Licensee's rights to occupy the Licence Area are terminated; or

(b) **October 26, 1994**.

1.05 The rights granted to the Licensee under this Licence shall be deemed to be suspended and of no force or effect during any period during which the Licensee's rights to occupy the Licence Area are suspended or cancelled.

1.06 Notwithstanding paragraph 1.04, the Licensor may cancel this Licence upon serving notice on the Licensee if and when the Licensee:

(a) becomes bankrupt, makes a general assignment for the benefit of its creditors or otherwise acknowledges its insolvency; or

(b) ceases to be eligible under the *Forest Act* to obtain a Licence to Cut;

and the cancellation shall be effective on the date specified in the notice.

~~2.00 FINANCIAL AND DEPOSITS~~

~~2.01 In addition to other money payable by the Licensee under the *Forest Act*, the Licensee will pay to the Crown:~~

~~(a) in respect of timber cut or removed under this Licence, either,~~
~~(i) stumpage at rates determined, re-determined and varied under the *Forest Act* and Regulations, or~~
~~(ii) royalty at rates specified in the *Forest Act*, if royalty is payable with respect to the timber,~~

~~(b) scaling fees determined under the Regulations;~~

~~(c) waste and damage assessments made under paragraphs 5.01, 5.02 and 5.03; and~~

~~(d) slash disposal assessments made under paragraph 4.02.~~

~~2.02 The Licensor will issue statements from time to time, setting out the amounts due and payable to the Crown.~~

~~2.03 Where the District Manager considers that timber harvesting or related operations proposed to be carried out under this Licence are likely to cause damage to improvements or chattels of a lawful occupier or lawful user of Crown land described in paragraph 6.02, the Licensee may be required to pay to the Crown a Special Deposit, in cash or in securities acceptable to the Licensor, in an amount determined by the Licensor to be adequate security for the Licensee's obligations under paragraph 6.01.~~

~~3.00 TIMBER MARKS AND SCALING~~

~~3.01 Unless the Licensee has obtained an exemption under the *Forest Act*, the Licensee will not permit timber to be removed from the Licence Area unless the timber has been conspicuously marked, in the manner prescribed in the Regulations, with the timber mark specified opposite this paragraph.~~

~~3.02 Timber cut or removed under this Licence shall, subject to the *Forest Act*, be scaled according to the *Forest Act*.~~

4.00 UTILIZATION STANDARDS, CUTTING SPECIFICATIONS AND FOREST PROTECTION

4.01 The Licensee will cause timber harvesting operations carried on under this Licence to conform to the utilization standards and cutting specifications set out in the schedule attached to this Licence.

4.02 The Licensee will comply with the provisions of Part 10 of the *Forest Act* and will dispose of all slash and debris according to the directions of a Forest Officer.

5.00 WASTE AND DAMAGE ASSESSMENTS

5.01 If trees designated to be cut in the Schedule attached to this Licence are not cut, or are left lodged; or if timber required to be utilized as set out in the Schedule attached to this Licence is wasted; or if timber that is required this Licence to be removed from Crown land is not removed, the Licensor may deliver to the Licensee an estimate of the volume of each species of timber uncut, not utilized or not removed, as the case may be.

5.02 Where the Licensee receives an estimate under paragraph 5.01, it will pay to the Crown, as liquidated damages, a waste assessment equal to the volume of each species estimated under paragraph 5.01, multiplied by the 12-month average billed stumpage as determined by the Licensor.

5.03 Damage to mature and immature timber will be assessed according to the *Forest Act*.

6.00 OTHER CROWN LAND OCCUPIERS

6.01 The Licensee acknowledges that the Licence Area is subject to other rights of use and occupation granted by the Crown, described in paragraph 6.02, and the Licensee will not interfere with the exercise of those rights nor damage property of an occupier of the Licence Area pursuant to those rights.

6.02 The rights of use and occupation referred to in paragraph 6.01 are:
Raymond W. Stockwell and Louis R. Bernor (Timber Sale Licence A20505)
and Construction Aggregates Ltd. (Special Use Permit 11137)

as shown on the attached map(s).

6.03 If damage occurs to the property of an occupier of Crown land holding rights described in paragraph 6.02 as a result of timber harvesting or related operations carried out under this Licence and the Licensee does not reasonably compensate the occupier for the damage, the Licensor may pay reasonable compensation to the occupier on the Licensee's behalf out of the deposit, if any, maintained under this Licence and for that purpose may sell a security included in the deposit.

6.04 If the deposit which may be required by paragraph 2.03 is reduced pursuant to paragraph 6.03, the Licensee will forthwith pay to the Crown, in cash or in securities acceptable to the Licensor, an amount of money sufficient to maintain the deposit in the amount specified.

7.00 LIABILITY AND INDEMNITY

7.01 The Licensee will indemnify the Crown against and will save it harmless from all claims, demands, suits, causes of action, costs, expenses and losses faced, incurred or suffered by the Crown as a result, directly or indirectly, of wrongful acts or omissions on the Licence Area of the Licensee, and:

(a) an employee of the Licensee;

(b) a person who performs work directly or indirectly under contract with the Licensee; and

(c) any other person who carries on timber harvesting or related operations on the Licence Area with the knowledge or consent of the Licensee, except:
(i) a servant or agent of the Crown, or
(ii) any person who uses or occupies the Licence Area under rights granted by the Crown;
acting within the scope of his duties.

7.02 Paragraph 7.01 does not apply to an act or omission that is a reasonable response to, and complies with, an order made on behalf of the Crown.

7.03 Where the Licensee fails to perform an obligation it is required to perform under this Licence:

(a) the Licensor may perform the obligation on the Licensee's behalf; and

(b) the Licensee will, on demand, pay the Crown an amount of money equal to the reasonable costs incurred under subparagraph (a) to perform the obligation.

7.04 The Crown will indemnify the Licensee against and will save it harmless from all claims, demands, suits, actions, causes of action, costs, expenses and losses faced, incurred or suffered by the Licensee as a result, directly or indirectly, of wrongful acts or omissions on the Licence Area of the Crown, its employees, agents and contractors.

8.00 FIELD PRACTICES AND WATER RESOURCES

8.01 The Licensee will not cause or permit:

(a) a stream or tidal water that supplies water for any purpose to be rendered unfit for that purpose.

(b) trees, logs, logging debris or any polluting substance to be deposited in, on or below the natural boundary of a stream or tidal water;

(c) logs to be skidded or equipment to be operated below the natural boundary of a stream or tidal water;

(d) any obstruction, gravel or fill to be placed, deposited or remain below the natural boundary of a stream or tidal water;

(e) a landing to be located within 40 m of a stream or tidal water, or in an area that is not designated for harvesting in the Licence Area; and

(f) slash to be burned save and except in compliance with the *Forest Act* and the Regulations thereunder.

8.02 The Licensee will:

(a) if it is in contravention of paragraph 8.01, within the time specified in a notice delivered to the Licensee by the Licensor, remove logging or road-building debris or other polluting substances deposited in, on or below the banks of streams and tidal water;

(b) fall and yard Crown and private timber away from the banks of streams and tidal water;

(c) not permit damage from harvesting or burning to natural growth in and on the banks of streams and tidal water;

(d) in order to traverse a stream or tidal water, build a bridge or install a culvert constructed and designed to the written specifications of the Licensor;

(e) construct, pursuant to schedule approved in writing by the Licensor, crossings of all streams and tidal water; and

(f) comply with all applicable legislation and regulations thereunder.

9.00 **MISCELLANEOUS**

9.01 The Licensee will perform the covenants, and will observe the conditions, if any, set out in the Schedule attached to this Licence, and where the Schedule conflicts with this Licence, the Schedule shall prevail.

9.02 This Licence is subject to the *Forest Act*.

9.03 This Licence will enure to the benefit of, and will be binding on, the parties and their respective heirs, executors, successors and permitted assigns.

9.04 The Licensee shall not, without the prior written consent of the Licensor, dispose of this agreement or an interest in it.

9.05 Every reference to the Licensor in this agreement will include the Regional Manager, District Manager and any Forest Officer designated by either of them to act for or on their respective behalf with respect to any provision or provisions of this Licence.

IN WITNESS to this Licence, it has been signed on behalf of the Crown, and it has been executed by the Licensee.

SIGNED, SEALED AND DELIVERED by the District Manager, on behalf of the Crown, in the presence of:

Greg Hemphill, District Manager
Sunshine Coast Forest District

THE COMMON SEAL of the Licensee was affixed in the presence of:

(or)

SIGNED, SEALED AND DELIVERED, by the Licensee, in the presence of

SUNSHINE COAST REGIONAL DISTRICT

(Licensee)

Re 4.01 Utilization Standards:

(a) Obligatory

(i) Stumps will be cut low enough to minimize waste, and in no case higher than thirty (30) centimetres on the side adjacent to the highest ground except when necessary in the judgement of the forest officer.

(ii) In order to minimize waste, all coniferous and deciduous trees containing X grade logs or better will be utilized to a small top diameter ten (10) centimetres inside bark.

(iii) All coniferous and deciduous trees and parts of these trees three (3) metres and over in length which contain X grade logs or better shall be removed.

(iv) Logs and/or parts of logs less than three (3) metres in length and broken at both ends are classed as breakage.

(v) Logs shall not be bucked or trimmed in such a manner as to reduce grade.

Optional

(vi) All coniferous and deciduous trees and parts of these trees which contain only Y grade logs may be removed and utilized at the licensee's option. If the Y grade material is not utilized, the District Manager may require it to be yarded to the landing or roadside.

Re 9.01 Additional Conditions:

(a) The licensee shall submit for the approval of the forest officer a plan of proposed logging of the area.

The plan must be prepared and submitted in accordance with the approved pre-harvest silviculture prescription and any other requirements of the District Manager.

All logging operations shall be conducted in accordance with the approved plan, and any deviation from the approved plan must be authorized in writing by the forest officer.

Any logging operation which is not conducted in accordance with the approved plan may be considered in trespass, and may be subject to trespass charges.

(b) Disposal of slash and snags shall be as provided in Part 10 of the *Forest Act*.

(c) All timber cut from the lands described in this licence shall not be sold or traded. All such timber shall be decked at landings approved by the forest officer for subsequent sale by the licensor.

Province of British Columbia
Ministry of Forests
FOREST SERVICE

EXHIBIT A

Date August 30, 1993
Ref. Map 92G-042
Base 92G-042
Scale 1: 20,000

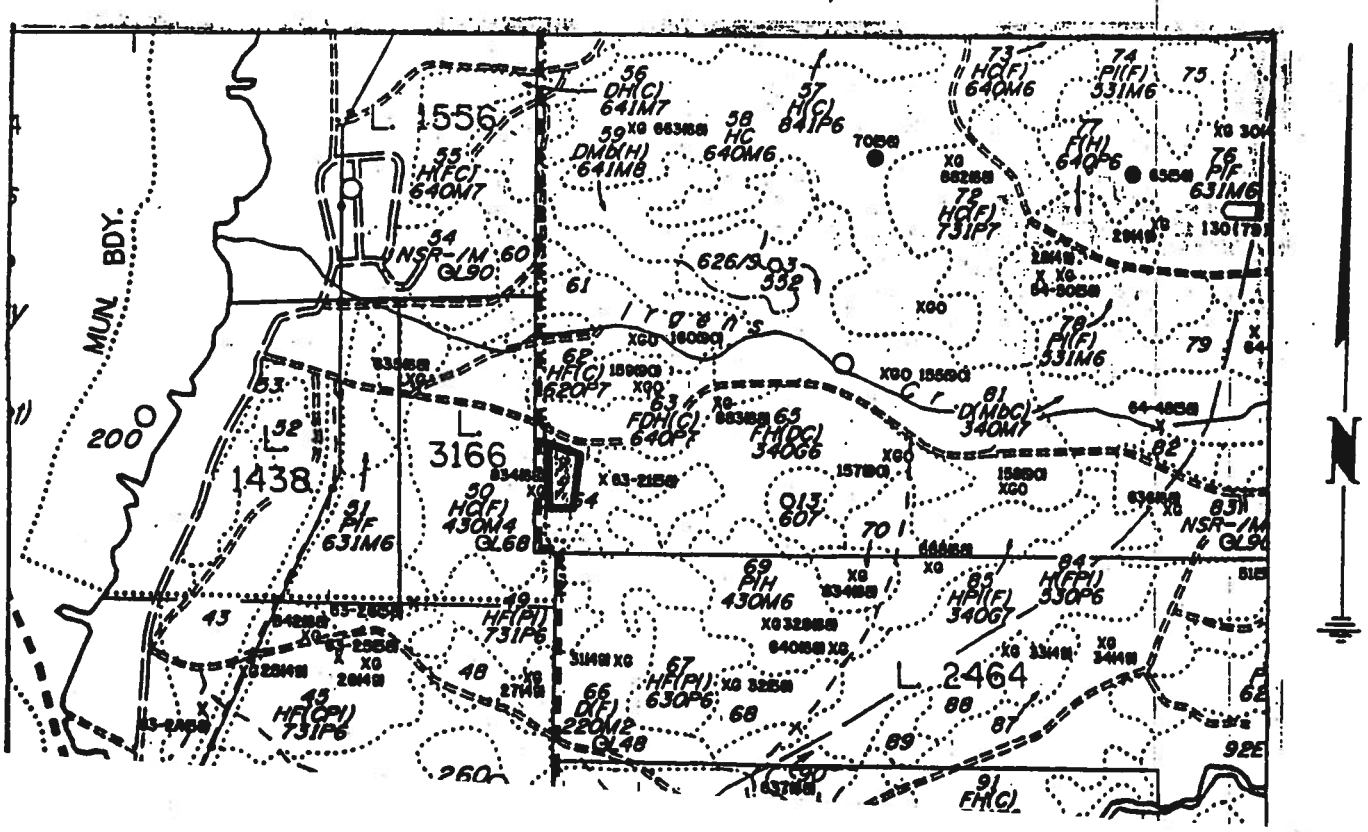
Map Of Licence to Cut L70835

Outlined ——— Area 3.76 hectares ±

Forest Region Vancouver
District Sunshine Coast
Land District New Westminster

U.T.M. / Grid	Zone	East	North	Reg.	Compt.	L
	10	446800	5482000	28	008	—

MANAGEMENT UNIT		TIMBER SUPPLY AREA		Pulpwood Agreement	Cascades	
Type	PSYU	Number	39 - Sunshine Coast		East	
Number	64 - Quadra	Block	B - Sechelt		West	✓
Block		Sub-B				



BRITISH COLUMBIA

Ministry of
Environment, Lands
and Parks

LICENCE OF OCCUPATION

Licence No.: 237335

File No.: 2405585

Disposition No.: 182213

THIS AGREEMENT is dated for reference September 20, 2000 and is made under the *Land Act.*

BETWEEN:

HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA, represented by the minister responsible for the *Land Act*, Parliament Buildings, Victoria, British Columbia

(the "Province")

AND:

THE DISTRICT OF SECHELT
PO Box 129
5797 Cowrie Street
Sechelt, BC V0N 3A0

(the "Licensee")

The parties agree as follows:

ARTICLE 1 - INTERPRETATION

1.1 In this Agreement,

"Agreement" means this licence of occupation;

"Commencement Date" means September 26, 2000;

"disposition" has the meaning given to it in the *Land Act* and includes a licence of occupation;

"Fees" means the fees set out in Article 3;

"Improvements" includes anything made, constructed, erected, built, altered, repaired or added to, in, on or under the Land, and attached to it or intended to become a part of it, and also includes any clearing, excavating, digging, drilling, tunnelling, filling, grading or ditching of, in, on or under the Land;

"Land" means that part or those parts of the following described land shown outlined by bold line on the schedule attached to this Agreement entitled "Legal Description Schedule":

THAT PART OF BLOCK A OF DISTRICT LOT 7613, GROUP 1, NEW WESTMINSTER DISTRICT, CONTAINING 3.76 HECTARES, MORE OR LESS,

except for those parts of the land that, on the Commencement Date, consist of highways (as defined in the *Highway Act*) and land covered by water;

"Realty Taxes" means all taxes, rates, levies, duties, charges and assessments levied or charged, at any time, by any competent governmental authority which relate to the Land, the Improvements or both of them and which you are liable to pay;

"Security" means the security referred to in section 6.1 or 6.2, as replaced or supplemented in accordance with section 6.5;

"Term" means the period of time set out in section 2.2;

"we", **"us"** or **"our"** refers to the Province alone and never refers to the combination of the Province and the Licensee: that combination is referred to as **"the parties"**; and

"you" or **"your"** refers to the Licensee.

1.2 In this Agreement, "person" includes a corporation, firm or association and wherever the singular or masculine form is used in this Agreement it will be construed as the plural or feminine or neuter form, as the case may be, and vice versa where the context or parties require.

1.3 The captions and headings contained in this Agreement are for convenience only and do not define or in any way limit the scope or intent of this Agreement.

1.4 This Agreement will be interpreted according to the laws of the Province of British Columbia.

1.5 Where there is a reference to an enactment of the Province of British Columbia or of Canada in this Agreement, that reference will include a reference to every amendment to it, every regulation made under it and any subsequent enactment of like effect and, unless otherwise indicated, all enactments referred to in this Agreement are enactments of the Province of British Columbia.

1.6 If any section of this Agreement, or any part of a section, is found to be illegal or unenforceable, that section or part of a section, as the case may be, will be considered separate and severable and the remainder of this Agreement will not be affected and this Agreement will

be enforceable to the fullest extent permitted by law.

1.7 Each schedule to this Agreement is an integral part of this Agreement as if set out at length in the body of this Agreement.

1.8 This Agreement constitutes the entire agreement between the parties and no understanding or agreement, oral or otherwise, exists between the parties with respect to the subject matter of this Agreement except as expressly set out in this Agreement and this Agreement may not be modified except by subsequent agreement in writing between the parties.

1.9 Each party will, upon the request of the other, do or cause to be done all lawful acts necessary for the performance of the provisions of this Agreement.

1.10 All provisions of this Agreement in our favour and all of our rights and remedies, either at law or in equity, will survive the termination of this Agreement.

1.11 Time is of the essence of this Agreement.

1.12 Wherever this Agreement provides that an action may be taken, a consent or approval must be obtained or a determination must be made, then you or we, as the case may be, will act reasonably in taking such action, deciding whether to provide such consent or approval or making such determination; but where this Agreement states that you or we have sole discretion to take an action, provide a consent or approval or make a determination, there will be no requirement to show reasonableness or to act reasonably in taking that action, providing that consent or approval or making that determination.

ARTICLE 2 - GRANT AND TERM

2.1 On the terms and conditions set out in this Agreement, we grant you a licence of occupation of the Land for municipal sewage and sludge processing facility purposes, and you acknowledge this licence of occupation does not grant you exclusive use and occupancy of the Land.

2.2 The term of this Agreement commences on the Commencement Date and terminates on the 10th anniversary of that date, or such earlier date provided for in this Agreement.

ARTICLE 3 - FEES

3.1 The Fee for the Term is $1.00, the receipt of which we acknowledge.

ARTICLE 4 - COVENANTS

4.1 You must

(a) pay, when due,

(i) the Fees to us at the address set out in Article 10,

(ii) the Realty Taxes, and

(iii) all charges for electricity, gas, water and other utilities supplied to the Land for use by you or on your behalf or with your permission;

(b) deliver to us, immediately upon demand, receipts or other evidence of the payment of Realty Taxes and all other money required to be paid by you under this Agreement;

(c) observe, abide by and comply with

(i) all laws, bylaws, orders, directions, ordinances and regulations of any competent governmental authority in any way affecting your use and occupation of the Land and the Improvements, and

(ii) the provisions of this Agreement;

(d) keep the Land and the Improvements in a safe, clean and sanitary condition satisfactory to us, and at our written request, make the Land and the Improvements safe, clean and sanitary;

(e) not commit any wilful or voluntary waste, spoil or destruction on the Land or do anything on the Land that may be or become a nuisance or annoyance to an owner or occupier of land in the vicinity of the Land;

(f) use and occupy the Land only in accordance with and for the purposes set out in section 2.1;

(g) not construct, place or affix any Improvement on or to the Land except as necessary for the purposes set out in section 2.1;

(h) pay all accounts and expenses as they become due for work performed on or materials supplied to the Land at your request, on your behalf or with your permission, except for money that you are required to hold back under the *Builders Lien Act*;

(i) if any claim of lien over the Land is made under the *Builders Lien Act* for work performed on or materials supplied to the Land at your request, on your behalf or with

your permission, immediately take all steps necessary to have the lien discharged, unless the claim of lien is being contested in good faith by you and you have taken the steps necessary to ensure that the claim of lien will not subject the Land or any interest of yours under this Agreement to sale or forfeiture;

(j) not cut or remove timber on or from the Land without

(i) our prior written consent, and

(ii) being granted the right under the *Forest Act* to harvest Crown timber on the Land:

(k) dispose of raw sewage and refuse only in accordance with the requirements and regulations of appropriate federal and provincial agencies;

(l) store bulk hazardous petroleum products and other toxic substances in accordance with the provisions of the *Waste Management Act*;

(m) not use construction materials containing toxic substances;

(n) during the course of land alteration or other activities on the Land which result in discovery or disturbance of any archaeological material, take all reasonable precautions to avoid direct impact with such material and immediately notify the Archaeology Branch of the Ministry of Small Business, Tourism and Culture;

(o) maintain a 30 metre wide buffer strip on the west and south sides of the Land, and ensure that no structures or improvements are constructed in the buffer strip;

(p) maintain a valid Waste Management Permit from the Ministry of Environment, Lands and Parks;

(q) deliver written notice to us, not later than 30 days prior to the expiration of this Agreement, confirming that the legal subdivision plan and boundary plan have been registered with the appropriate Land Title Office, after which, we will offer you a Lease over the Land described in the boundary plan;

(r) permit us, or our authorized representatives, to enter on the Land at any time to inspect the Land and the Improvements;

(s) indemnify and save us and our servants, employees and agents harmless against all claims, actions, causes of action, losses, damages, costs and liabilities, including fees of solicitors and other professional advisors, arising out of

(i) your breach, violation or nonperformance of a provision of this Agreement, and

(ii) any personal injury, bodily injury (including death) or property damage occurring or happening on or off the Land by virtue of your entry upon, use or occupation of the Land,

and the amount of all such losses, damages, costs and liabilities will be payable to us immediately upon demand; and

(t) on the termination of this Agreement,

(i) peaceably quit and deliver to us possession of the Land and, subject to paragraphs (ii), (iii) and (iv), the Improvements in a safe, clean and sanitary condition,

(ii) within 30 days, remove from the Land any Improvement you want to remove, if the Improvement was placed on or made to the Land by you and you are not in default of this Agreement,

(iii) not remove any Improvement from the Land if you are in default of this Agreement, unless we direct or permit you to do so under paragraph (iv),

(iv) remove from the Land any Improvement that we, in writing, direct or permit you to remove, other than any Improvement permitted to be placed on or made to the Land under another disposition, and

(v) restore the surface of the Land as nearly as may reasonably be possible to the same condition as it was on the Commencement Date, to our satisfaction, but if you are not directed or permitted to remove an Improvement under paragraph (iv), this paragraph will not apply to that part of the surface of the Land on which that Improvement is located,

and all of your right, interest and estate in the Land will be absolutely forfeited to us, and to the extent necessary, this covenant will survive the termination of this Agreement.

4.2 You will not permit any person to do anything you are restricted from doing under this Article.

ARTICLE 5 - LIMITATIONS

5.1 You agree with us that

(a) we are under no obligation to provide access or services to the Land or to maintain or improve existing access roads;

(b) this Agreement is subject to

(i) all subsisting grants to or rights of any person made or acquired under the *Coal Act*, *Forest Act*, *Mineral Tenure Act*, *Petroleum and Natural Gas Act*, *Range Act*, *Wildlife Act* or *Water Act*, or any extension or renewal of the same, whether or not you have actual notice of them, and

(ii) the exceptions and reservations of interests, rights, privileges and titles referred to in section 50 of the *Land Act*;

(c) we may make other dispositions of or over the Land;

(d) you will make no claim for compensation, in damages or otherwise, in respect of a disposition made under subsection (c), where such disposition does not materially affect the exercise of your rights under this Agreement;

(e) subject to subsection (d), all of your costs and expenses, direct or indirect, that arise out of any lawful interference with your rights under this Agreement as a result of the exercise or operation of the interests, rights, privileges and titles reserved to us in subsections (b) and (c) will be borne solely by you;

(f) you will not commence or maintain proceedings under section 65 of the *Land Act* in respect of any lawful interference with your rights under this Agreement that arises as a result of the exercise or operation of the interests, rights, privileges and titles described in subsections (b) and (c);

(g) you will not expand the facility outside the area of this Agreement;

(h) you will not remove or permit the removal of any Improvement from the Land except as expressly permitted or required under this Agreement;

(i) any interest you may have in the Improvements ceases to exist and becomes our property upon the termination of this Agreement, except where an Improvement may be removed under paragraph 4.1(t)(ii), (iii) or (iv) in which case any interest you may have in that Improvement ceases to exist and becomes our property if the Improvement is not removed from the Land within the time period set out in paragraph 4.1(t)(ii) or the time period provided for in the direction or permission given under paragraph 4.1(t)(iii); and

(j) if, after the termination of this Agreement, we permit you to remain in possession of the Land and we accept money from you in respect of such possession, a tenancy from year to year will not be created by implication of law and you will be deemed to be a monthly tenant only subject to all of the provisions of this Agreement, except as to duration, in the absence of a written agreement to the contrary.

ARTICLE 6 - SECURITY AND INSURANCE

6.1 On the Commencement Date, you will deliver to us security in the amount of $0.00 which will

(a) guarantee the performance of your obligations under this Agreement;

(b) be in the form required by us; and

(c) remain in effect until we certify, in writing, that you have fully performed your obligations under this Agreement.

6.2 Despite section 6.1, your obligations under that section are suspended for so long as you maintain in good standing other security acceptable to us to guarantee the performance of your obligations under this Agreement and all other dispositions held by you.

6.3 We may use the Security for the payment of any costs and expenses incurred by us to perform any of your obligations under this Agreement that are not performed by you or to pay any overdue Fees and, if such event occurs, you will, within 30 days of that event, deliver further Security to us in an amount equal to the amount drawn down by us.

6.4 After we certify, in writing, that you have fully performed your obligations under this Agreement, we will return to you the Security maintained under section 6.1, less all amounts drawn down by us under section 6.3.

6.5 You acknowledge that we may, from time to time, notify you to

(a) change the form or amount of the Security; and

(b) provide and maintain another form of Security in replacement of or in addition to the Security posted by you under this Agreement;

and you will, within 60 days of receiving such notice, deliver to us written confirmation that the change has been made or the replacement or additional form of Security has been provided by you.

6.6 You must

(a) without limiting your obligations or liabilities under this Agreement, at your expense, effect and keep in force during the Term Comprehensive/Commercial General Liability insurance protecting us as an additional insured in an amount of not less than $2,000,000.00 inclusive per occurrence insuring against liability for personal injury, bodily injury and property damage, and claims for liability assumed under contract,

arising from all accidents or occurrences on the Land or the Improvements;

(b) on the Commencement Date and immediately upon demand, deliver to us a completed "Province of British Columbia Certificate of Insurance" for all insurance required to be maintained by you under this Agreement;

(c) ensure that all insurance required to be maintained by you under this Agreement is

(i) placed with insurers licensed in British Columbia,

(ii) primary and does not require the sharing of any loss by any insurer that insures us, and

(iii) endorsed to provide us with 30 days' advance written notice of cancellation or material change; and

(d) deliver to us, immediately upon demand, certified copies of all policies of insurance required to be maintained by you under this Agreement.

6.7 You acknowledge that we may, from time to time, notify you to

(a) change the amount of insurance set out in subsection 6.6(a); and

(b) provide and maintain another type or types of insurance in replacement of or in addition to the insurance previously required to be maintained by you under this Agreement;

and you will, within 60 days of receiving such notice, cause the amounts and types to be changed and deliver to us a completed "Province of British Columbia Certificate of Insurance" for all insurance then required to be maintained by you under this Agreement.

ARTICLE 7 - ASSIGNMENT

7.1 You must not sublicense, assign, mortgage or transfer this Agreement, or permit any person to use or occupy the Land, without our prior written consent, which consent we may withhold in our sole discretion.

7.2 For the purpose of section 7.1, if you are a corporation, a change in control (as that term is defined in subsection 1(4) of the *Company Act*) will be deemed to be a transfer of this Agreement.

7.3 Section 7.2 does not apply to a corporation if the shares of the corporation which carry votes for the election of the directors of the corporation trade on a stock exchange located in Canada.

7.4 Prior to considering a request for our consent under section 7.1, we may require you to meet certain conditions, including without limitation, that you submit to us a "site profile", "preliminary site investigation" or "detailed site investigation" (as those terms are defined in the *Waste Management Act*) for the Land or other similar type of investigation of the Land.

ARTICLE 8 - TERMINATION

8.1 You agree with us that

(a) if you

(i) default in the payment of any money payable by you under this Agreement, or

(ii) fail to observe, abide by and comply with the provisions of this Agreement (other than the payment of any money payable by you under this Agreement),

and your default or failure continues for 60 days after we give written notice of the default or failure to you,

(b) if, in our opinion, you fail to make diligent use of the Land for the purposes set out in this Agreement, and your failure continues for 60 days after we give written notice of the failure to you;

(c) if you

(i) become insolvent or make an assignment for the general benefit of your creditors,

(ii) commit an act which entitles a person to take action under the *Bankruptcy and Insolvency Act* (Canada) or a bankruptcy petition is filed or presented against you or you consent to the filing of the petition or a decree is entered by a court of competent jurisdiction adjudging you bankrupt under any law relating to bankruptcy or insolvency, or

(iii) voluntarily enter into an arrangement with your creditors;

(d) if you are a corporation,

(i) a receiver or receiver-manager is appointed to administer or carry on your business, or

(ii) an order is made, a resolution passed or a petition filed for your liquidation or winding up;

(e) if you are a society, you convert into a company in accordance with the *Society Act* without our prior written consent;

(f) if this Agreement is taken in execution or attachment by any person; or

(g) if we require the Land for our own use or, in our opinion, it is in the public interest to cancel this Agreement and we have given you 60 days' written notice of such requirement or opinion;

this Agreement will, at our option and with or without entry, terminate and your right to use and occupy the Land will cease.

8.2 If the condition complained of (other than the payment of any money payable by you under this Agreement) reasonably requires more time to cure than 60 days, you will be deemed to have complied with the remedying of it if you commence remedying or curing the condition within 60 days and diligently complete the same.

8.3 You agree with us that

(a) you will make no claim for compensation, in damages or otherwise, upon the lawful termination of this Agreement under section 8.1; and

(b) our remedies under this Article are in addition to those available to us under the *Land Act*.

ARTICLE 9 - DISPUTE RESOLUTION

9.1 If any dispute arises under this Agreement, the parties will attempt to resolve the dispute within 60 days of the dispute arising (or within such other time period agreed to by the parties) and, subject to applicable laws, provide candid and timely disclosure to each other of all relevant facts, information and documents to facilitate those efforts.

9.2 Subject to section 9.5, if a dispute under this Agreement cannot be resolved under section 9.1, we or you may refer the dispute to arbitration conducted by a sole arbitrator appointed pursuant to the *Commercial Arbitration Act*.

9.3 The cost of the arbitration referred to in section 9.2 will be shared equally by the parties and the arbitration will be governed by the laws of the Province of British Columbia.

9.4 The arbitration will be conducted at our offices (or the offices of our authorized representative) in Surrey, British Columbia, and if we or our authorized representative have no office in Surrey, British Columbia, then our offices (or the offices of our authorized representative) that are closest to Surrey, British Columbia.

9.5 A dispute under this Agreement in respect of a matter within our sole discretion cannot, unless we agree, be referred to arbitration as set out in section 9.2.

ARTICLE 10 - NOTICE

10.1 Any notice required to be given by either party to the other will be deemed to be given if mailed by prepaid registered mail in Canada or delivered to the address of the other as follows:

to us

BRITISH COLUMBIA ASSETS
AND LAND CORPORATION
200-10428 153 Street
Surrey, BC V3R 1E1;

to you

THE DISTRICT OF SECHELT
PO Box 129
5797 Cowrie Street
Sechelt, BC V0N 3A0;

or at such other address as a party may, from time to time, direct in writing, and any such notice will be deemed to have been received if delivered, on the day of delivery, and if mailed, 7 days after the time of mailing, except in the case of mail interruption in which case actual receipt is required.

10.2 In order to expedite the delivery of any notice required to be given by either party to the other, a concurrent facsimile copy of any notice will, where possible, be provided to the other party but nothing in this section, and specifically the lack of delivery of a facsimile copy of any notice, will affect the deemed delivery provided in section 10.1.

10.3 The delivery of all money payable to us under this Agreement will be effected by hand, courier or prepaid regular mail to the address specified above, or by any other payment procedure agreed to by the parties, such deliveries to be effective on actual receipt.

ARTICLE 11 - MISCELLANEOUS

11.1 No provision of this Agreement will be considered to have been waived unless the waiver is in

writing, and a waiver of a breach of a provision of this Agreement will not be construed as or constitute a waiver of any further or other breach of the same or any other provision of this Agreement, and a consent or approval to any act requiring consent or approval will not waive or render unnecessary the requirement to obtain consent or approval to any subsequent same or similar act.

11.2 No remedy conferred upon or reserved to us under this Agreement is exclusive of any other remedy in this Agreement or provided by law, but that remedy will be in addition to all other remedies in this Agreement or then existing at law, in equity or by statute.

11.3 The grant of a sublicence, assignment or transfer of this Agreement does not release you from your obligation to observe and perform all the provisions of this Agreement on your part to be observed and performed unless we specifically release you from such obligation in our consent to the sublicence, assignment or transfer of this Agreement.

11.4 This Agreement extends to, is binding upon and enures to the benefit of the parties, their heirs, executors, administrators, successors and permitted assigns.

11.5 If, due to a strike, lockout, labour dispute, act of God, inability to obtain labour or materials, law, ordinance, rule, regulation or order of a competent governmental authority, enemy or hostile action, civil commotion, fire or other casualty or any condition or cause beyond your reasonable control, other than normal weather conditions, you are delayed in performing any of your obligations under this Agreement, the time for the performance of that obligation will be extended by a period of time equal to the period of time of the delay so long as

(a) you give notice to us within 30 days of the commencement of the delay setting forth the nature of the delay and an estimated time frame for the performance of your obligation; and

(b) you diligently attempt to remove the delay.

11.6 You agree with us that

(a) we are under no obligation, express or implied, to provide financial assistance or to contribute toward the cost of servicing, creating or developing the Land or the Improvements and you are solely responsible for all costs and expenses associated with your use of the Land and the Improvements for the purposes set out in this Agreement; and

(b) nothing in this Agreement constitutes you as our agent, joint venturer or partner or gives you any authority or power to bind us in any way.

11.7 This Agreement does not override or affect any powers, privileges or immunities to which you are entitled under any enactment of the Province of British Columbia.

The parties have executed this Agreement as of the date of reference of this Agreement.

SIGNED on behalf of **HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA** by British Columbia Assets and Land Corporation, authorized representative of the minister responsible for the *Land Act*

Authorized Signatory,
British Columbia Assets and Land Corporation

SIGNED on behalf of
THE DISTRICT OF SECHELT
by its authorized signatories

Authorized Signatory

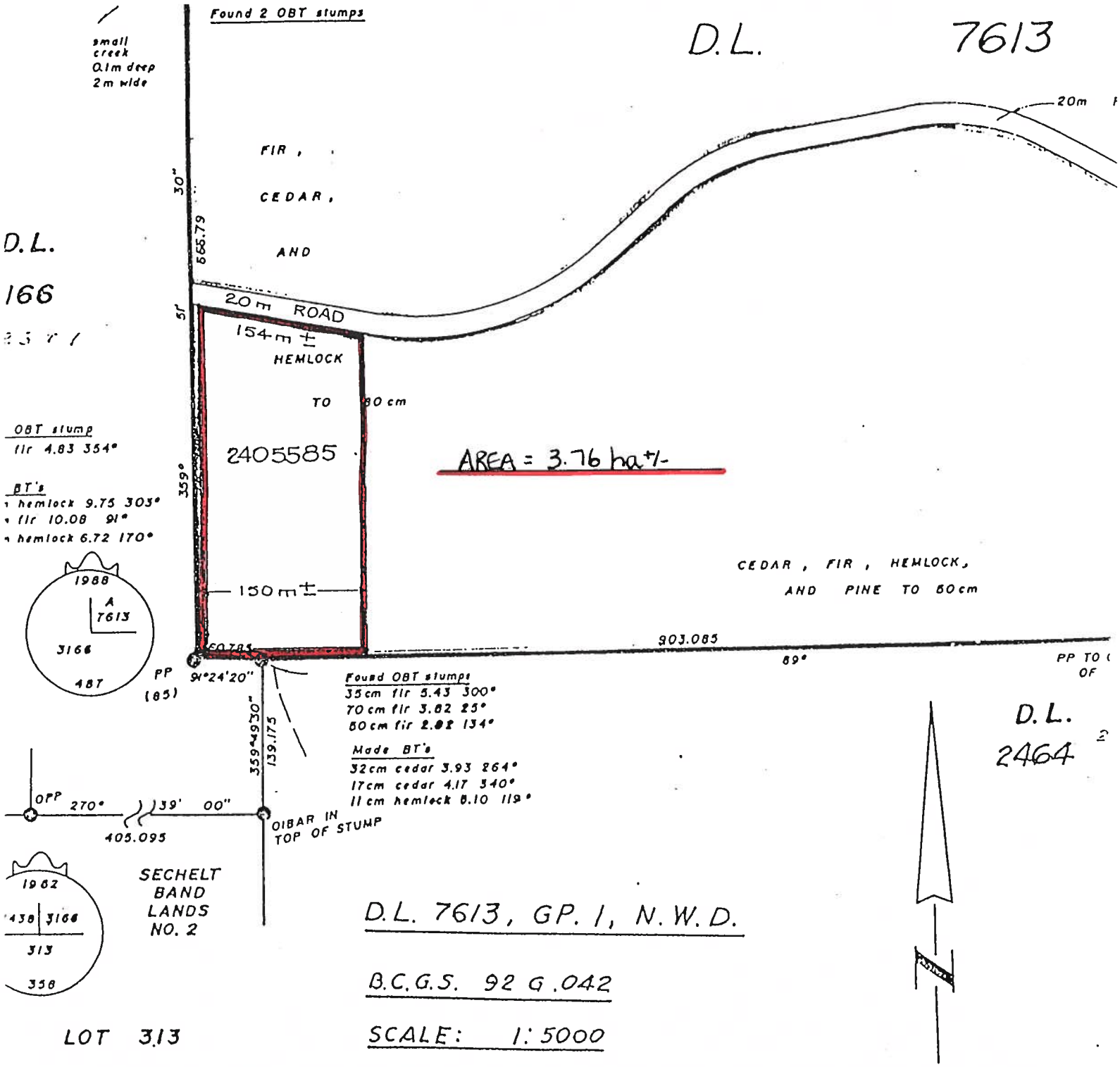
Authorized Signatory

Licence 237335

File No.: 2405585

Disposition No.: 182213

LEGAL DESCRIPTION SCHEDULE



Province of British Columbia

Ministry of Environment, Lands and Parks

License of Occupation

License No. 235203 File No. 2405585

THIS AGREEMENT dated for reference the 26th day of October, 1994.

IN PURSUANCE of the *LAND ACT* (Section 36).

BETWEEN:

HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA, represented by the Minister of Environment, Lands and Parks, Parliament Buildings, Victoria, British Columbia

(hereinafter called the "Owner")

OF THE FIRST PART

AND:

DISTRICT OF SECHELT
PO Box 129
5545 Inlet Avenue
Sechelt, British Columbia
V0N 3A0

(hereinafter called the "Licensee")

OF THE SECOND PART

WITNESS THAT WHEREAS the Owner has agreed to grant to the Licensee a license over that parcel of land described in the schedule attached entitled Legal Description (hereinafter referred to as the "Land");

NOW THEREFORE in consideration of the fee to be paid by and the covenants of the Licensee, the parties agree as follows:

Article I - Grant of License

(1.01) The Owner, on the terms set forth herein, hereby grants to the Licensee a license to enter on the Land for *municipal sludge processing facility purposes*.

Article II - Duration

(2.01) The duration of the license and the rights herein granted shall be for a *term of 2 years commencing on the 26th day of October, 1994* (hereinafter called the "Commencement Date") unless cancelled in accordance with the terms hereof.

Article III - License Fee

(3.01) The Licensee shall pay to the Owner, in advance, on the Commencement Date, the license fee as prescribed in the attached Fee Schedule.

Article IV - Covenants of the Licensee

(4.01) The Licensee covenants with the Owner

(a) to pay the license fee due at the address of the Owner first above written or at such other place as the Owner may specify from time to time;

(b) to pay and discharge when due all applicable taxes, levies, charges and assessments now or hereafter assessed, levied or charged which relate to the Land or any improvements thereon (herein called "Realty Taxes") which the Licensee is liable to pay;

(c) to observe, abide by and comply with all applicable laws, bylaws, orders, directions, ordinances and regulations of any competent government authority in any way affecting the Land and improvements situate thereon, or their use and occupation;

(d) not to commit or suffer any willful or voluntary waste, spoil or destruction on the Land or do or suffer to be done thereon anything that may be or become a nuisance or annoyance to the owners or occupiers of adjoining land;

(e) to deliver to the Owner from time to time, upon demand, proof of insurance provided for in subsection (k), receipts or other evidence of payment of Realty Taxes, insurance premiums and other monetary obligations of the Licensee required to be observed by the Licensee pursuant to this license;

(f) to indemnify and save the Owner harmless against all losses, damages, costs and liabilities, including fees of solicitors and other professional advisors arising out of:

(i) any breach, violation or non-performance of any covenant, condition or agreement in this license by the Licensee,

(ii) any personal injury, death or property damage occurring on the Land or happening by virtue of the Licensee's occupation of the Land,

and the Owner may add the amount of such losses, damages, costs and liabilities to the license fee and the amount so added shall be payable to the Owner immediately;

(g) to keep the Land in a safe, clean and sanitary condition satisfactory to the Owner and to make clean and sanitary any portion of the Land or any improvement that the Owner may direct by notice in writing to the Licensee;

(h) to permit the Owner, or his authorized representative to enter upon the Land at any time to examine its condition;

(i) to use and occupy the Land in accordance with the provisions of this license including those set forth in any Special Proviso Schedule;

(j) on the expiration or at the earlier cancellation of this license

(i) to quit peaceably and deliver possession of the Land to the Owner,

(ii) to remove all buildings, machinery, plant equipment and apparatus and all other improvements to or things on the Land, from the Land,

(iii) to restore the surface of the Land to its original condition,

and to the extent necessary, this covenant shall survive the expiration or cancellation of this license;

(k) to effect and keep in force during the term, insurance protecting the Owner and the Licensee (without any rights of cross-claim or subrogation against the Owner) against claims for personal injury, death, property damage or third party

or public liability claims arising from any accident or occurrence on the Land to an amount not less than $1,000,000.00 PROVIDED, however, that the Owner may, in his sole discretion, waive the requirements of this subsection on the delivery to the Owner of evidence that the Licensee is self-insured;

(l) notwithstanding subsection (k) of section 4.01, the Owner may from time to time notify the Licensee that the amount of insurance posted by the Licensee pursuant to that subsection be changed and the Licensee shall, within 60 days of receiving such notice, cause the amount of insurance posted, pursuant to subsection (k) of section 4.01 to be changed to the amount specified in the notice and deliver to the Owner written confirmation of the change except that when the Licensee is self-insuring this section shall not apply;

(m) not to interfere with the activities of any other person to enter on and use the Land under a prior or subsequent license granted by the Owner.

Article V - Assignment

(5.01) The Licensee shall not assign this license or sublicense any part of the Land without the prior written consent of the Owner.

Article VI - Cancellation

(6.01) In the event that

(a) the Owner requires the Land for his own use or in his sole discretion, considers that it is in the public interest to cancel the rights herein granted, in whole or in part;

(b) the Licensee ceases to use the Land for the purposes permitted herein;

(c) the Owner, in his sole discretion, considers that it is no longer necessary for the Licensee to use the Land for the purposes permitted herein;

the Owner may on 90 days written notice to the Licensee, cancel this license and the rights herein granted, in whole or in part.

(6.02) In the event that the Licensee fails to observe or perform any of the covenants, agreements, provisions or conditions contained herein, and such failure continues for a period of 60 days next after the giving of written notice by the Owner to the Licensee of the nature of the failure, the Owner may cancel this license in accordance with the ***Land Act*** and, notwithstanding subsection (j) of section 4.01, any building, machinery, plant equipment, and apparatus and all other improvements to the Land shall become, at the discretion of the Owner, the property of the Owner.

(6.03) In the event that

(a) the license hereby granted should be taken in execution or attachment by any person or the Licensee commits an act of bankruptcy, becomes insolvent or is petitioned into bankruptcy or voluntarily enters into an arrangement with his creditors;

(b) The Owner discovers that the Licensee either in his application for this license or otherwise has, in the opinion of the Owner, misrepresented or withheld any fact material to the application;

the Owner may on 90 days written notice to the Licensee, cancel this license and the rights herein granted.

(6.04) Thirty days after the expiration or cancellation of this license, any improvement or fixtures that remain unremoved from the Land shall be absolutely forfeited to and become the property of the Owner and the Owner may remove them from the Land and the Licensee shall, on demand, compensate the Owner for all costs incurred by the Owner respecting their removal.

(6.05) The Licensee shall not be entitled to any compensation, whether for damages or otherwise, in respect of a cancellation of this license by the Owner under this Article.

Article VII - Security

(7.01) The security in the sum of $0.00 and all rights, privileges, benefits and interests accruing thereto delivered by the Licensee to the Owner (herein called the "Security") to guarantee the performance of the Licensee's obligations under this license shall be maintained in effect until such time as the Owner certifies in writing that such obligations have been fully performed; provided, however, that the Owner may, in his sole discretion, waive the requirements of this subsection.

(7.02) In the event the Licensee should default in the performance of any of his obligations hereunder, it shall be lawful for the Owner, in his sole discretion, to sell, call in and convert the Security, or any part of it, and such Security shall be deemed to have been absolutely forfeited to the Owner.

(7.03) The rights of the Owner under this Article shall be deemed to continue in full force and effect notwithstanding the expiration or earlier cancellation of this license.

(7.04) Notwithstanding any amount of Security stated to be required under section 7.01 the Owner may, from time to time by notice to the Licensee, demand the amount to be changed to that specified in a notice and the Licensee shall, within 60 days of such notice, change the Security to that specified and provide the Owner with evidence of the change, except that when no Security is required under section 7.01 this section shall not apply.

Article VIII - Notice

(8.01) Where service of a notice or a document is required under this license, the notice or document shall be in writing and shall be deemed to have been served if delivered to, or if sent by prepaid registered mail addressed to, the Owner and the Licensee at the addresses specified for each on the first page of this license, and where service is by registered mail the notice or document shall be conclusively deemed to have been served on the eighth day after its deposit in a Canada Post office at any place in Canada.

(8.02) Either party may, by notice in writing to the other, specify another address for service of notices under this license and where another address is specified under this section, notices shall be mailed to that address in accordance with this Article.

(8.03) Notwithstanding section 8.01, any written notice to be served or given by the Owner to the Licensee under this license shall be effectively given or served by posting the same in a conspicuous place on the Land.

Article IX - Miscellaneous

(9.01) No term, condition, covenant or other provision herein shall be considered to have been waived by the Owner unless such waiver is expressed in writing by the Owner. Any such waiver of any term, condition, covenant or other provision herein shall not be construed as or constitute a waiver of any further or other breach of the same or any other term, condition, covenant, or other provision and the consent or approval of the Owner to any act by the Licensee requiring the consent or approval of the Owner shall not be considered to waive or render unnecessary such consents or approvals to any subsequent similar act by the Licensee.

(9.02) No remedy conferred upon or reserved to the Owner is exclusive of any other remedy herein or provided by law, but such remedy shall be cumulative and shall

be in addition to any other remedy herein or hereafter existing at law, in equity, or by statute.

(9.03) This license is subject to:

(a) all subsisting grants to or rights of any person made or acquired under the *Coal Act, Forest Act, Mineral Tenure Act, Petroleum and Natural Gas Act, Range Act, Water Act* or *Wildlife Act* or any extension or renewal of the same, whether or not the Licensee has actual notice of them;

(b) the exceptions and reservations of rights, interests, privileges and titles referred to in section 47 of the *Land Act*; AND

(c) any prior disposition made pursuant to the *Land Act*.

(9.04) The Licensee acknowledges and agrees with the Owner that

(a) any interference with the rights of the Licensee under this license by virtue of the exercise or operation of the rights, privileges or interests described in section 9.03 shall not constitute a breach of the Owner's obligations hereunder and the Licensee releases and discharges the Owner from and against any claim for loss or damage arising directly or indirectly out of any such interference;

(b) all costs and expenses, direct or indirect, that arise out of any interference by the Licensee with the rights, privileges and interests described in section 9.03 shall be borne solely by the Licensee;

(c) he shall not commence or maintain proceedings under section 60 of the *Land Act* in respect of any interference with his rights hereunder arising directly or indirectly out of the exercise or operation of the rights, privileges or interests described in section 9.03; AND

(d) all schedules attached to this license form an integral part of this license.

(9.05) This license shall not entitle the Licensee to exclusive possession of the Land, and the Owner may grant licenses to others to use the Land for any purpose other than that permitted herein, so long as the grant does not materially affect the exercise of the Licensee's rights hereunder. The question of whether a grant materially affects the exercise of the Licensee's rights hereunder shall be determined by the Owner in his sole discretion.

(9.06) The terms and provisions of this license shall extend to, be binding upon and enure to the benefit of the parties hereto and their successors and permitted assigns.

(9.07) Time is of the essence in this agreement.

Article X - Interpretation

(10.01) In this license, unless the context otherwise requires, the singular includes the plural and the masculine includes the feminine gender and a corporation.

(10.02) The captions and headings contained in this license are for convenience only and are not to be construed as defining or in any way limiting the scope or intent of the provisions herein.

(10.03) Where in this license there is a reference to an enactment of the Province of British Columbia or of Canada, that reference shall include a reference to any subsequent enactment of like effect, and unless the context otherwise requires, all statutes referred to herein are enactments of the Province of British Columbia.

(10.04) If any section of this license or any part of a section is found to be illegal or unenforceable, that part or section, as the case may be, shall be considered

separate and severable and the remaining parts or sections, as the case may be, shall not be affected thereby and shall be enforceable to the fullest extent permitted by law.

IN WITNESS WHEREOF, the parties have executed this license as of the day and year first above written.

SIGNED on behalf of Her Majesty the Queen in Right of the Province of British Columbia by the Minister of Environment, Lands and Parks or his duly authorized signatory in the presence of:

Authorized Signatory

SIGNED by District of Sechelt in the presence of:

M.A. Jeffrey

The District of Sechelt by its authorized signatories:

Authorized Signatory EARL BASSE - MAYOR

Joseph A. Calenda

Authorized Signatory Joseph A. Calenda - Administrator

Province of British Columbia
Ministry of Environment, Lands and Parks

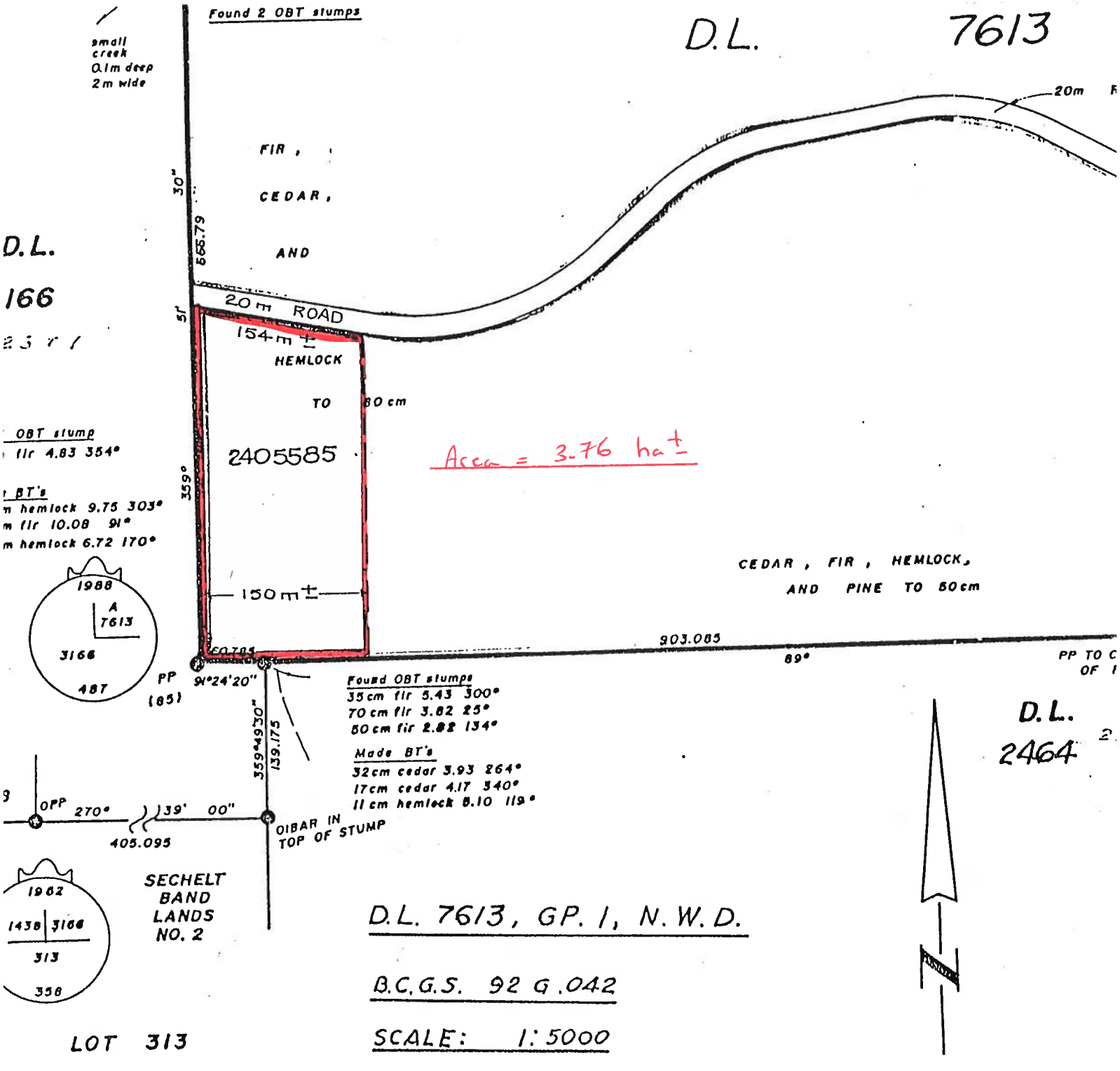
Legal Description Schedule

License No. 2[illegible]3 File No. 2405585

1. Legal Description

That part of Block A of District Lot 7613, Group 1, New Westminster District, shown outlined on sketch below, containing 3.76 hectares, more or less.

2. Sketch Plan



Province of British Columbia

Ministry of Environment, Lands and Parks

SPECIAL PROVISO SCHEDULE

License No. 233703

File No. 2405585

1. The Licensee shall obtain a License to Cut from the Ministry of Forests before harvesting, clearing, cutting, burning or selling ANY merchantable or non-merchantable timber that is present on the Land.

2. The Licensee covenants and agrees that a boundary plan of the Land indicating the location of all improvements will have been prepared by a British Columbia Land Surveyor retained by the Licensee, in compliance with the instructions of the Surveyor General of British Columbia, within one year from the date survey instructions are issued.

Province of British Columbia

Ministry of Environment, Lands and Parks

FEE SCHEDULE

License No. 235993

File No. 2405585

THE FEE FOR THE TERM is the sum of $1.00, the receipt and sufficiency of which is acknowledged.

BRITISH COLUMBIA

Ministry of Sustainable Resource Management

LEASE

Lease No.: 237761

File No.: 2405585

Disposition No.: 818320

THIS AGREEMENT is dated for reference September 26, 2001 and is made under the *Land Act.*

BETWEEN:

HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA, represented by the minister responsible for the *Land Act*, Parliament Buildings, Victoria, British Columbia

(the "Province")

AND:

DISTRICT OF SECHELT
PO Box 129
Sechelt, BC V0N 3A0

(the "Lessee")

The parties agree as follows:

ARTICLE 1 - INTERPRETATION

1.1 In this Agreement,

"Agreement" means this lease;

"Commencement Date" means September 26, 2001;

"disposition" has the meaning given to it in the *Land Act* and includes a licence of occupation;

"Improvements" includes anything made, constructed, erected, built, altered, repaired or added to, in, on or under the Land, and attached to it or intended to become a part of it, and also includes any clearing, excavating, digging, drilling, tunnelling, filling, grading or ditching of, in, on or under the Land;

"Land" means that part or those parts of the following described land shown outlined by bold line on the schedule attached to this Agreement entitled "Legal Description Schedule":

Lot D, District Lot 7613, Group 1, New Westminster District, Plan LMP22726, containing 4.3 hectares

except for those parts of the land that, on the Commencement Date, consist of highways (as defined in the *Highway Act*) and land covered by water;

"Realty Taxes" means all taxes, rates, levies, duties, charges and assessments levied or charged, at any time, by any competent governmental authority which relate to the Land, the Improvements or both of them;

"Rent" means the rent set out in Article 3;

"Security" means the security referred to in section 6.1 or 6.2, as replaced or supplemented in accordance with section 6.5;

"Term" means the period of time set out in section 2.2;

"we", **"us"** or **"our"** refers to the Province alone and never refers to the combination of the Province and the Lessee: that combination is referred to as **"the parties"**; and

"you" or **"your"** refers to the Lessee.

1.2 In this Agreement, "person" includes a corporation, firm or association and wherever the singular or masculine form is used in this Agreement it will be construed as the plural or feminine or neuter form, as the case may be, and vice versa where the context or parties require.

1.3 The captions and headings contained in this Agreement are for convenience only and do not define or in any way limit the scope or intent of this Agreement.

1.4 This Agreement will be interpreted according to the laws of the Province of British Columbia.

1.5 Where there is a reference to an enactment of the Province of British Columbia or of Canada in this Agreement, that reference will include a reference to every amendment to it, every regulation made under it and any subsequent enactment of like effect and, unless otherwise indicated, all enactments referred to in this Agreement are enactments of the Province of British Columbia.

1.6 If any section of this Agreement, or any part of a section, is found to be illegal or

unenforceable, that section or part of a section, as the case may be, will be considered separate and severable and the remainder of this Agreement will not be affected and this Agreement will be enforceable to the fullest extent permitted by law.

1.7 Each schedule to this Agreement is an integral part of this Agreement as if set out at length in the body of this Agreement.

1.8 This Agreement constitutes the entire agreement between the parties and no understanding or agreement, oral or otherwise, exists between the parties with respect to the subject matter of this Agreement except as expressly set out in this Agreement and this Agreement may not be modified except by subsequent agreement in writing between the parties.

1.9 Each party will, upon the request of the other, do or cause to be done all lawful acts necessary for the performance of the provisions of this Agreement.

1.10 All provisions of this Agreement in our favour and all of our rights and remedies, either at law or in equity, will survive the termination of this Agreement.

1.11 Time is of the essence of this Agreement.

1.12 Wherever this Agreement provides that an action may be taken, a consent or approval must be obtained or a determination must be made, then you or we, as the case may be, will act reasonably in taking such action, deciding whether to provide such consent or approval or making such determination; but where this Agreement states that you or we have sole discretion to take an action, provide a consent or approval or make a determination, there will be no requirement to show reasonableness or to act reasonably in taking that action, providing that consent or approval or making that determination.

1.13 Where this Agreement contains the forms of words contained in Column I of Schedule 4 of the *Land Transfer Form Act,* those words will have the same effect and be construed as if the appropriate forms of words contained in Column II of that Schedule were contained in this Agreement, unless the context requires another construction of those words.

ARTICLE 2 - GRANT AND TERM

2.1 On the terms and conditions set out in this Agreement, we grant you a lease of the Land for municipal sewage and sludge disposal facility purposes.

2.2 The term of this Agreement commences on the Commencement Date and terminates on the 30th anniversary of that date, or such earlier date provided for in this Agreement.

ARTICLE 3 - RENT

3.1 The Rent for the Term is $1.00, the receipt of which we acknowledge.

ARTICLE 4 - COVENANTS

4.1 You must

(a) pay, when due,

(i) the Rent to us at the address set out in Article 10,

(ii) the Realty Taxes, and

(iii) all charges for electricity, gas, water and other utilities supplied to the Land;

(b) deliver to us, immediately upon demand, receipts or other evidence of the payment of Realty Taxes and all other money required to be paid by you under this Agreement;

(c) observe, abide by and comply with

(i) all applicable laws, bylaws, orders, directions, ordinances and regulations of any competent governmental authority in any way affecting the Land and the Improvements, or their use and occupation, and

(ii) the provisions of this Agreement;

(d) in respect of the use of the Land by you or by anyone you permit to use the Land, keep the Land and the Improvements in a safe, clean and sanitary condition satisfactory to us, and at our written request, make the Land and the Improvements safe, clean and sanitary;

(e) not commit any wilful or voluntary waste, spoil or destruction on the Land or do anything on the Land that may be or become a nuisance or annoyance to an owner or occupier of land in the vicinity of the Land;

(f) use and occupy the Land only in accordance with and for the purposes set out in section 2.1;

(g) not construct, place or affix any Improvement on or to the Land except as necessary for

the purposes set out in section 2.1;

(h) pay all accounts and expenses as they become due for labour or services performed on, or materials supplied to, the Land except for money that you are required to hold back under the *Builders Lien Act*;

(i) if any claim of lien over the Land is made under the *Builders Lien Act*, immediately take all steps necessary to have the lien discharged, unless the claim of lien is being contested in good faith by you and you have taken the steps necessary to ensure that the claim of lien will not subject the Land or any interest of yours under this Agreement to sale or forfeiture;

(j) not cut or remove timber on or from the Land without

(i) our prior written consent, and

(ii) being granted the right under the *Forest Act* to harvest Crown timber on the Land;

(k) take all reasonable precautions to avoid disturbing or damaging any archaeological material found on or under the Land and, upon discovering any archaeological material on or under the Land, you must immediately notify the ministry responsible for administering the *Heritage Conservation Act*;

(l) maintain a 30 metre wide buffer strip on the west and south sides of the Land and ensure that no structures or improvements are constructed in the buffer strip;

(m) maintain a valid Waste Management Permit from the Ministry of Water, Land and Air Protection;

(n) submit to us, a Site Investigation and Environmental Managment Plan pursuant to the Contaminated Sites Regulation under the Waste Management Act, upon receipt of written notice from us;

(o) permit us, or our authorized representatives, to enter on the Land at any time to inspect the Land and the Improvements;

(p) indemnify and save us and our servants, employees and agents harmless against all claims, actions, causes of action, losses, damages, costs and liabilities, including fees of solicitors and other professional advisors, arising out of

(i) your breach, violation or nonperformance of a provision of this Agreement, and

(ii) any personal injury, bodily injury (including death) or property damage occurring or happening on or off the Land by virtue of your entry upon, use or occupation of the Land,

and the amount of all such losses, damages, costs and liabilities will be payable to us immediately upon demand; and

(q) on the termination of this Agreement,

(i) peaceably quit and deliver to us possession of the Land and, subject to paragraphs (ii) and (iii), the Improvements in a safe, clean and sanitary condition,

(ii) within 30 days, remove from the Land any Improvement you want to remove, if the Improvement was placed on or made to the Land by you, is in the nature of a tenant's fixture normally removable by tenants and is not part of a building or part of the Land,

(iii) remove from the Land any Improvement that we, in writing, direct or permit you to remove, other than any Improvement permitted to be placed on or made to the Land under another disposition, and

(iv) restore the surface of the Land as nearly as may reasonably be possible to the same condition as it was on the Commencement Date, to our satisfaction, but if you are not directed or permitted to remove an Improvement under paragraph (iii), this paragraph will not apply to that part of the surface of the Land on which that Improvement is located,

and all of your right, interest and estate in the Land will be absolutely forfeited to us, and to the extent necessary, this covenant will survive the termination of this Agreement.

4.2 You will not permit any person to do anything you are restricted from doing under this Article.

4.3 We will provide you with quiet enjoyment of the Land.

ARTICLE 5 - LIMITATIONS

5.1 You agree with us that

(a) we are under no obligation to provide access or services to the Land or to maintain or improve existing access roads;

(b) this Agreement is subject to

(i) all subsisting grants to or rights of any person made or acquired under the *Coal Act*, *Forest Act*, *Mineral Tenure Act*, *Petroleum and Natural Gas Act*, *Range Act*, *Wildlife Act* or *Water Act*, or any extension or renewal of the same, whether or not you have actual notice of them, and

(ii) the exceptions and reservations of interests, rights, privileges and titles referred to in section 50 of the *Land Act*;

(c) with your prior consent, which consent you will not unreasonably withhold, we may make other dispositions of or over the Land, or any part of it, to a person, including a Crown agency or ministry, and, upon such consent being given you will, if required by us in the case of a disposition by way of easement, right of way or statutory right of way, immediately execute and deliver to us such instrument as may be necessary to subordinate your rights under this Agreement to such easement, right of way or statutory right of way;

(d) for the purpose of subsection (c), you will be deemed to have reasonably withheld your consent if a disposition made under that subsection would materially affect the exercise of your rights under this Agreement;

(e) you will make no claim for compensation, in damages or otherwise, in respect of a disposition made under subsection (c), where such disposition does not materially affect the exercise of your rights under this Agreement;

(f) subject to subsection (e), all of your costs and expenses, direct or indirect, that arise out of any lawful interference with your rights under this Agreement as a result of the exercise or operation of the interests, rights, privileges and titles reserved to us in subsections (b) and (c) will be borne solely by you;

(g) you will not commence or maintain proceedings under section 65 of the *Land Act* in respect of any lawful interference with your rights under this Agreement that arises as a result of the exercise or operation of the interests, rights, privileges and titles described in subsections (b) and (c);

(h) any interference with your rights under this Agreement as a result of the exercise or operation of the interests, rights, privileges and titles described in subsections (c) and (d) will not constitute a breach of our covenant of quiet enjoyment and you release and

discharge us from all claims for loss or damage arising directly or indirectly out of any such interference;

(i) you will not remove or permit the removal of any Improvement from the Land except as expressly permitted or required under this Agreement;

(j) any interest you may have in the Improvements ceases to exist and becomes our property upon termination of this Agreement, except where an Improvement may be removed under paragraph 4.1(q)(ii) or (iii) in which case any interest you may have in that Improvement ceases to exist and becomes our property if the Improvement is not removed from the Land within the time period set out in paragraph 4.1(q)(ii) or the time period provided for in the direction or permission given under paragraph 4.1(q)(iii); and

(k) if, after the termination of this Agreement, we permit you to remain in possession of the Land and we accept money from you in respect of such possession, a tenancy from year to year will not be created by implication of law and you will be deemed to be a monthly tenant only subject to all of the provisions of this Agreement, except as to duration, in the absence of a written agreement to the contrary.

ARTICLE 6 - SECURITY AND INSURANCE

6.1 On the Commencement Date, you will deliver to us security in the amount of $0.00 which will

(a) guarantee the performance of your obligations under this Agreement;

(b) be in the form required by us; and

(c) remain in effect until we certify, in writing, that you have fully performed your obligations under this Agreement.

6.2 Despite section 6.1, your obligations under that section are suspended for so long as you maintain in good standing other security acceptable to us to guarantee the performance of your obligations under this Agreement and all other dispositions held by you.

6.3 We may use the Security for the payment of any costs and expenses incurred by us to perform any of your obligations under this Agreement that are not performed by you and, if such event occurs, you will, within 30 days of that event, deliver further Security to us in an amount equal to the amount drawn down by us.

6.4 After we certify, in writing, that you have fully performed your obligations under this Agreement, we will return to you the Security maintained under section 6.1, less all amounts

drawn down by us under section 6.3.

6.5 You acknowledge that we may, from time to time, notify you to

(a) change the form or amount of the Security; and

(b) provide and maintain another form of Security in replacement of or in addition to the Security posted by you under this Agreement;

and you will, within 60 days of receiving such notice, deliver to us written confirmation that the change has been made or the replacement or additional form of Security has been provided by you.

6.6 You must

(a) without limiting your obligations or liabilities under this Agreement, at your expense, effect and keep in force during the Term Comprehensive/Commercial General Liability insurance protecting us as an additional insured in an amount of not less than $2,000,000.00 inclusive per occurrence insuring against liability for personal injury, bodily injury and property damage, and claims for liability assumed under contract, arising from all accidents or occurrences on the Land or the Improvements;

(b) on the Commencement Date and immediately upon demand, deliver to us a completed "Province of British Columbia Certificate of Insurance" for all insurance required to be maintained by you under this Agreement;

(c) ensure that all insurance required to be maintained by you under this Agreement is

(i) placed with insurers licensed in British Columbia,

(ii) primary and does not require the sharing of any loss by any insurer that insures us, and

(iii) endorsed to provide us with 30 days' advance written notice of cancellation or material change; and

(d) deliver to us, immediately upon demand, certified copies of all policies of insurance required to be maintained by you under this Agreement.

6.7 You acknowledge that we may, from time to time, notify you to

(a) change the amount of insurance set out in subsection 6.6(a); and

(b) provide and maintain another type or types of insurance in replacement of or in addition to the insurance previously required to be maintained by you under this Agreement;

and you will, within 60 days of receiving such notice, cause the amounts and types to be changed and deliver to us a completed "Province of British Columbia Certificate of Insurance" for all insurance then required to be maintained by you under this Agreement.

ARTICLE 7 - ASSIGNMENT

7.1 You must not sublease, assign, mortgage or transfer this Agreement, or permit any person to use or occupy the Land, without our prior written consent, which consent we may withhold in our sole discretion.

7.2 For the purpose of section 7.1, if you are a corporation, a change in control (as that term is defined in subsection 1(4) of the *Company Act*) will be deemed to be a transfer of this Agreement.

7.3 Section 7.2 does not apply to a corporation if the shares of the corporation which carry votes for the election of the directors of the corporation trade on a stock exchange located in Canada.

7.4 Prior to considering a request for our consent under section 7.1, we may require you to meet certain conditions, including without limitation, that you submit to us a "site profile", "preliminary site investigation" or "detailed site investigation" (as those terms are defined in the *Waste Management Act*) for the Land or other similar type of investigation of the Land.

ARTICLE 8 - TERMINATION

8.1 You agree with us that

(a) if you

(i) default in the payment of any money payable by you under this Agreement, or

(ii) fail to observe, abide by and comply with the provisions of this Agreement (other than the payment of any money payable by you under this Agreement),

and your default or failure continues for 60 days after we give written notice of the default or failure to you,

(b) if, in our opinion, you fail to make diligent use of the Land for the purposes set out in this Agreement, and your failure continues for 60 days after we give written notice of the failure to you;

(c) if you

(i) become insolvent or make an assignment for the general benefit of your creditors,

(ii) commit an act which entitles a person to take action under the *Bankruptcy and Insolvency Act* (Canada) or a bankruptcy petition is filed or presented against you or you consent to the filing of the petition or a decree is entered by a court of competent jurisdiction adjudging you bankrupt under any law relating to bankruptcy or insolvency, or

(iii) voluntarily enter into an arrangement with your creditors;

(d) if you are a corporation,

(i) a receiver or receiver-manager is appointed to administer or carry on your business, or

(ii) an order is made, a resolution passed or a petition filed for your liquidation or winding up;

(e) if you are a society, you convert into a company in accordance with the *Society Act* without our prior written consent; or

(f) if this Agreement is taken in execution or attachment by any person;

this Agreement will, at our option and with or without entry, terminate, and all of your right, interest and estate in the Land will be absolutely forfeited to us.

8.2 If the condition complained of (other than the payment of any money payable by you under this Agreement) reasonably requires more time to cure than 60 days, you will be deemed to have complied with the remedying of it if you commence remedying or curing the condition within 60 days and diligently complete the same.

8.3 You agree with us that

(a) you will make no claim for compensation, in damages or otherwise, upon the lawful termination of this Agreement under section 8.1; and

(b) our remedies under this Article are in addition to those available to us under the *Land Act*.

ARTICLE 9 - DISPUTE RESOLUTION

9.1 If any dispute arises under this Agreement, the parties will attempt to resolve the dispute within 60 days of the dispute arising (or within such other time period agreed to by the parties) and, subject to applicable laws, provide candid and timely disclosure to each other of all relevant facts, information and documents to facilitate those efforts.

9.2 Subject to section 9.5, if a dispute under this Agreement cannot be resolved under section 9.1, we or you may refer the dispute to arbitration conducted by a sole arbitrator appointed pursuant to the *Commercial Arbitration Act*.

9.3 The cost of the arbitration referred to in section 9.2 will be shared equally by the parties and the arbitration will be governed by the laws of the Province of British Columbia.

9.4 The arbitration will be conducted at our offices (or the offices of our authorized representative) in Surrey, British Columbia, and if we or our authorized representative have no office in Surrey, British Columbia, then our offices (or the offices of our authorized representative) that are closest to Surrey, British Columbia.

9.5 A dispute under this Agreement in respect of a matter within our sole discretion cannot, unless we agree, be referred to arbitration as set out in section 9.2.

ARTICLE 10 - NOTICE

10.1 Any notice required to be given by either party to the other will be deemed to be given if mailed by prepaid registered mail in Canada or delivered to the address of the other as follows:

to us

British Columbia Assets and Land Corporation
200-10428 153 St
Surrey, BC V3R 1E1;

to you

District of Sechelt
PO Box 129
Sechelt, BC V0N 3A0;

or at such other address as a party may, from time to time, direct in writing, and any such notice will be deemed to have been received if delivered, on the day of delivery, and if mailed, 7 days after the time of mailing, except in the case of mail interruption in which case actual receipt is required.

10.2 In order to expedite the delivery of any notice required to be given by either party to the other, a concurrent facsimile copy of any notice will, where possible, be provided to the other party but nothing in this section, and specifically the lack of delivery of a facsimile copy of any notice, will affect the deemed delivery provided in section 10.1.

10.3 The delivery of all money payable to us under this Agreement will be effected by hand, courier or prepaid regular mail to the address specified above, or by any other payment procedure agreed to by the parties, such deliveries to be effective on actual receipt.

ARTICLE 11 - MISCELLANEOUS

11.1 No provision of this Agreement will be considered to have been waived unless the waiver is in writing, and a waiver of a breach of a provision of this Agreement will not be construed as or constitute a waiver of any further or other breach of the same or any other provision of this Agreement, and a consent or approval to any act requiring consent or approval will not waive or render unnecessary the requirement to obtain consent or approval to any subsequent same or similar act.

11.2 No remedy conferred upon or reserved to us under this Agreement is exclusive of any other remedy in this Agreement or provided by law, but that remedy will be in addition to all other remedies in this Agreement or then existing at law, in equity or by statute.

11.3 The grant of a sublease, assignment or transfer of this Agreement does not release you from your obligation to observe and perform all the provisions of this Agreement on your part to be observed and performed unless we specifically release you from such obligation in our consent to the sublease, assignment or transfer of this Agreement.

11.4 This Agreement extends to, is binding upon and enures to the benefit of the parties, their heirs, executors, administrators, successors and permitted assigns.

11.5 If, due to a strike, lockout, labour dispute, act of God, inability to obtain labour or materials, law, ordinance, rule, regulation or order of a competent governmental authority, enemy or

hostile action, civil commotion, fire or other casualty or any condition or cause beyond your reasonable control, other than normal weather conditions, you are delayed in performing any of your obligations under this Agreement, the time for the performance of that obligation will be extended by a period of time equal to the period of time of the delay so long as

(a) you give notice to us within 30 days of the commencement of the delay setting forth the nature of the delay and an estimated time frame for the performance of your obligation; and

(b) you diligently attempt to remove the delay.

11.6 You agree with us that

(a) we are under no obligation, express or implied, to provide financial assistance or to contribute toward the cost of servicing, creating or developing the Land or the Improvements and you are solely responsible for all costs and expenses associated with your use of the Land and the Improvements for the purposes set out in this Agreement; and

(b) nothing in this Agreement constitutes you as our agent, joint venturer or partner or gives you any authority or power to bind us in any way.

11.7 This Agreement does not override or affect any powers, privileges or immunities to which you are entitled under any enactment of the Province of British Columbia.

The parties have executed this Agreement as of the date of reference of this Agreement.

SIGNED on behalf of **HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA** by British Columbia Assets and Land Corporation, authorized representative of the minister responsible for the *Land Act*

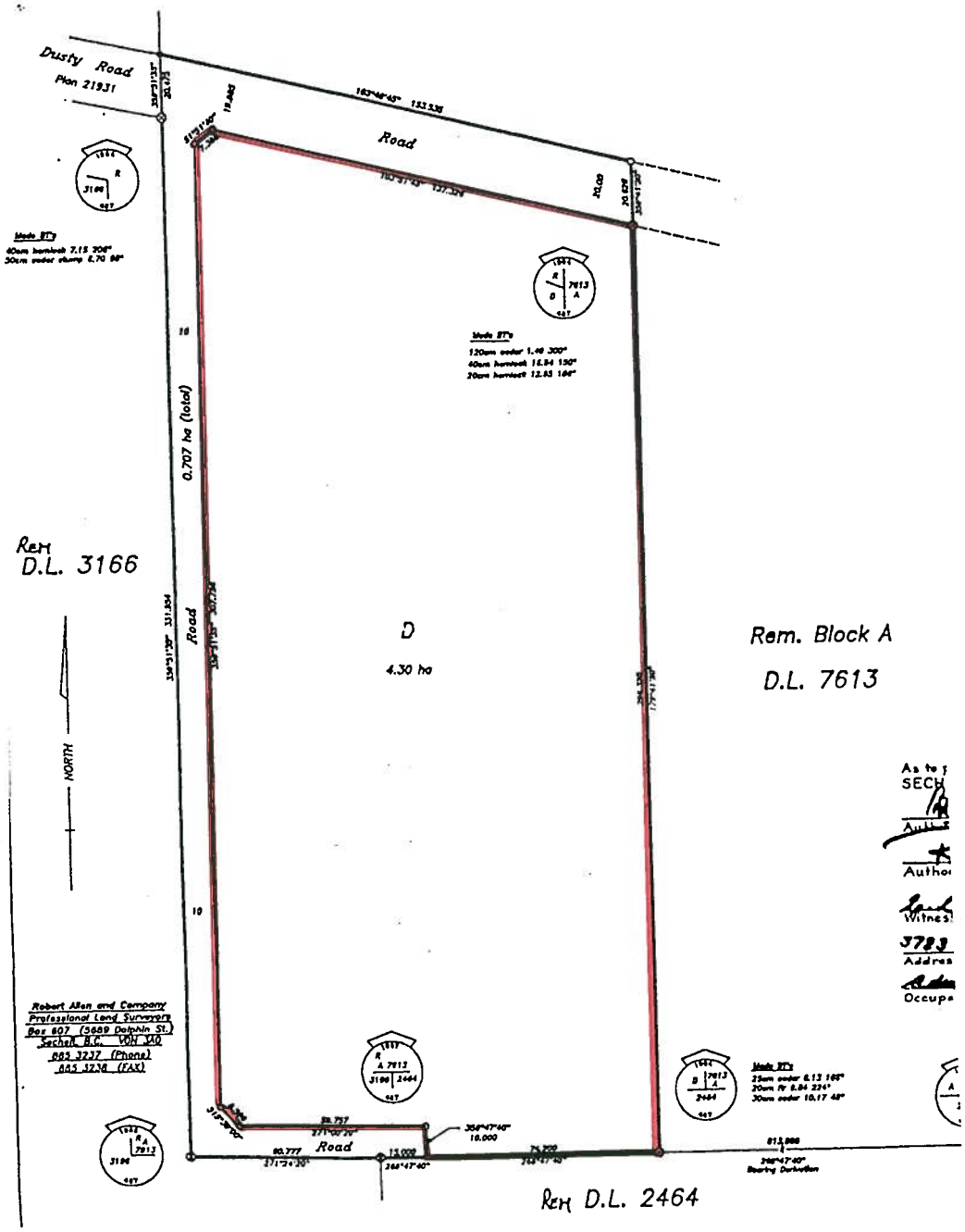
Authorized Signatory,
British Columbia Assets and Land Corporation

SIGNED on Behalf of District of Sechelt
by its authorized signatories

Authorized Signatory BRUCE MILNE - MAYOR

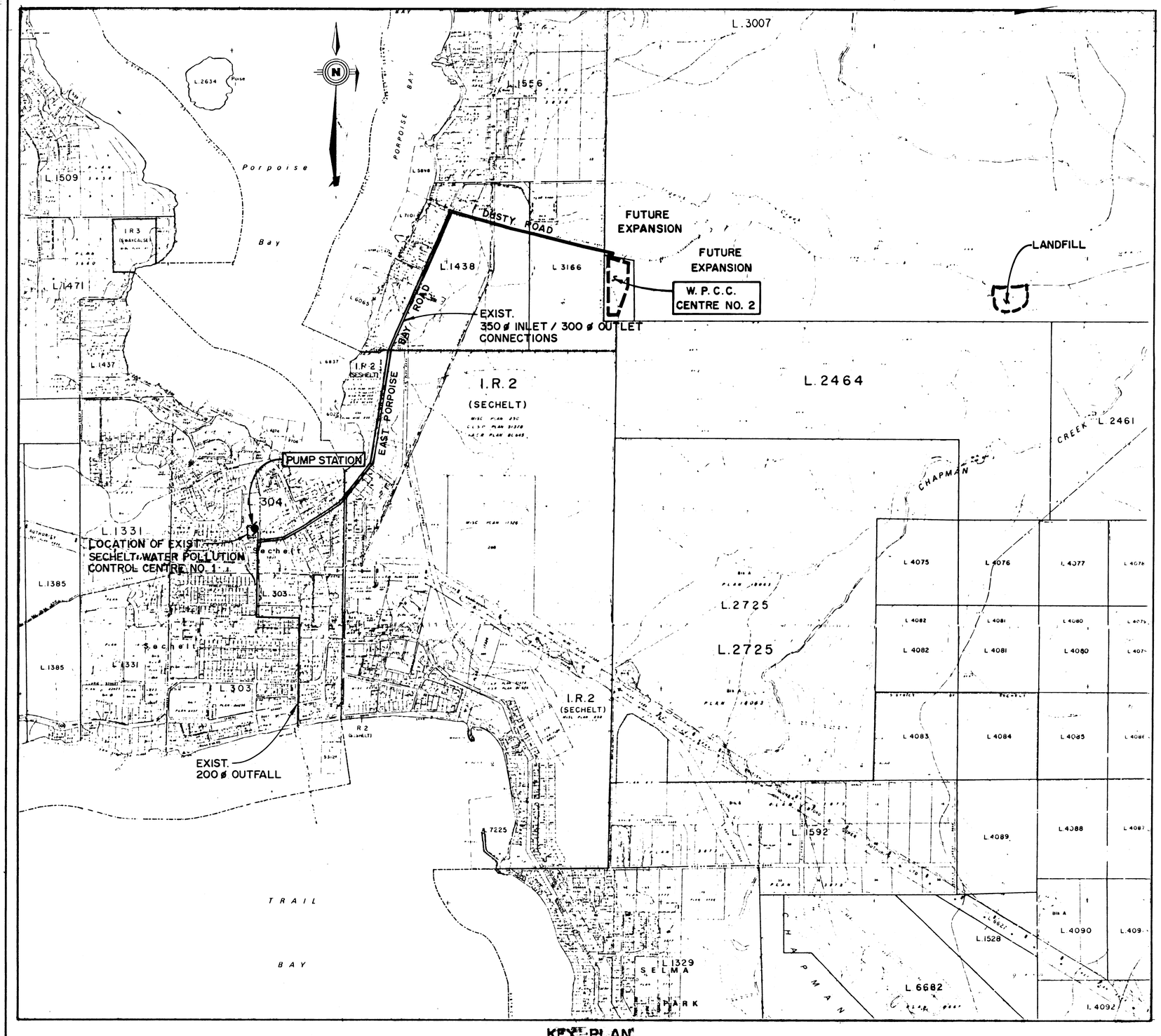
Authorized Signatory ANNE JEFFREY - MUNICIPAL CLERK

LEGAL DESCRIPTION SCHEDULE



District of Sechelt Records –

Facility Construction and Upgrades



INDEX TO DRAWINGS

SHT. No.	DESCRIPTION
1	KEY PLAN – INDEX TO DRAWINGS
2	LOCATION PLAN AND DESIGN DATA CENTRE No. 2
3	SITE PLAN AND CLEARING CENTRE No. 2
4	CENTRE No. 2 PLANT CROSS SECTIONS
5	SCREEN BAR AND GRIT CHANNEL
6	AERATED BASIN – PLAN AND DETAILS
7	AERATED BASIN – WALKWAY BRIDGE DETAILS
8	SEDIMENTATION TANK AND CHLORINATION/DECHLORINATION CONCRETE OUTLINE
9	SEDIMENTATION TANK – DETAILS
10	CHLORINATION/DECHLORINATION TANK – DETAILS
11	AERATED SLUDGE BASIN – PLAN – AERATION SYSTEM SCHEMATIC
12	CONTROL BUILDING CENTRE No. 2 – PLAN AND SECTIONS
13	CONTROL BUILDING ELEVATION AND FENCE DETAILS
14	BLOWER ROOM – PIPING DETAILS
15	CHLORINATION/DECHLORINATION ROOM – SYSTEM SCHEMATIC
16	PARSHALL FLUME AND SPLITTER BOX
17	GENERAL STRUCTURAL NOTES
18	REINFORCING DETAILS
19	SEDIMENTATION TANK AND CHLORINATION TANK REINFORCING
20	PUMP STATION CENTRE No. 1 – SITE PLAN, SYSTEM PUMPING CURVE, FORCEMAIN
21	PUMP STATION CENTRE No. 1 – BUILDING DETAILS
22	PUMP STATION CENTRE No. 1 – REINFORCING
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24	CENTRE No. 1 – OUTSIDE PIPING – DETAILS BILL OF MAJOR MATERIALS
25	ELECTRICAL – SINGLE LINE DIAGRAM
26	ELECTRICAL – CONTROL SCHEMATIC DIAGRAM
27	ELECTRICAL – PLC – I/O
28	ELECTRICAL – SINGLE LINE DIAGRAM AND POWER LAYOUT
29	ELECTRICAL – SINGLE LINE DIAGRAM AND POWER LAYOUT
30	ELECTRICAL – SITE PLAN

DISTRICT OF SECHELT
CONSTRUCTION OF
GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION - STAGE I
CONTRACT No. 28.121.3

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. L. KNERR

W.P.D. 19321 REVISIONS

ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
B	OCT. '94	VB		-	RECORD DRAWING						

DESIGNED I.W./A.B.
DRAWN M.J./DK
CHECKED I.W.

DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
KEY PLAN – INDEX TO DRAWINGS

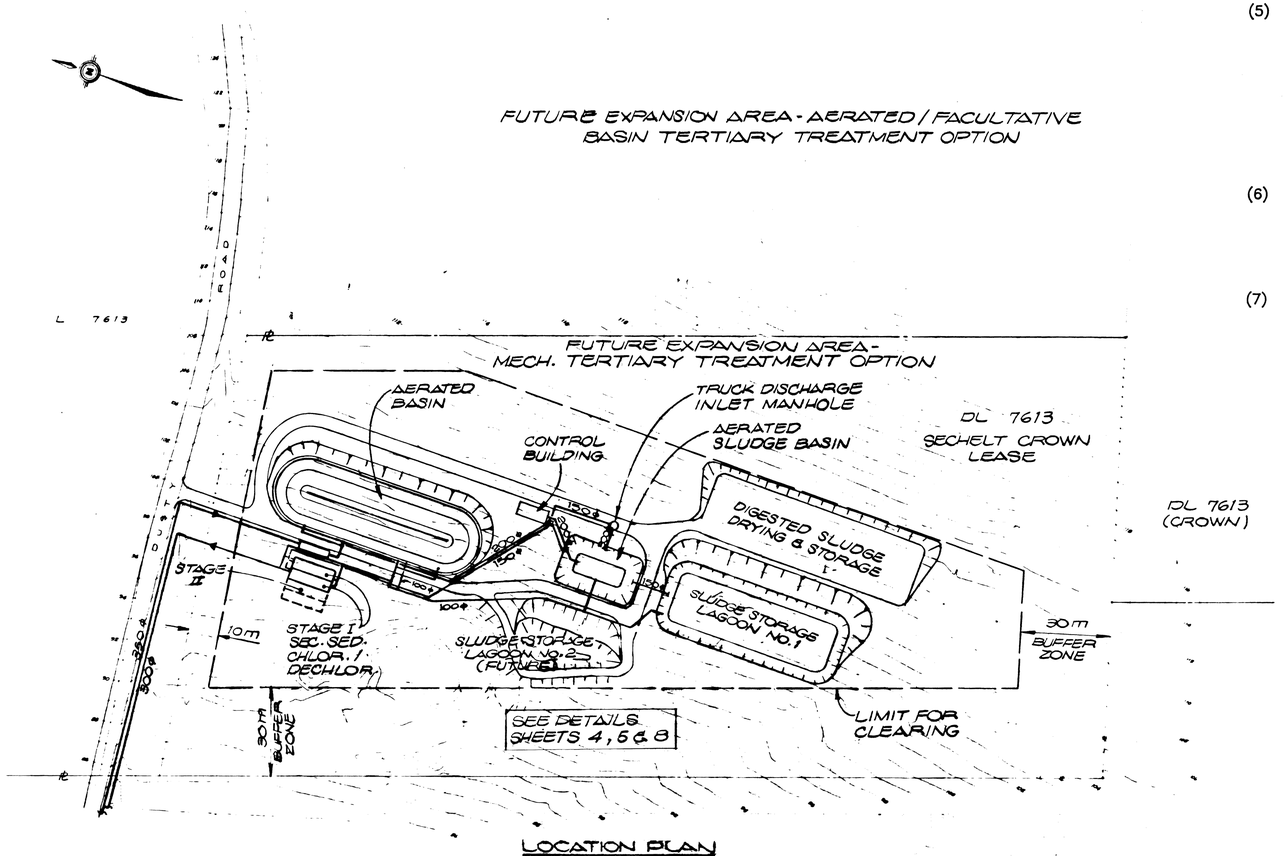
SCALE: AS SHOWN
DRAWING No. 28.121: 3
SHEET 1 OF 30 ISSUE B

DESIGN CRITERIA - SECHELT WPCC No. 2
(ASSUMING LAGOON FORM OF TREATMENT)

	STAGE 1	STAGE 2	STAGE 3	FUTURE
POPULATION	3000	6000	12 000	48 000
ADWF m^3/d (mgd)	1364 (0.3)	2727 (0.6)	5454 (1.2)	21 820 (4.8)
PWWF m^3/d INFLUENT (mgd)	3638 (0.8)	6820 (1.5)	15 180 (2.9)	31 820 (7.0)
m^3/d EFFLUENT (mgd)	1818 (0.4)	3180 (0.7)	6364 (1.4)	22 730 (5.0)
BOD_5 kg/d				
PROPOSED W.P.C.C. No.2	270	540	1080	
EXIST. SECHELT W.P.C.C. No.1	180			
SUSPENDED SOLIDS	90	180	360	
	540	720	1440	
EFFLUENT CRITERIA (mg/L)				
BOD_5	45	45	ADVANCED WASTEWATER TREATMENT	
SUSPENDED SOLIDS	60	60		

THIS CONTRACT

SCREENING/GRIT	YES	NO (SECOND TANK)	AERATED MECH. SCREEN
AERATION	YES	ADDITIONAL AERATORS	SECOND AERATED BASIN
SECONDARY SED. TANK	YES	CONVERSION OF CHLORINATION/ DECHLORINATION TANK	THIRD AND FOURTH TANK
AERATED SLUDGE BASIN	YES	NO (MORE BASINS)	DIGESTERS
SLUDGE STORAGE	YES	NO (MORE BASINS)	MECHANICAL DEWATERING



(1) SCREENING

MANUAL BAR SCREEN WIDTH	0.45 m
HYDRAULIC CAPACITY	2280 m^3/d (0.6 mgd)

(2) GRIT CHANNEL

WIDTH	0.45 m
MAX. WATER DEPTH	0.59 m
LENGTH	7.5 m
DETENTION TIME	20 sec.

(3) AERATED BASIN

LENGTH	68.6 m
SURFACE WIDTH	8.0 m
VOLUME (MAX.)	2400 m^3
OXYGEN DEMAND	50.0 lbs. O_2/h
RECYCLE OF DESIGN FLOW	1.5
AERATORS CAPACITY 4-10 H.P. (2.33 lbs. O_2/hp)	93

(4) SECONDARY SEDIMENTATION TANK (1)

LENGTH	15.0 m
WIDTH	3.0 m
WALL DEPTH	4.0 m
VOLUME	170 m^3
DETENTION TIME	3.0 h
WEIR LENGTH	11.0 m
WEIR LOADING AAF	104 m^3/m d
OVERFLOW RATE ADWF	25.0 m^3/m^2 d

(5) CHLORINATION/DECHLORINATION TANK (1)

LENGTH	15.0 m
WIDTH	3.0 m
WALL DEPTH	4.0 m
DETENTION TIME	30.0 min.
CHLORINE DOSAGE (AVERAGE)	8.0 mg/L
CHLORINE DAILY CONSUMPTION	20.0 lbs/d
SULFUR DIOXIDE DOSAGE 1mg/L per 1mg/L OF CHLORINE RESIDUAL	10.0 lbs/d

(6) AERATED SLUDGE BASIN (1)

DEPTH	4.0 m
VOLUME	1,000.0 m^3
AIR SUPPLIED	1,050 CFM

(7) TRUCK DISCHARGE MANHOLE

DEPTH	1.9 m
VOLUME	5.8 m^3

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT.'94	VB			RECORD DRAWING

DESIGNED I.W./A.B.
DRAWN NZ / VB
CHECKED I.W.

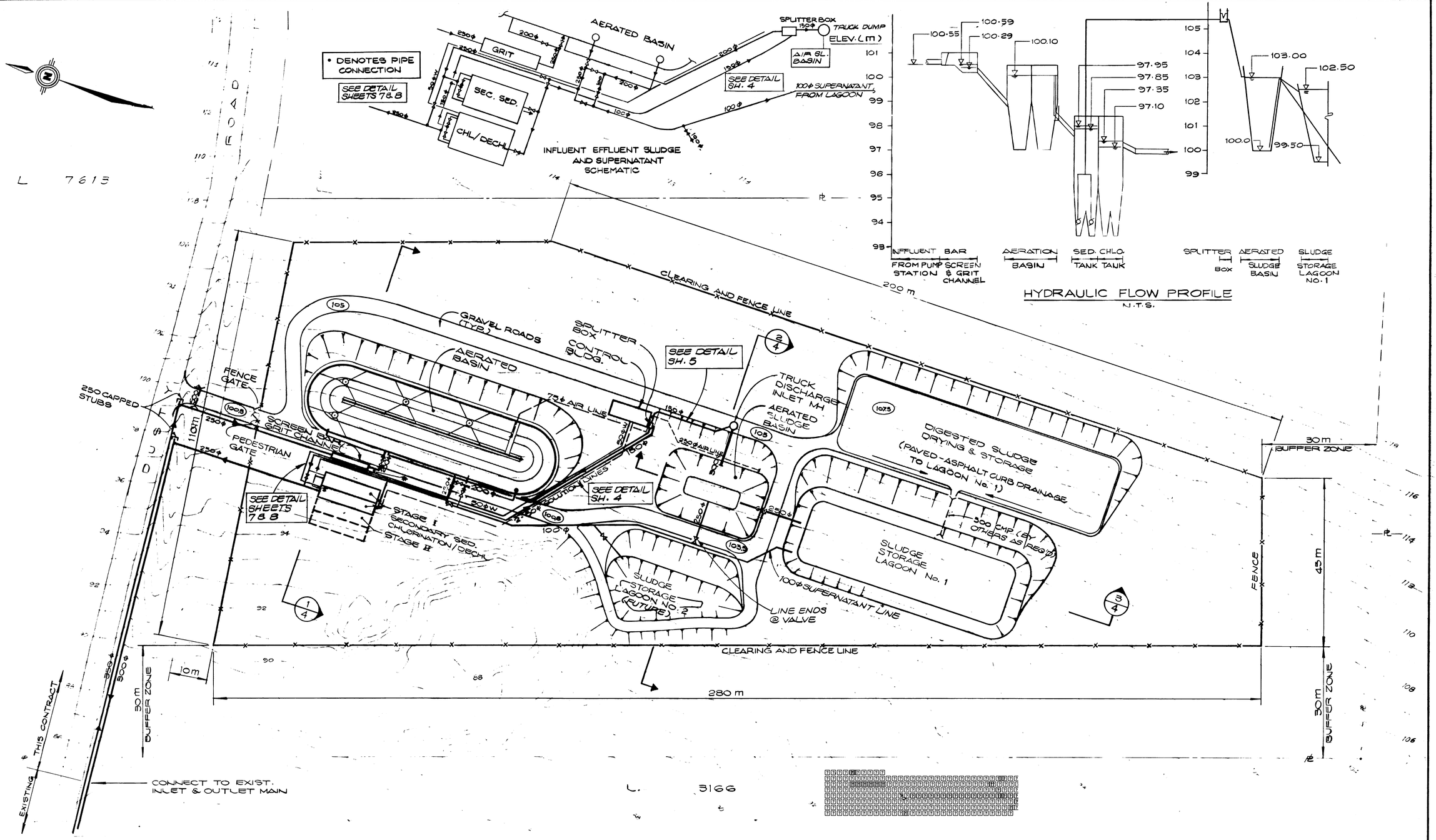
DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2 AND PUMP STATION - STAGE I
LOCATION PLAN AND DESIGN DATA CENTRE No. 2

SCALE: AS SHOWN
DRAWING No. 28:121:5
SHEET 2 OF 30 ISSUE B

INFLUENT EFFLUENT SLUDGE AND SUPERNATANT SCHEMATIC

HYDRAULIC FLOW PROFILE
N.T.S.



L 7615

L 3166

✚ - 50ϕ SELF DRAINING STAND PIPE

NOTE: - PIPING TO HAVE 800mm MIN. COVER OR AS INSTRUCTED
- PIPING TO HAVE SLOPE (0.2% MIN.) EXCEPT AS INSTRUCTED

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. BERZINS

SITE PLAN (CENTRE No. 2)
1:500

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT. '94	VB			RECORD DRAWING

DESIGNED I.W./A.B.
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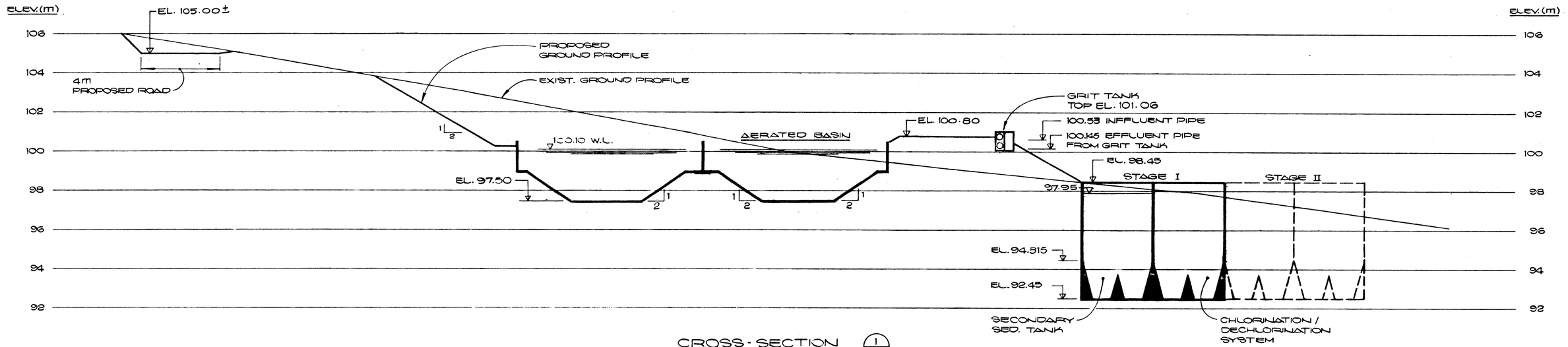
CONSULTING ENGINEERS
Nov 22/93

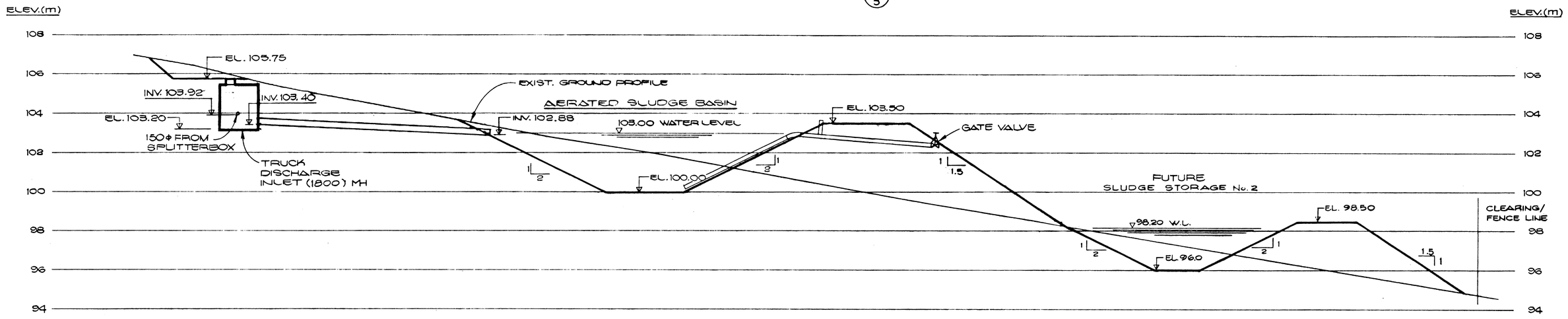
DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
SITE PLAN AND CLEARING CENTRE No. 2

SCALE: AS SHOWN
DRAWING No. 25:121:3
SHEET 3 OF 30 ISSUE B

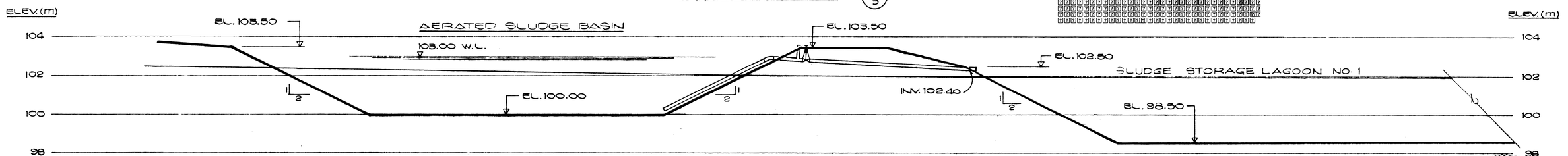
W.O. 102221



CROSS-SECTION (1/3)



CROSS-SECTION (2/3)



CROSS-SECTION (3/3)

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT.'94	VB			RECORD DRAWING

DESIGNED I.W./A.B.
DRAWN M.T.
CHECKED I.W.

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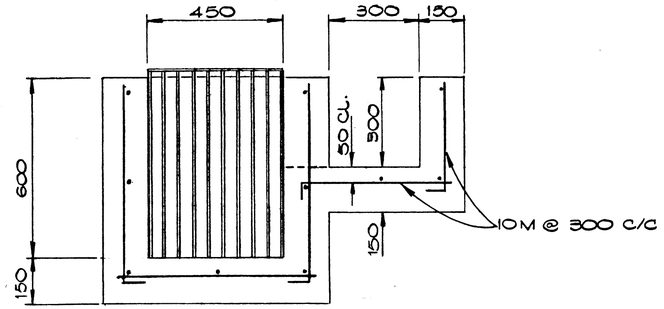
CONSULTING ENGINEERS
Nov 22/93

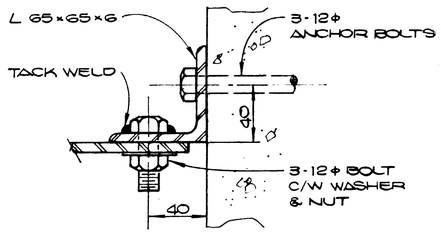
DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND. PUMP STATION - STAGE I
CENTRE No. 2 PLANT CROSS SECTIONS

SCALE: HORIZ. 1:100; VERT. 1:100
DRAWING No. 28-121-3
SHEET 4 OF 30 ISSUE B

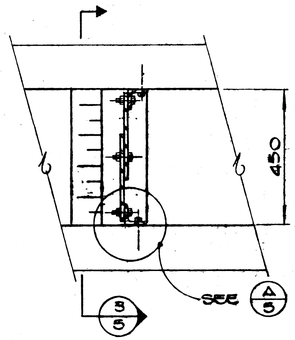
W.T.R. 152221



SECTION (4/5)
1:10

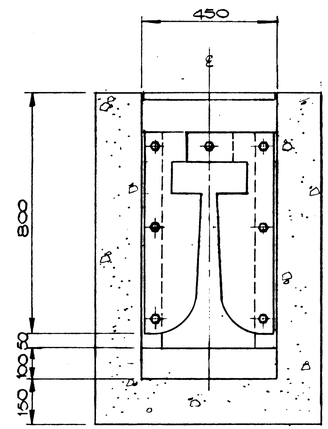


DETAIL (4/5)
N.T.S.

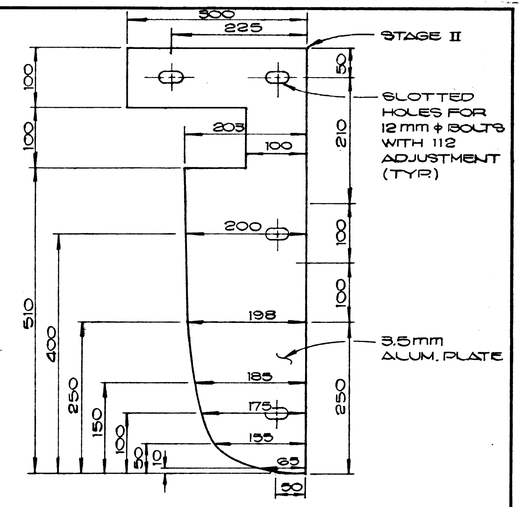


PLAN

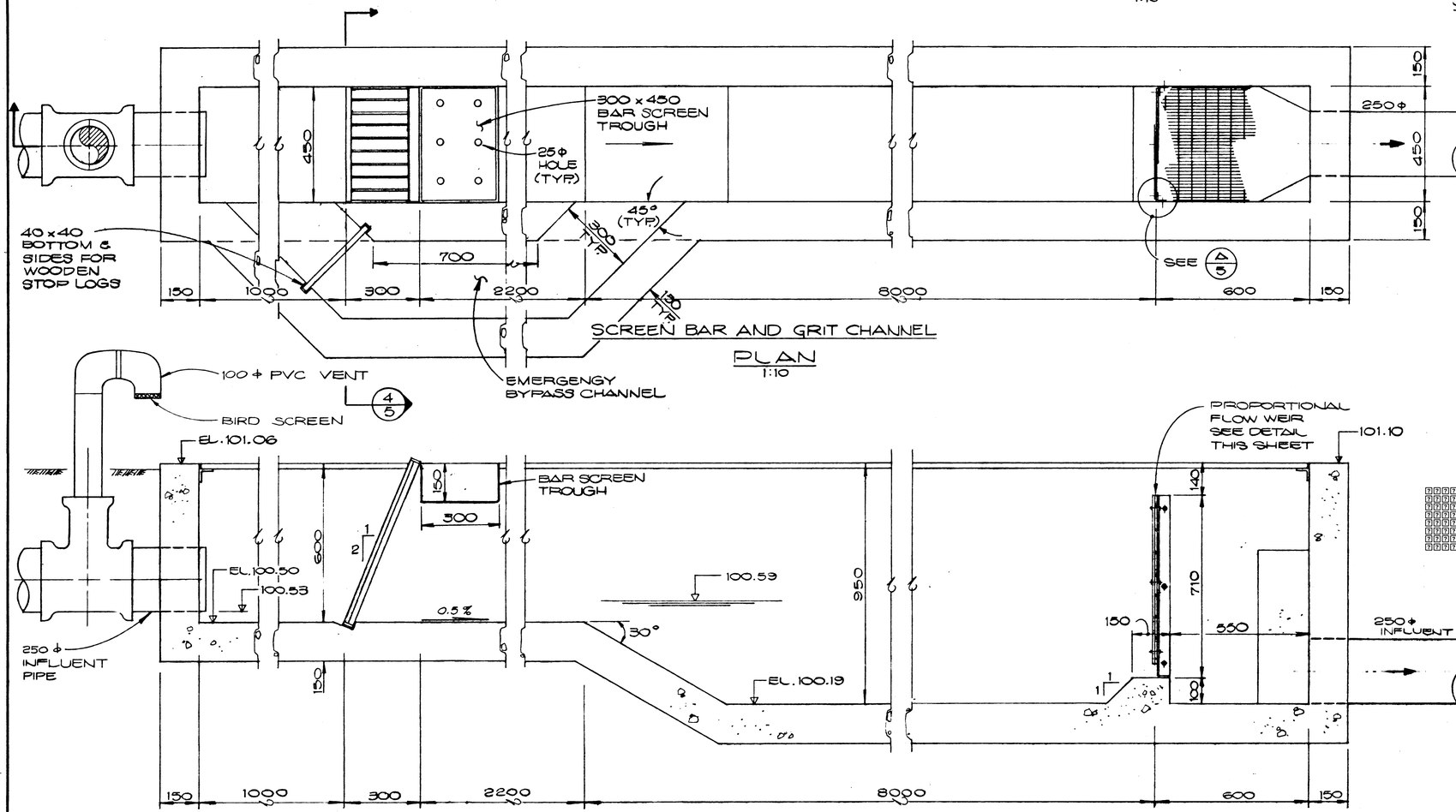
GRIT CHANNEL EFFLUENT DETAIL
1:10



SECTION (3/5)

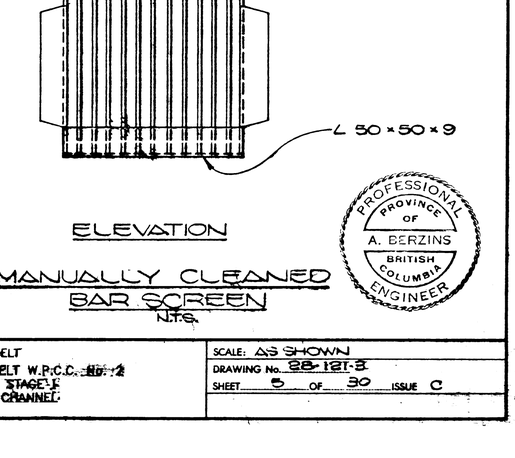


PROPORTIONAL FLOW WEIR DETAIL
N.T.S.



SECTION (1/5)
1:10

NOTE:
GRIT CHANNEL REINFORCING M10 @ 300 C/C IN ALL WALLS & SLAB.



SECTION (2/5)

ELEVATION

MANUALLY CLEANED BAR SCREEN
N.T.S.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	JUN/94	VB			BYPASS ADDED; FLOW WEIR BASE REVISED
	C	OCT.'94	VB			RECORD DRAWING

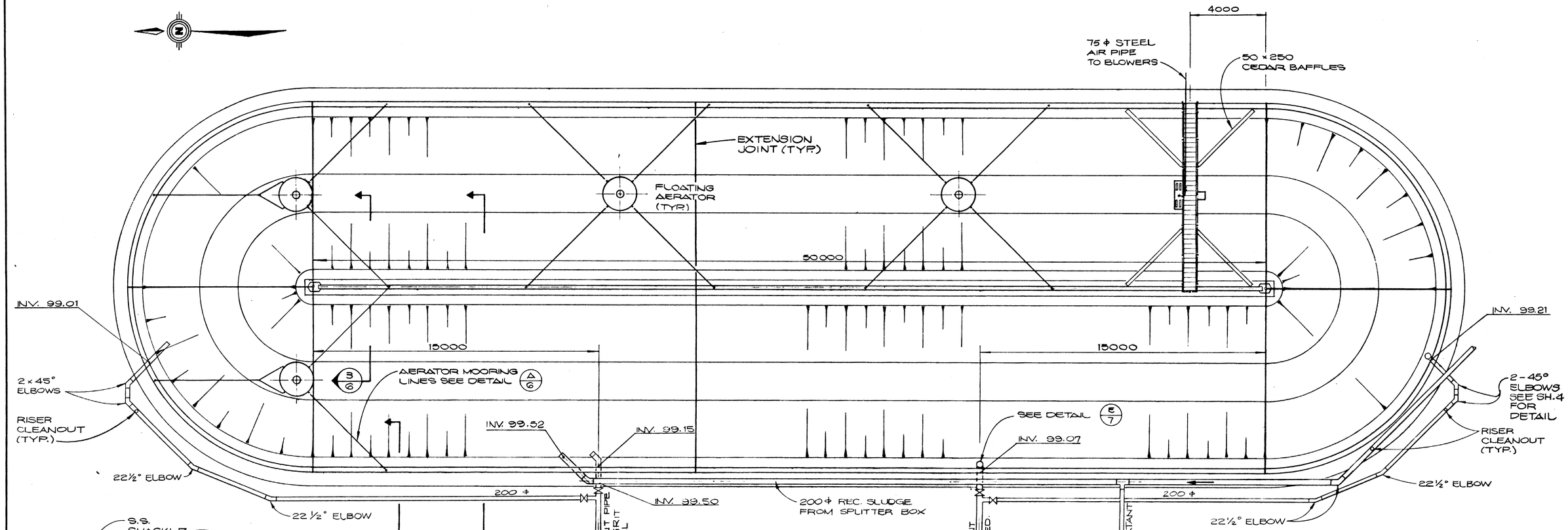
DESIGNED I.W./A.B.
DRAWN
CHECKED I.W.

DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. NO. 1
AND PUMP STATION – STAGE 1
SCREEN BAR AND GRIT CHANNEL

SCALE: AS SHOWN
DRAWING No. 28-12T-3
SHEET 5 OF 30 ISSUE C

W.O. 187271



NOTE:
SLAB REINFORCING
15M @ 300 C/C. E.W.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. BERZINS

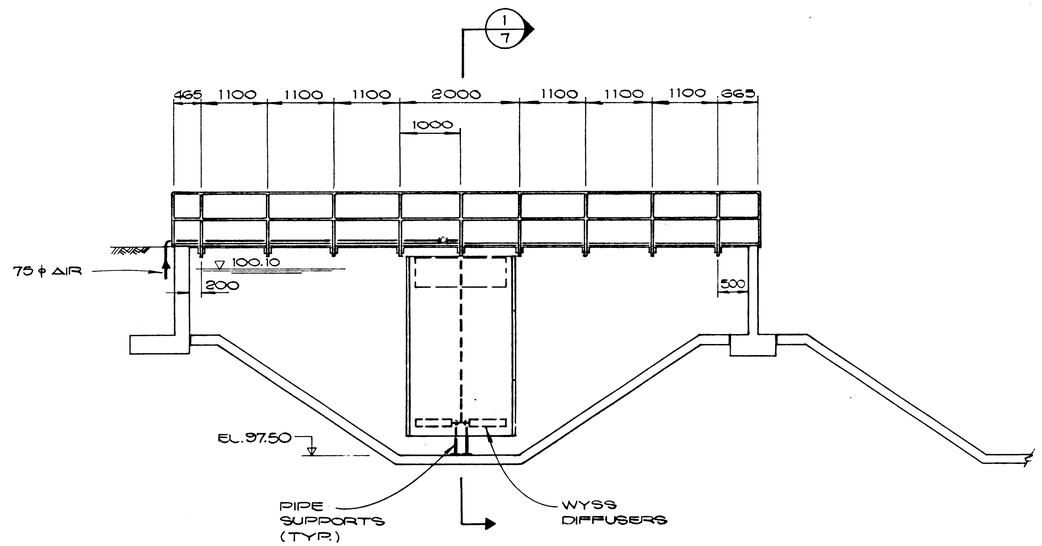
W.P.A. 182721 REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT. '94	VB			RECORD DRAWING

DESIGNED I.W./A.B.
DRAWN M.Z.
CHECKED I.W.

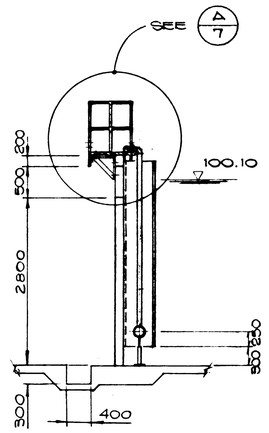
DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. NO. 2
AND PUMP STATION - STAGE 1
AERATED BASIN - PLAN AND DETAILS

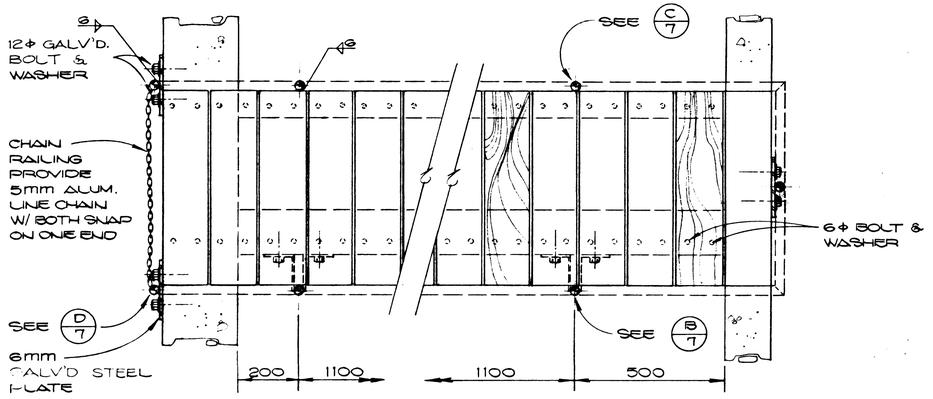
SCALE: AS SHOWN
DRAWING No. 22-121-3
SHEET 6 OF 30 ISSUE B



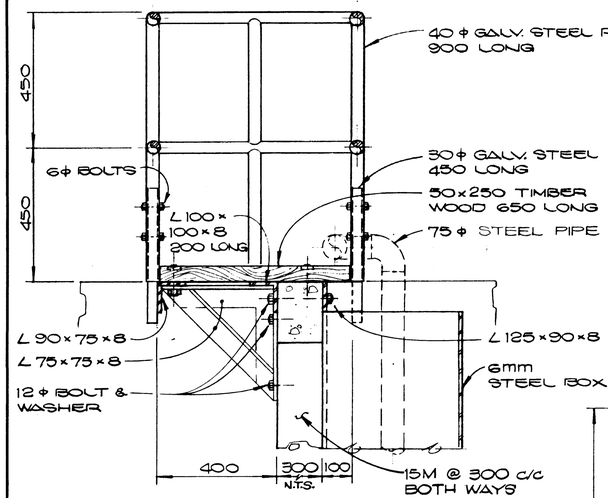
WALKWAY - BRIDGE DETAIL
1:50



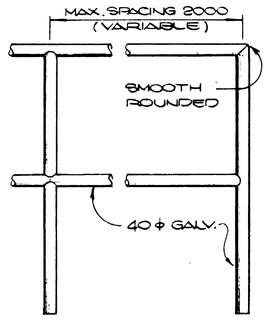
SECTION 1/7



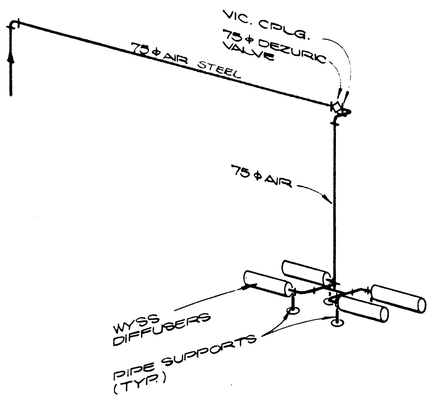
WALKWAY BRIDGE
PLAN
1:10



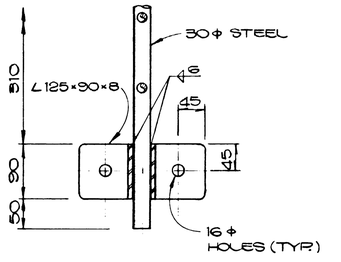
DETAIL A/7
1:10



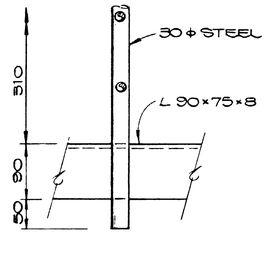
REMOVABLE HANDRAIL



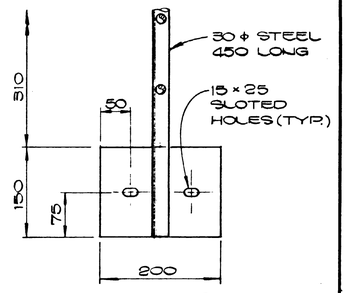
SCHEMATIC



DETAIL B/7

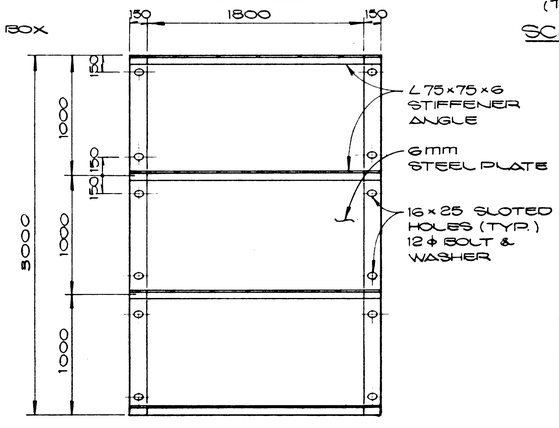


DETAIL C/7



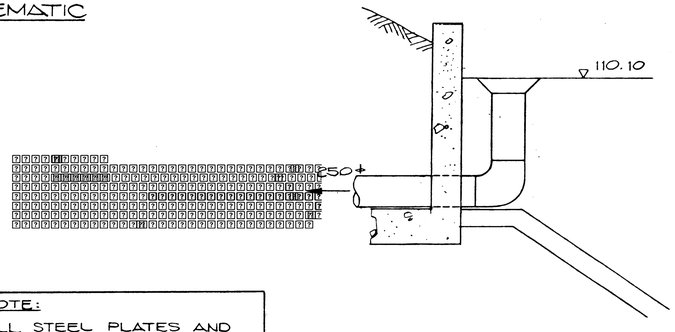
DETAIL D/7

PLAN



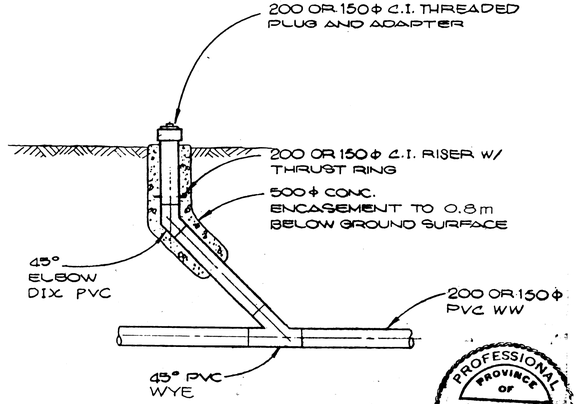
ELEVATION

DIFFUSERS BOX



DETAIL E/6
1:25

NOTE:
ALL STEEL PLATES AND FASTENERS TO BE HOT DIP GALV'D. UNLESS OTHERWISE NOTED. ALL SUBMERGED STEEL SHALL BE COAL TAR COATED AS WELL



TYPICAL CLEANOUT
NTS

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT. '94	VB			RECORD DRAWING

ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION

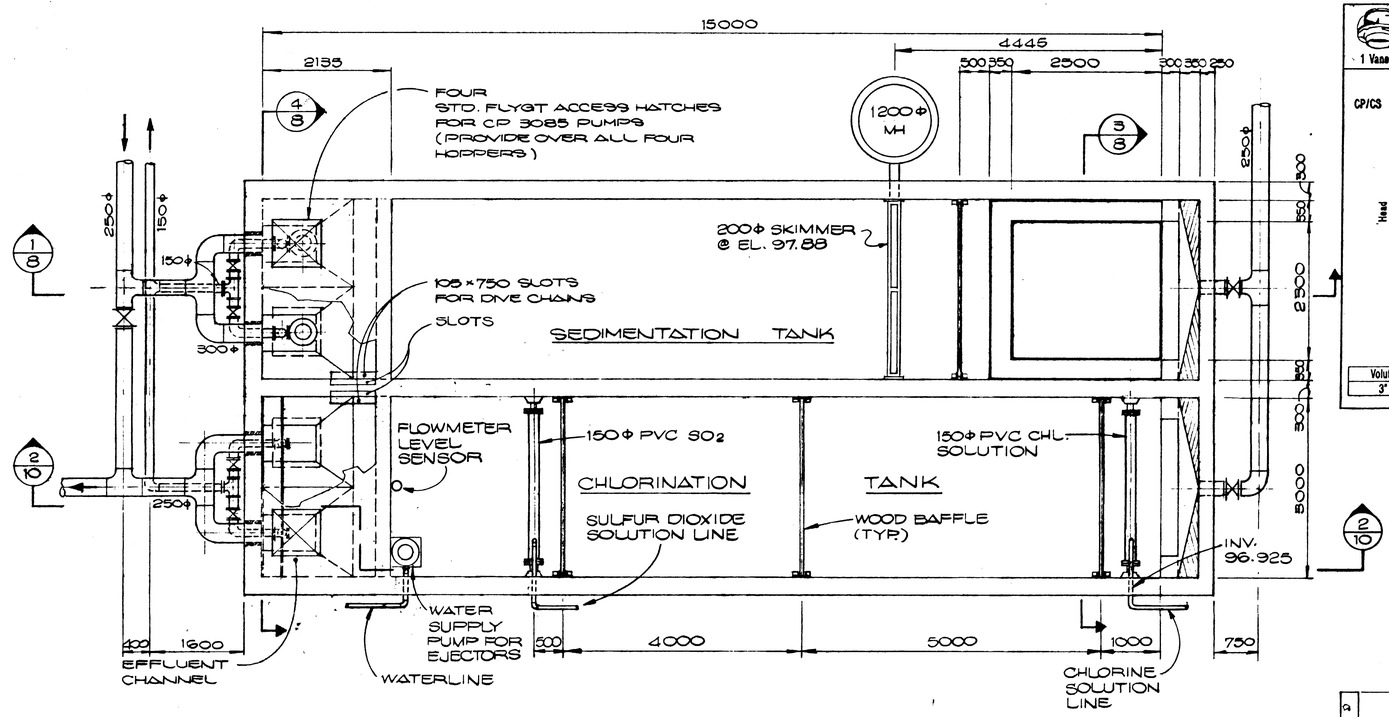
DESIGNED I. W./A.B.
DRAWN
CHECKED I.W.

DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
Nov 22 /93

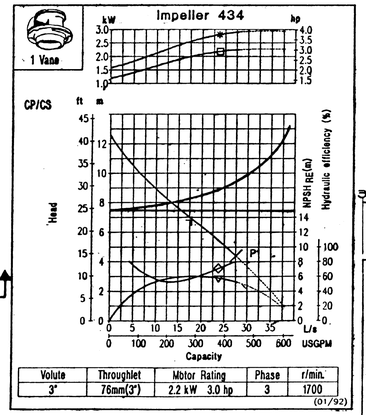
DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
AERATED BASIN – WALKWAY BRIDGE DETAILS

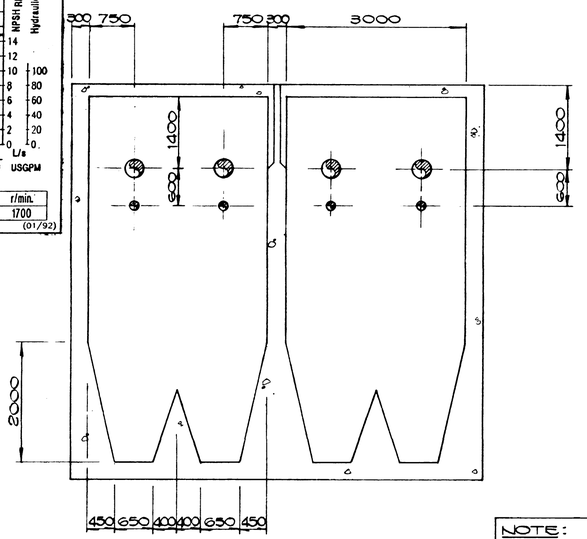
SCALE: AS SHOWN
DRAWING No. 28·121·5
SHEET 7 OF 30 ISSUE B

W.T.S. 13721

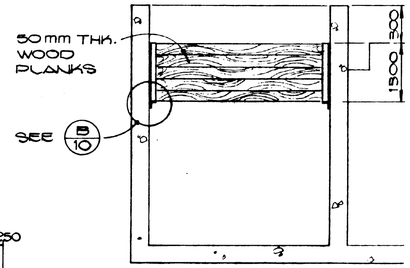


PLAN
1:50



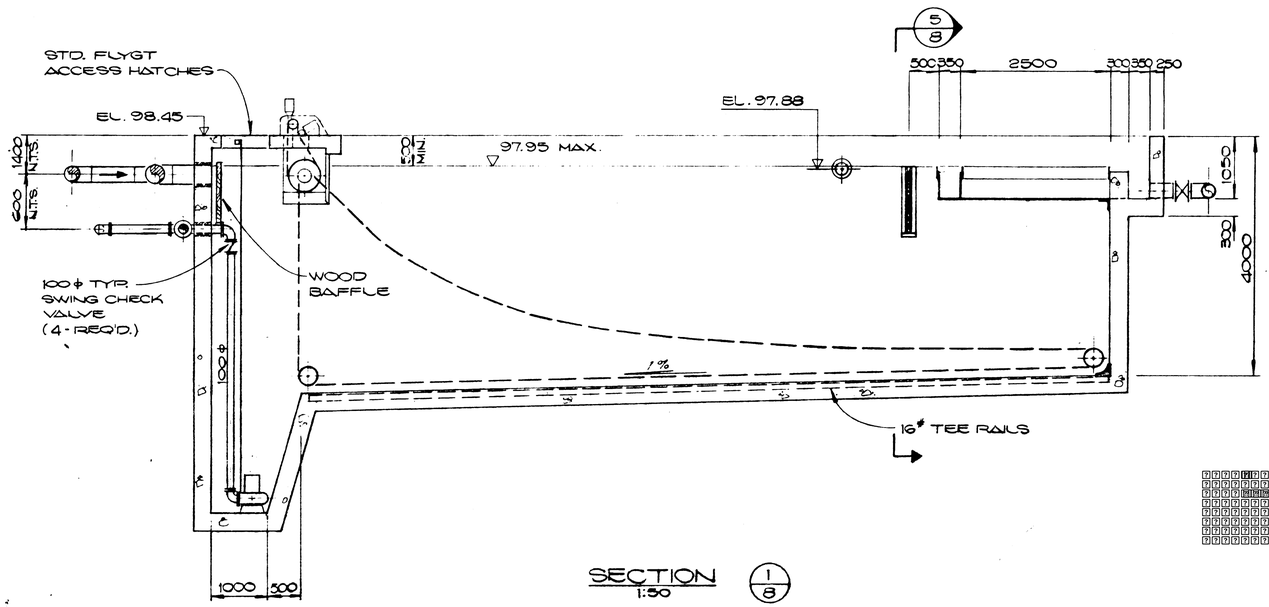


SECTION
1:50
4/8

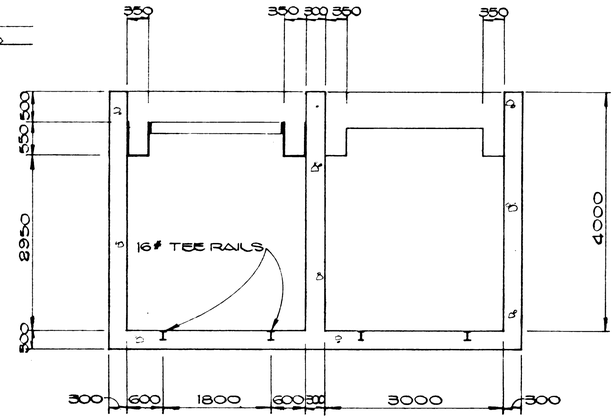


SECTION
1:50
5/8

NOTE:
COLLECTOR SYSTEM SHALL BE AMWELL CHP FOR 3000 x 15000 x 4000 DEEP SECONDARY SED. TANK C/W DRIVE UNIT SUITABLE FOR ALSO DRIVING SECOND FUTURE SYSTEM IN ADJACENT SED. TANK (OR APPROVED EQUAL)



SECTION
1:50
1/8



SECTION
1:50
3/8

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
W.P.A. 10231	B	OCT. '94	VB			RECORD DRAWING						

DESIGNED I.W./A.B.
DRAWN M.R.
CHECKED I.W.

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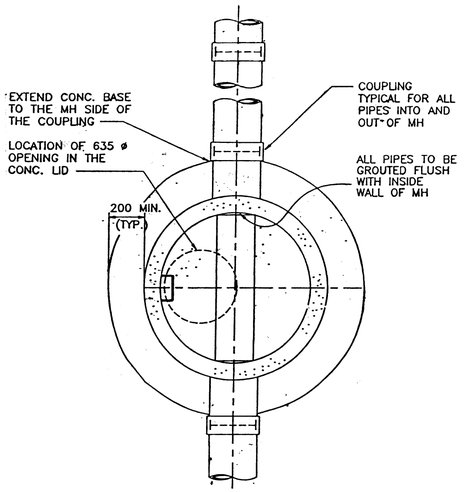
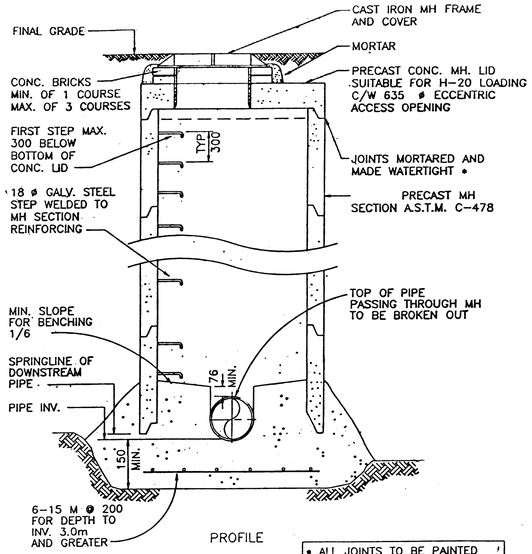
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION — STAGE I
SEDIMENTATION TANK AND CHLORINATION/DECHLORINATION
CONCRETE OUTLINE

SCALE: AS SHOWN
DRAWING No. 28-121-3
SHEET 8 OF 30 ISSUE B



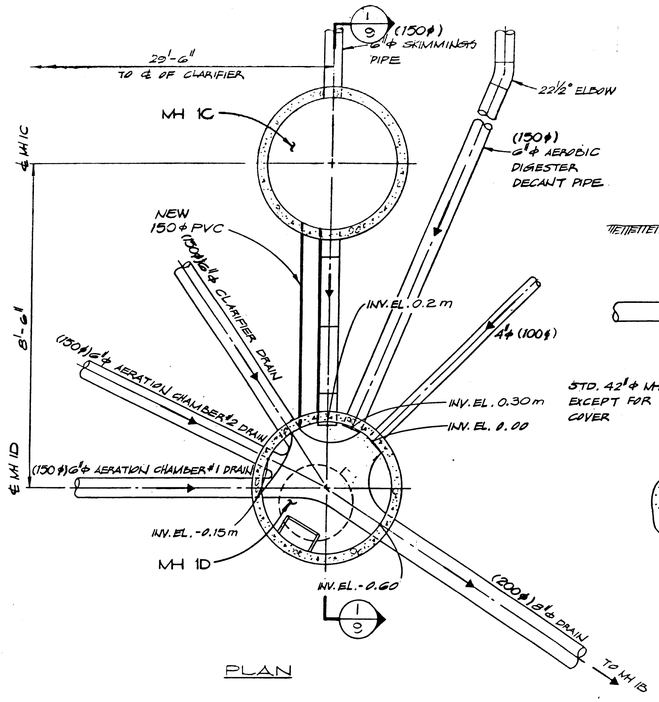
PLAN



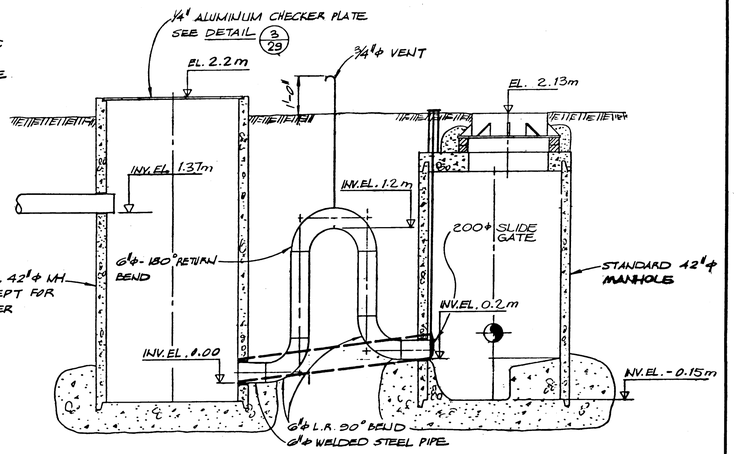
PROFILE

• ALL JOINTS TO BE PAINTED WITH AN APPROVED ASPHALTIC MORTAR

STANDARD MANHOLE DETAIL
NTS

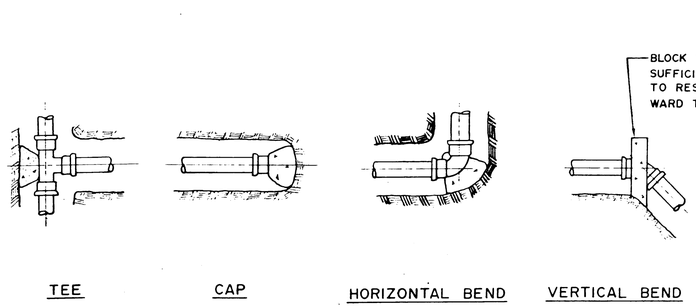


PLAN



SECTION 1/9

EXISTING MANHOLES 1C & 1D
½" = 1'-0"



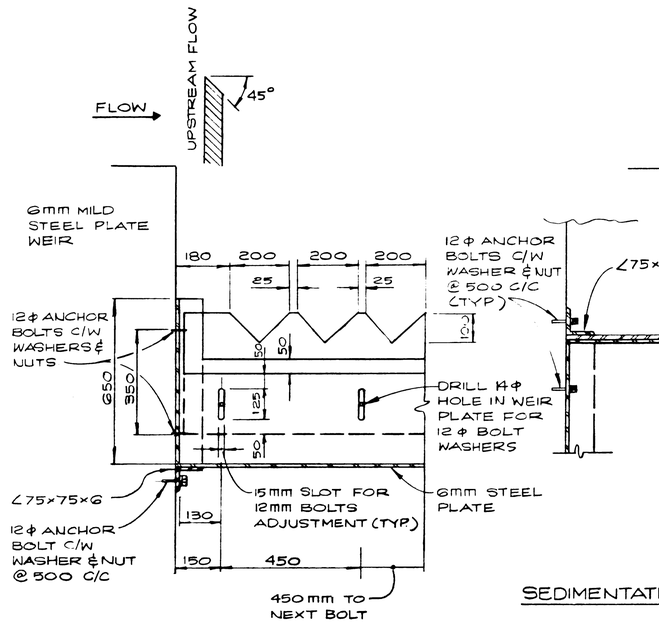
TEE CAP HORIZONTAL BEND VERTICAL BEND

BEARING AREA OF CONCRETE AGAINST UNDISTURBED TRENCH WALL REQUIRED FOR 1.03 MPa PRESSURE

PIPE SIZE	TEES & CAPS	90° BEND	45° BEND	22½° BEND
150 ø	0.21 m²	0.31 m²	0.17 m²	0.09 m²
200 ø	0.37 m²	0.53 m²	0.28 m²	0.15 m²
250 ø	0.60 m²	0.85 m²	0.46 m²	0.23 m²
300 ø	0.85 m²	1.21 m²	0.66 m²	0.33 m²

NOTE: AREA CALCULATED ASSUMING 119.69 kPa SAFE BEARING LOAD. INCREASE OR DECREASE AREAS PROPORTIONALLY IN UNSTABLE SOIL OR HARDPAN OR ROCK RESPECTIVELY.

THRUST BLOCKS DETAILS
NTS



SEDIMENTATION TANK EFFLUENT WEIRS
N.T.S.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. BERZINS

ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
B	OCT. '94	VB			RECORD DRAWING

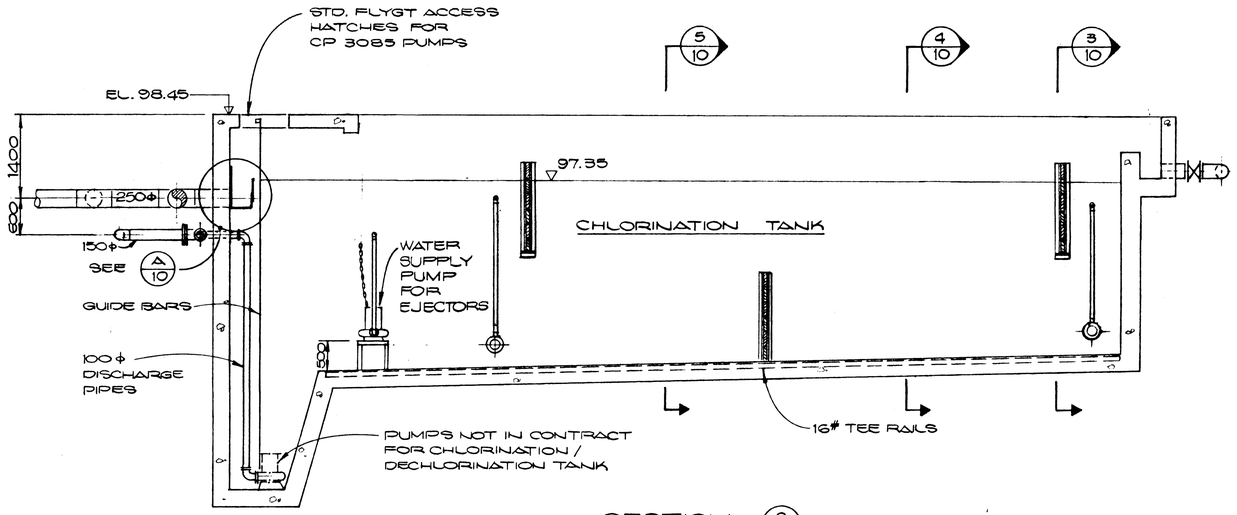
N.T.S. 1992/1 REVISIONS

DESIGNED I.W./A.B.
DRAWN M.
CHECKED I.W.

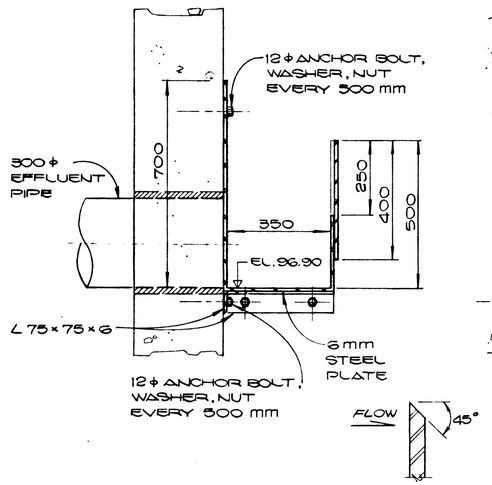
DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
NOV 22/93

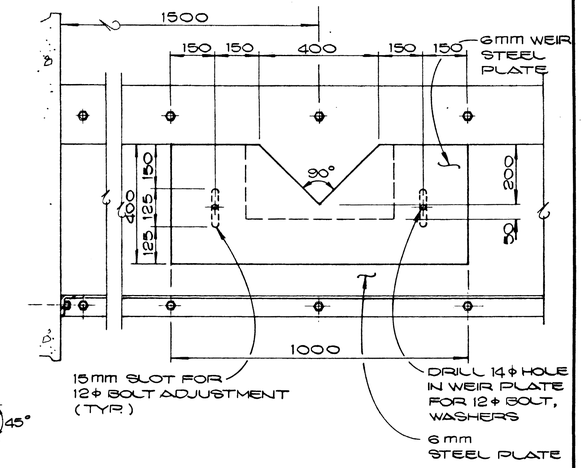
DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2 AND PUMP STATION – STAGE I
SEDIMENTATION TANK – DETAILS

SCALE: AS SHOWN
DRAWING No. 28-121-5
SHEET 9 OF 30 ISSUE B

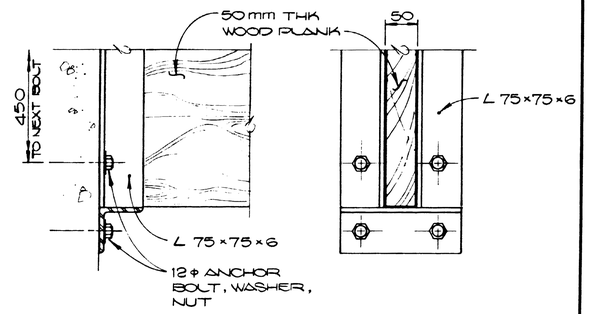


SECTION 2/8
1:50

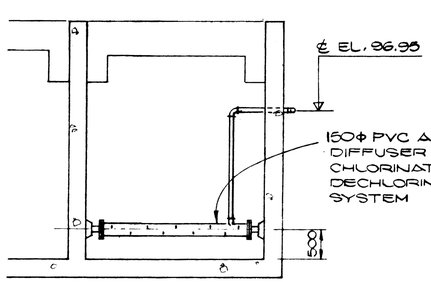




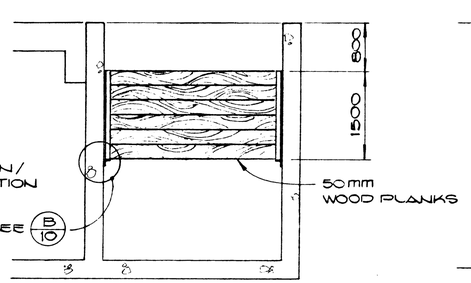
DETAIL 4/10



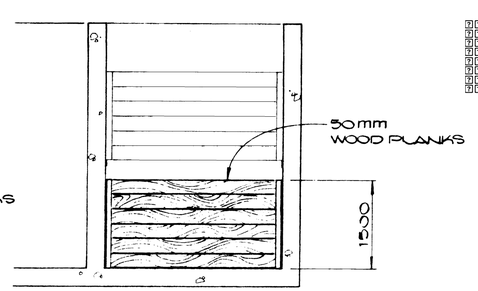
DETAIL 8/10 B/8



SECTION 3/10
1:50



SECTION 4/10
1:50



SECTION 5/10
1:50

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
W.O. 132231	B	OCT. '94	VB			RECORD DRAWING						

DESIGNED I.W./A.B.
DRAWN M.T.
CHECKED I.W.

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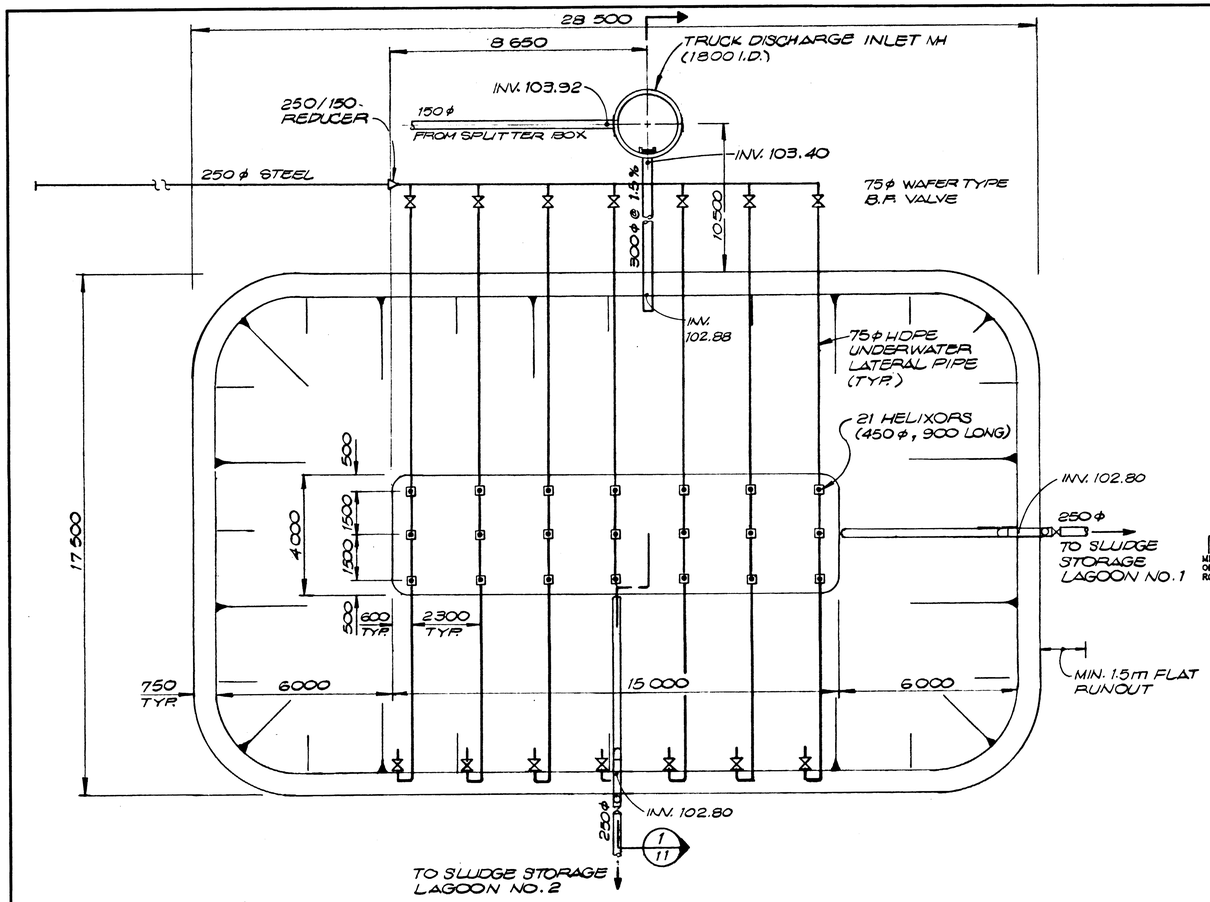
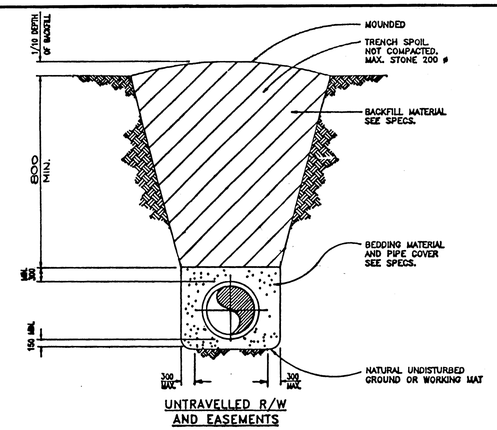
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
CHLORINATION/DECHLORINATION TANK – DETAILS

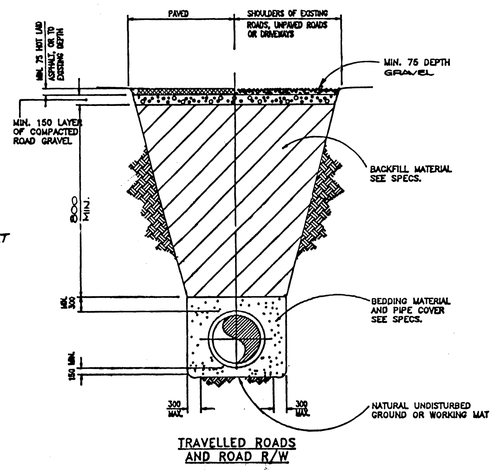
SCALE: AS SHOWN
DRAWING No. 88·121·3
SHEET 10 OF 30 ISSUE B



AERATED SLUDGE BASIN
PLAN
1:100

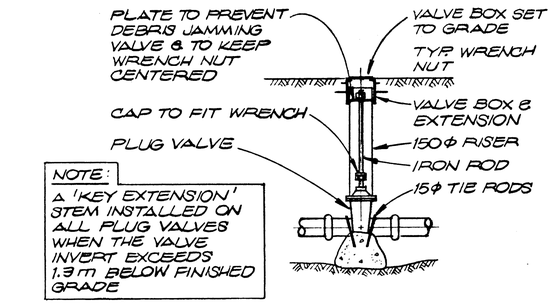


UNTRAVELLED R/W
AND EASEMENTS

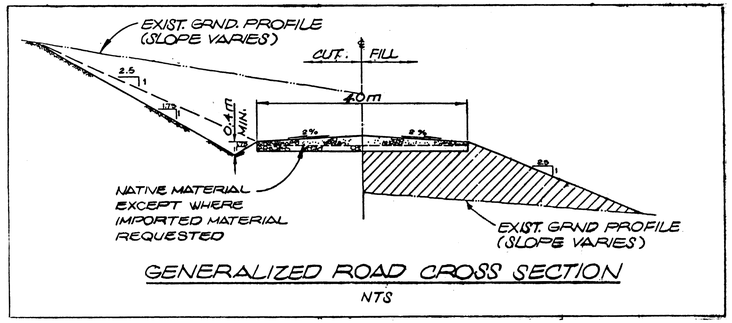


TRAVELLED ROADS
AND ROAD R/W

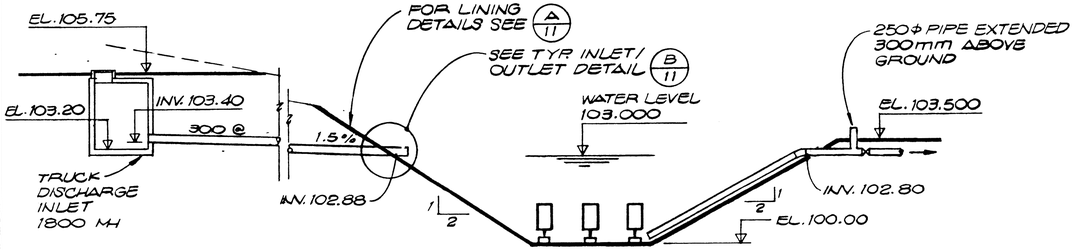
STANDARD TRENCH DETAILS FOR PIPES
N.T.S.



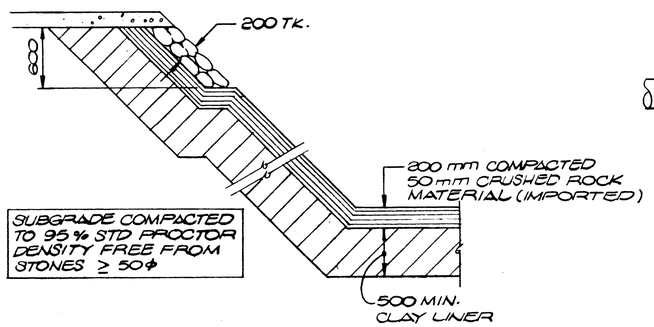
BURIED GATE VALVE
NTS



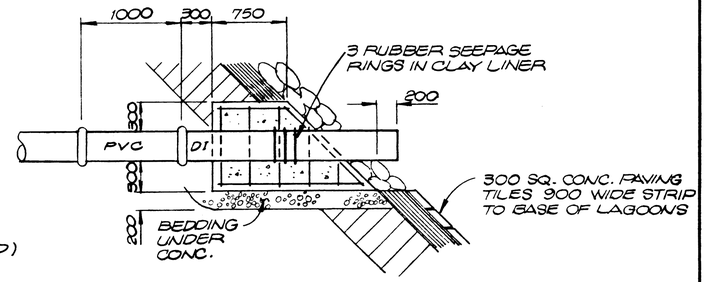
GENERALIZED ROAD CROSS SECTION
NTS



SECTION 1/11



DETAIL A/11
NTS



TYPICAL INLET
DETAIL B/11
NTS

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT. '94	VB			RECORD DRAWING

ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION

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DRAWN V.B
CHECKED I.W.

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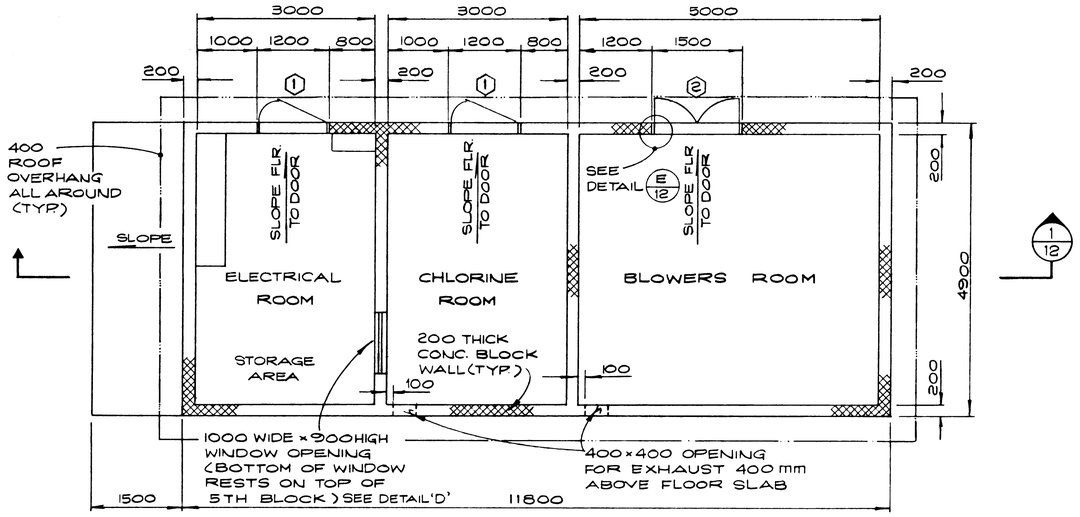
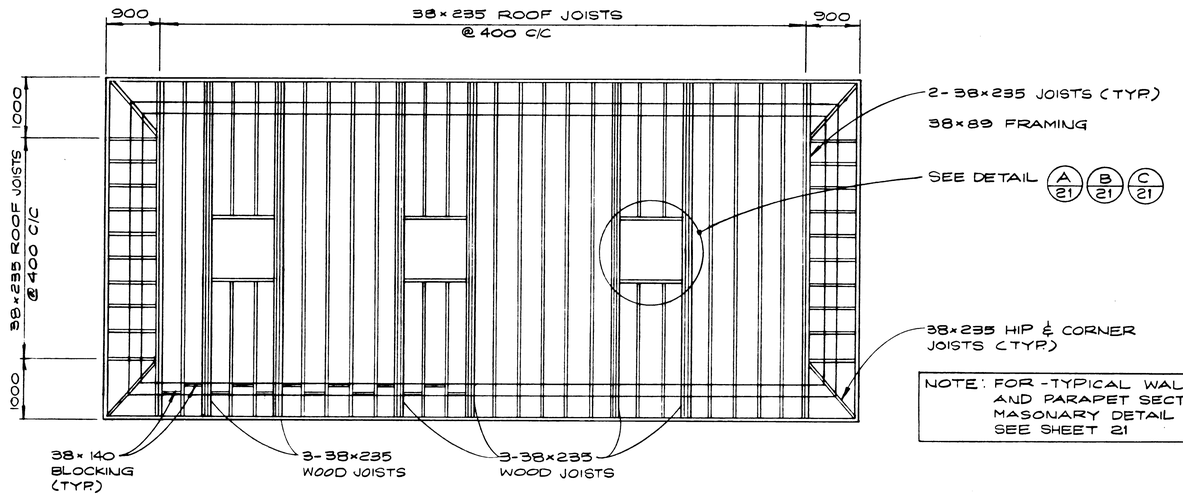
CONSULTING ENGINEERS
Nov. 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE 1
AERATED SLUDGE BASIN – PLAN – AERATION SYSTEM SCHEMATIC

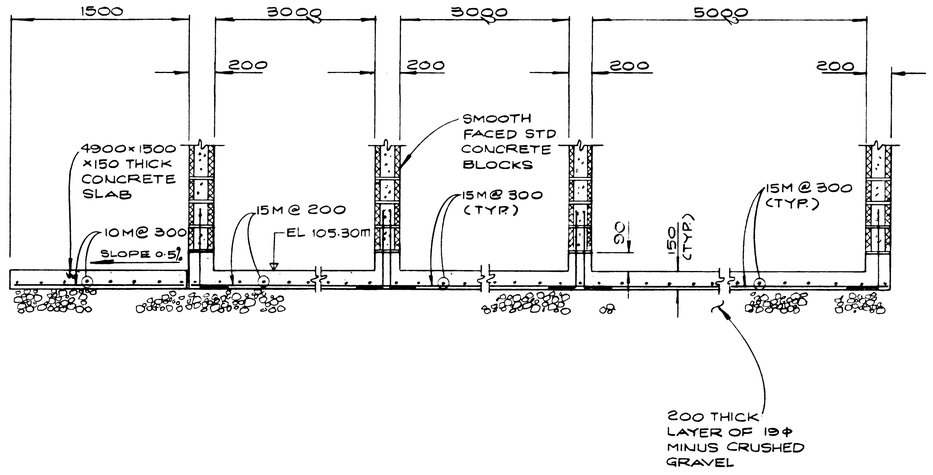
SCALE: AS SHOWN
DRAWING No. 28-121-3
SHEET 11 OF 30 ISSUE B



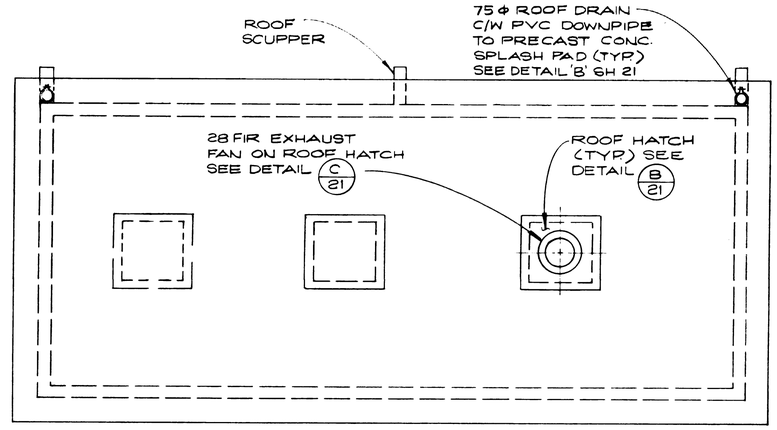
CONTROL BUILDING PLAN
1:50



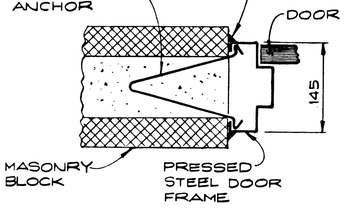
ROOF FRAMING PLAN
1:50



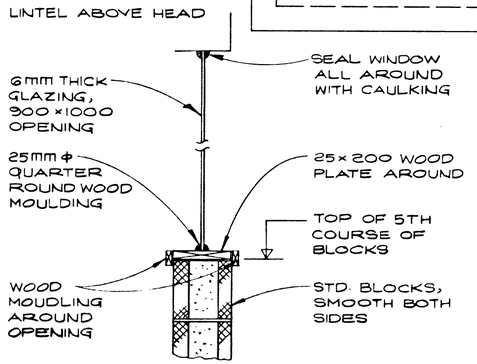
CONTROL BUILDING - SLAB
SECTION 1/12
1:25



ROOF PLAN
1:50



MAN DOOR FRAME
DETAIL E/12
N.T.S.



VIEW WINDOW DETAIL D/12
N.T.S.

DOOR SCHEDULE

NUMBER (1)	WIDTH (NOMINAL)	HEIGHT (NOMINAL)	THICKNESS	MATERIAL	FRAME	SWING	LATCHSET/LOCK	DEADBOLT LOCK	PANIC BAR	FLUSH BOLTS(2)	CLOSER	STOP	ASTRAGAL	KICKPLATE	THRESHOLD	BUTTS (SETS)	REMARKS
1	1150	2100	50	STL	STL.	LHR	✓	✓			✓	✓		✓	✓	3	
2	1150	2100	50	STL	STL.	RHR	✓	✓	✓		✓	✓		✓		3	

SEE THIS SHEET FOR DOOR NO. & LOCATION

NOTE:
ANCHOR THRESHOLD AT DELIVERY DOOR ACCESS SECURELY TO HOLD FLUSH BOLT.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

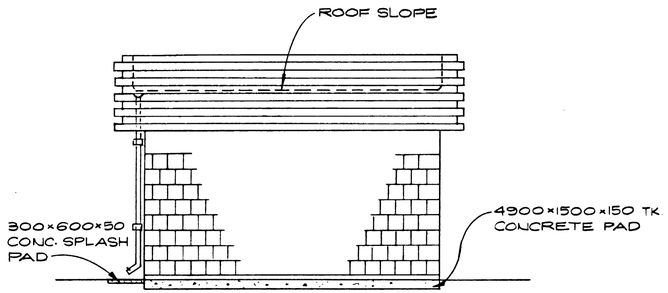
W.O. 19221 REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT. '94	VB			RECORD DRAWING

DESIGNED I.W./A.B.
DRAWN D.K.
CHECKED I.W.

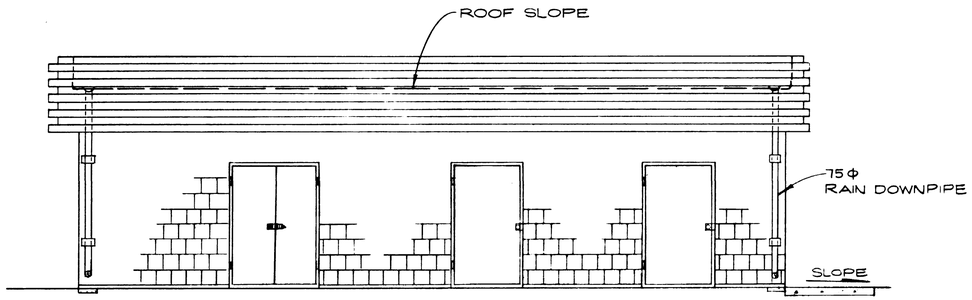
DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
CONTROL BUILDING CENTRE No. 2 – PLAN AND SECTIONS

SCALE: AS SHOWN
DRAWING No. 28.121.3
SHEET 12 OF 30 ISSUE B



NORTH ELEVATION
1:50



EAST ELEVATION
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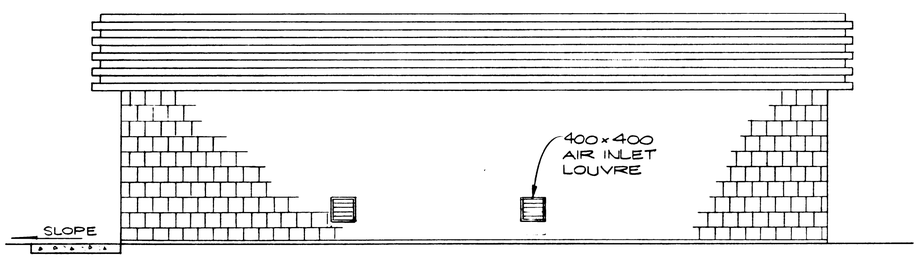

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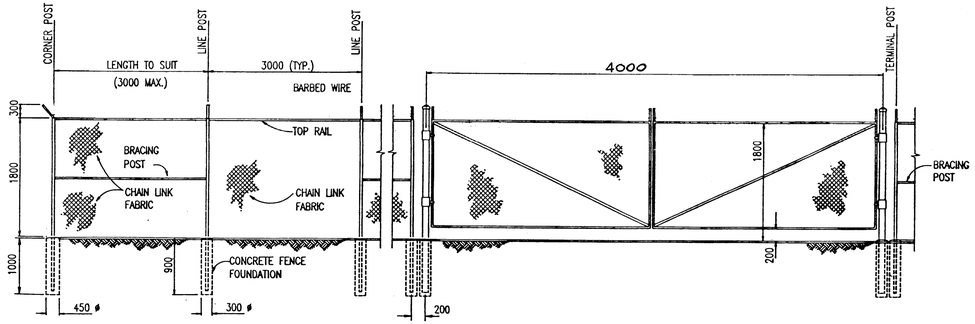


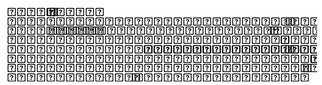
GATE AND CHAIN LINK FENCE DETAILS
NTS

CHAINLINK FENCING

ALL PIPES FOR POSTS & RAILS TO STRUCTURAL GRADE ASTM A 120 SCHED. 40 H.D.G. STEEL.

I	TERMINAL & CORNER POSTS	75mm OUTSIDE DIA. C/W EXTENSION ARM
II	GATE POSTS	170 mm OUTSIDE DIA. MIN. C/W DOME POST CAP
III	TOP RAILS	42mm OUTSIDE DIA.
IV	LINE POSTS	60 mm OUTSIDE DIA. C/W EXTENSION ARM
V	CENTRE RAIL	36mm OUTSIDE DIA.

CHAINLINK FABRIC TO BE 3.8mm H.D.G. WIRE. GALV. FABRIC SHALL HAVE AN AVERAGE OF 0.61 kg OF ZINC PER SQ. METRE OF AREA & GALV. IN ACCORDANCE WITH ASTM A 392. GALV. MESH SHALL BE 50mm DIAMONDS.



PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT. '94	VB			RECORD DRAWING

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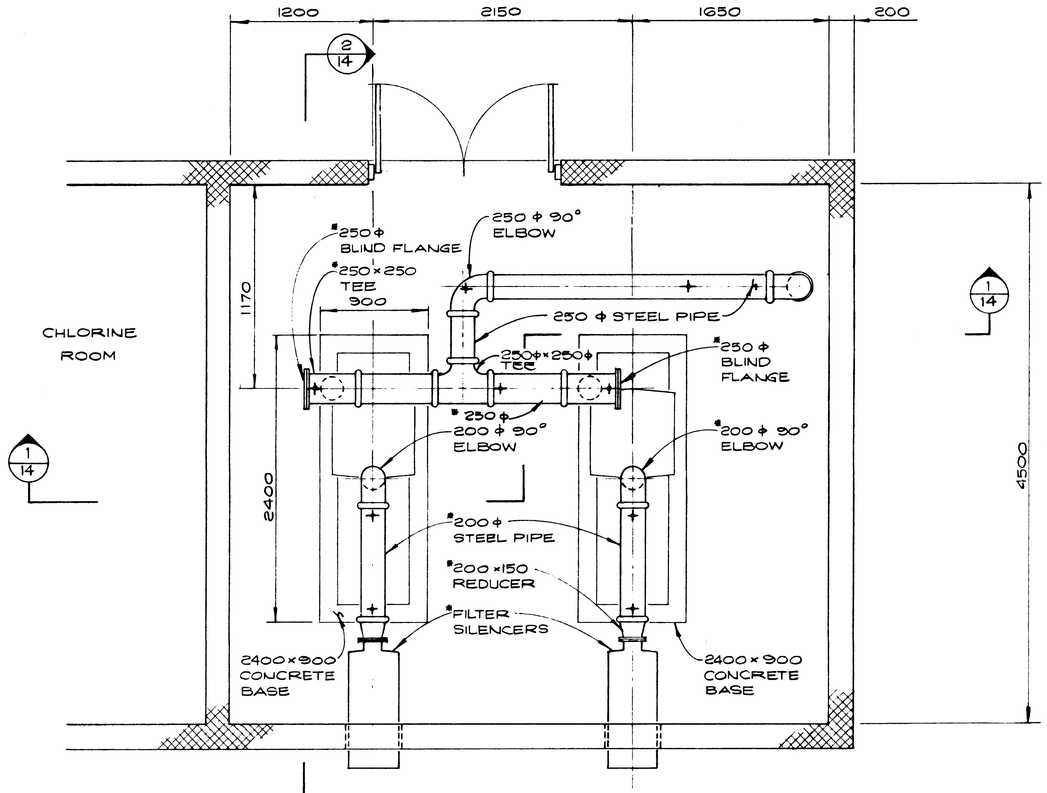
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
CONTROL BUILDING ELEVATION AND FENCE DETAILS

SCALE: AS SHOWN
DRAWING No. 28.121.3
SHEET 13 OF 30 ISSUE B

W.O. 19221



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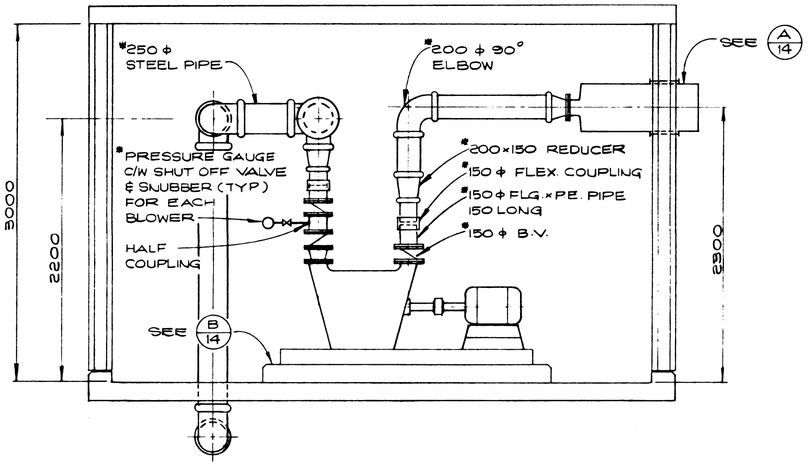
✚ DENOTES PIPE HANGERS LOCATION



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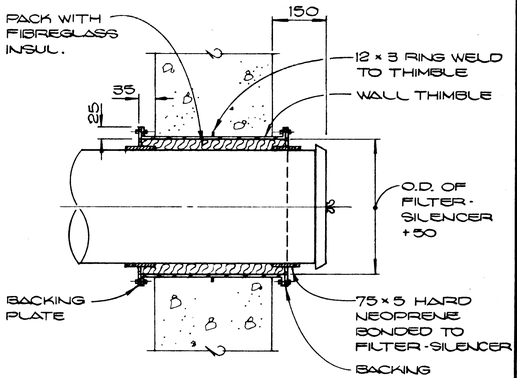

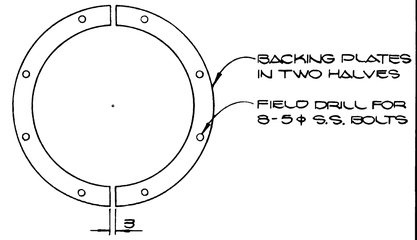

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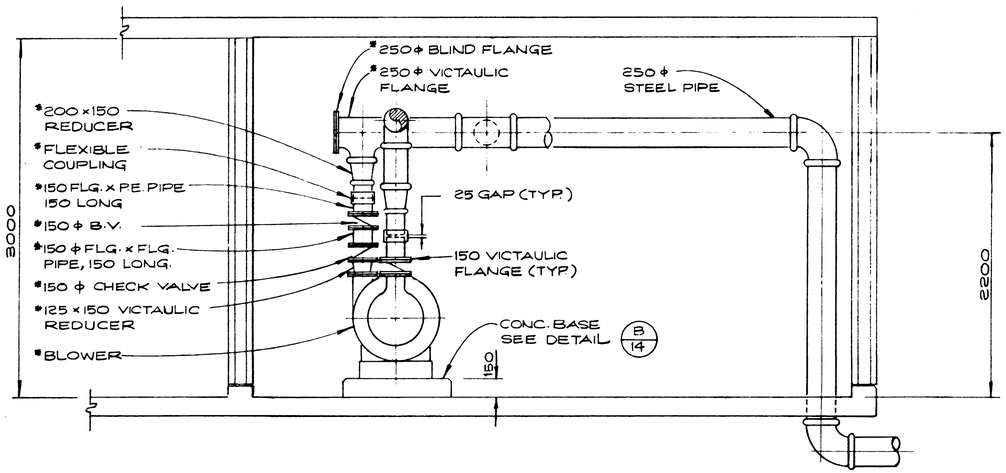

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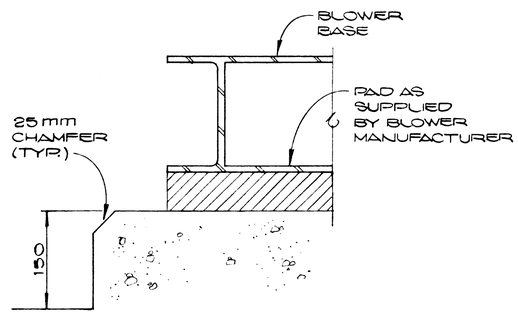
* AVAILABLE FROM W.P.C.C. No. 1
SHALL BE CLEANED & PAINTED



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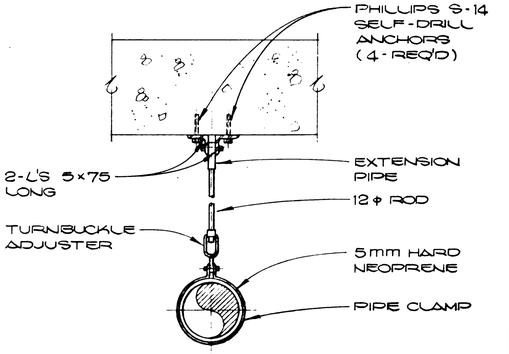

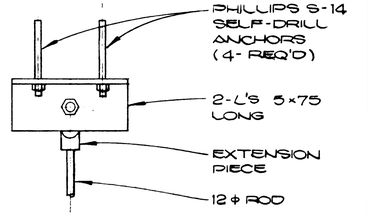

TYP. PIPE HANGER DETAIL
N.T.S.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
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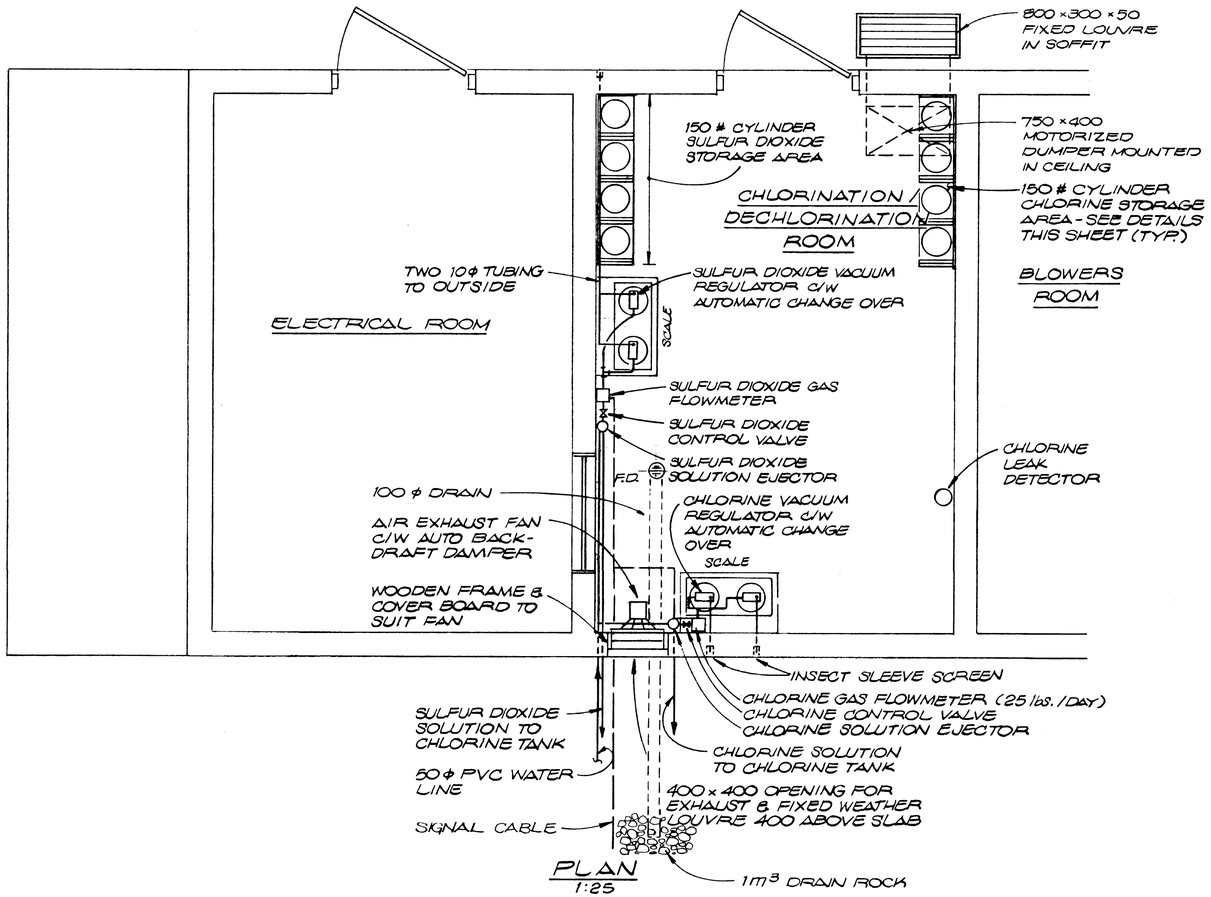
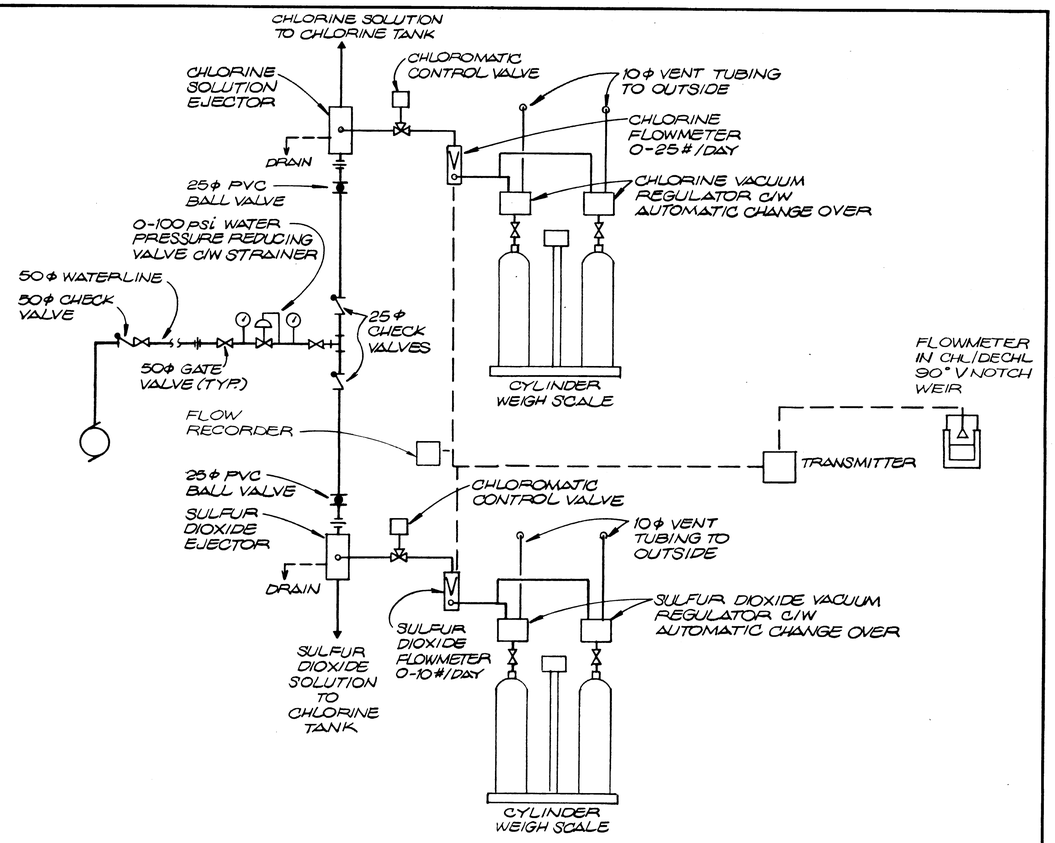
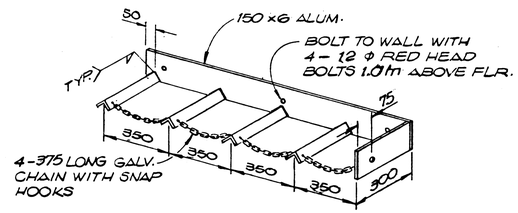
DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
BLOWER ROOM – PIPING DETAILS

SCALE: AS SHOWN
DRAWING No. 23-121-3
SHEET 14 OF 30 ISSUE B





CHLORINATION / DECHLORINATION SYSTEM SCHEMATIC
NTS



SECURING CHAIN DETAIL
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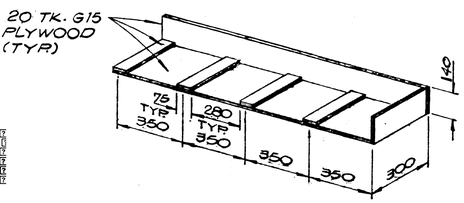

PLYWOOD STAND DETAIL
NTS

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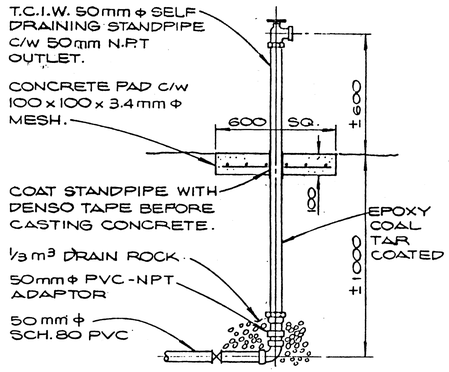
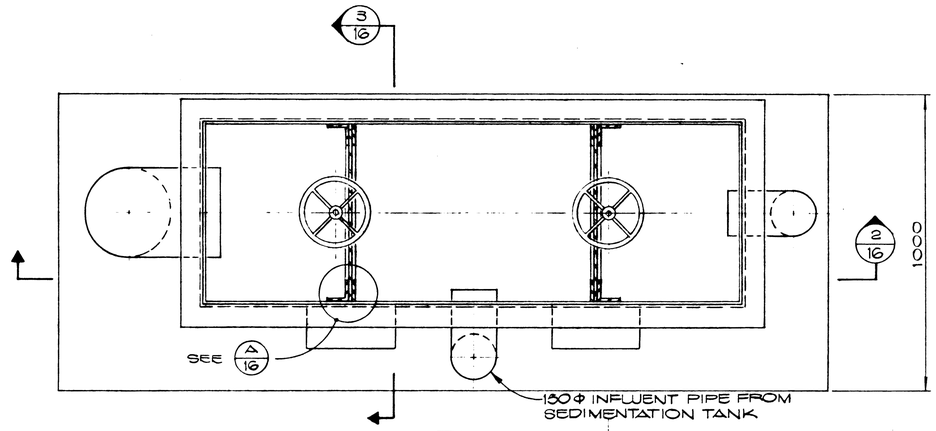
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
CHLORINATION/DECHLORINATION ROOM – SYSTEM SCHEMATIC

SCALE: AS SHOWN
DRAWING No. 20-121-3
SHEET 15 OF 30 ISSUE B

W.S.B. 15737



WATER SUPPLY STANDPIPE DETAIL
N.T.S.



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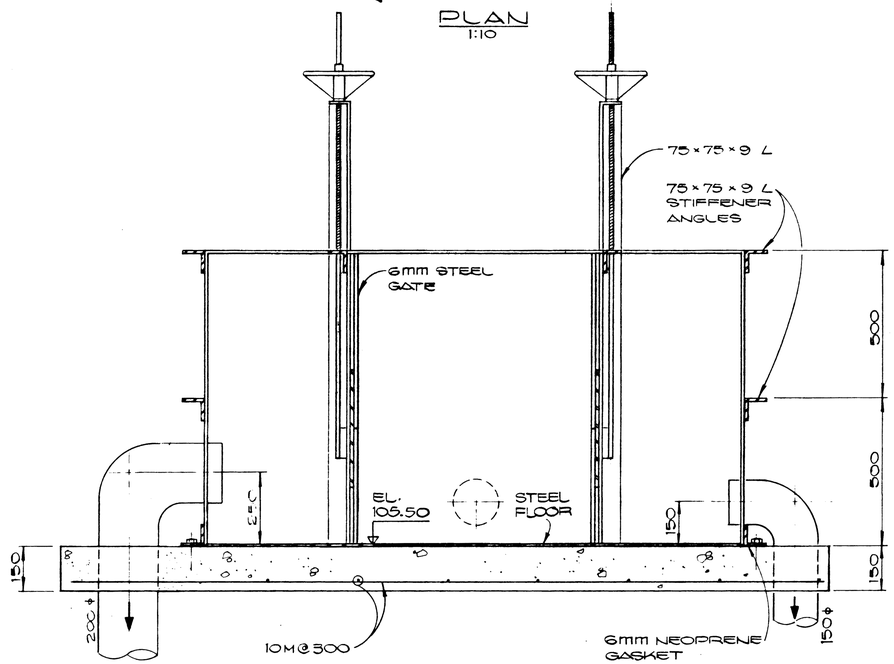

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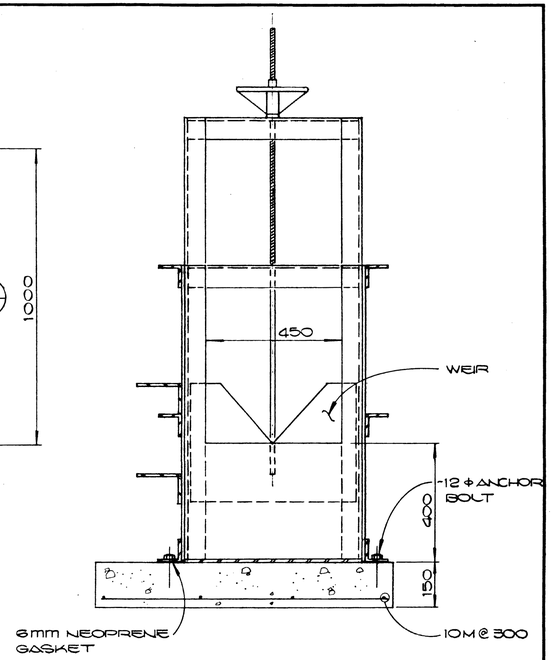

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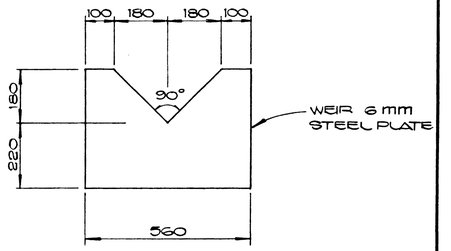

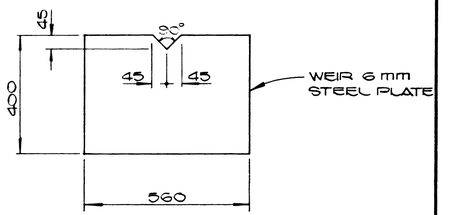

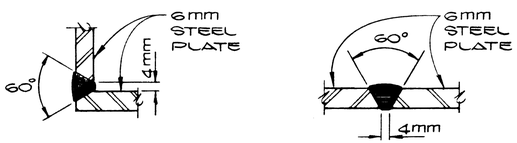

CHANNEL WELD DETAILS
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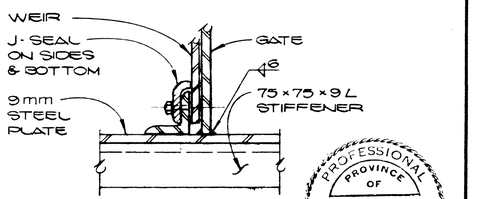

DETAIL A/16
N.T.S.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. BERZINS

W.T.B. 13721 REVISIONS

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Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
PARSHALL FLUME AND SPLITTER BOX

SCALE: AS SHOWN
DRAWING No. 28-121-3
SHEET 16 OF 30 ISSUE B

GENERAL STRUCTURAL NOTES

GENERAL NOTES

1. SCOPE : THE NOTES AND DETAILS ON THIS SHEET ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.
2. APPLICABLE SPECIFICATIONS AND CODES : CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL BUILDING CODE EXCEPT WHERE OTHER APPLICABLE CODES OR THE FOLLOWING NOTES ARE MORE RESTRICTIVE.
3. ALTERNATIVE DESIGNS : THE STRUCTURAL SYSTEMS AND DETAILS ON THESE PLANS ARE THE PRIORITY DESIGN, HOWEVER, ALTERNATIVE SYSTEMS AND DETAILS MAY BE USED IF THE CONTRACTOR SUBMITS PLANS SUBSTANTIATED BY CALCULATIONS AND TEST DATA THAT ARE APPROVED BY THE ENGINEER. ALTERNATIVE DESIGNS SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE GOVERNING CODES AND FOLLOWING NOTES.
4. DIMENSIONS : STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
5. PROVISIONS FOR EQUIPMENT : MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DRAWINGS SHALL BE PROVIDED FOR PRIOR TO CASTING CONCRETE.
6. CONSTRUCTION LOADS : STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. DURING CONSTRUCTION, THE STRUCTURES SHALL BE PROTECTED BY BRACING AND BALANCING WHEREVER EXCESSIVE CONSTRUCTION LOADS MAY OCCUR. ALL TEMPORARY AND PERMANENT SURCHARGE LOADS SHALL BE CONSIDERED.
7. DRAINAGE SURFACES : FLOOR ELEVATIONS SHOWN ON CONCRETE OUTLINE DRAWINGS ARE PERIMETER ELEVATIONS FOR STRUCTURAL SLABS AND DO NOT INDICATE FLOOR SLOPES, TOPPING OR FLOOR ELEVATIONS. FOR AREAS REQUIRING FLOOR SLOPES, TOPPING AND FLOOR DRAIN (ELEVATIONS AND LOCATIONS), SEE ARCHITECTURAL AND MECHANICAL DRAWINGS.

STEEL

1. APPLICABLE SPECIFICATIONS AND CODES : STEEL CONSTRUCTION SHALL CONFORM TO CSA S16 "STEEL STRUCTURES FOR BUILDINGS" AS CONTAINED IN THE N.B.C. 1985.
2. BOLTED JOINTS : EXCEPT FOR BOLTS ANCHORED IN CONCRETE, BOLTED JOINTS SHALL CONFORM TO THE SPECIFICATIONS OF THE CANADIAN INSTITUTE OF STEEL CONSTRUCTION. BOLTS SHALL BE AS SPECIFIED ON THE DRAWINGS, OR, AT LEAST 13mm DIAMETER IF NOT SPECIFIED ON THE DRAWINGS.
3. ANCHOR BOLTS : BOLTS ANCHORED IN CONCRETE, IF NOT SPECIFIED ON THE DRAWINGS, SHALL BE 13mm DIAMETER WITH 225mm EMBEDDED AND SHALL CONFORM TO ASTM A-36.
4. ANCHOR STUDS : STUDS WELDED TO STEEL AND ANCHORED IN CONCRETE SHALL BE "NELWELD" BENT STUD ANCHORS OF "NELSON" STUD WELDING MADE WITH COLD DRAWN MILD STEEL HAVING A MINIMUM ULTIMATE TENSILE STRENGTH OF 400 MPa. STUDS SHALL BE WELDED USING GRANULAR FLUX THAT FORMS A WELD WHICH EXCEEDS SPACINGS INDICATED ON THE DRAWINGS.

   WHERE SIZE IS NOT DESIGNATED USE 7mm x 100mm. WHERE SPACING IS NOT DESIGNATED INSTALL STUDS AT EQUAL INTERVALS (225mm MIN. TO 450mm MAX.) ALONG THE ENTIRE LENGTH OF THE ANCHORED MEMBER AND 75mm FROM THE ENDS.
5. ENCASED STEEL : STEEL COMPLETELY ENCASED IN CONCRETE SHALL NOT BE PAINTED AND SHALL HAVE A CLEAN SURFACE FOR BONDING TO CONCRETE.

ALUMINUM

1. APPLICABLE SPECIFICATIONS AND CODES : ALUMINUM CONSTRUCTION SHALL CONFORM TO CAN3-S157 "STRENGTH DESIGN IN ALUMINUM" AS SPECIFIED IN THE N.B.C. 1985.

MASONRY

1. APPLICABLE SPECIFICATIONS AND CODES : MASONRY CONSTRUCTION SHALL CONFORM TO CAN3-S157 AS SPECIFIED IN THE N.B.C. 1985.

CONCRETE

1. APPLICABLE SPECIFICATIONS AND CODES : CONCRETE CONSTRUCTION SHALL CONFORM TO CSA 23.3-M84 "DESIGN OF CONCRETE STRUCTURES FOR BUILDING" AS SPECIFIED IN THE N.B.C. 1985.
2. REINFORCING STEEL DETAILS : ALL DETAILING, FABRICATING AND ERECTION OF STEEL REINFORCING BARS, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH THE "METRIC SUPPLEMENT" IN CONJUNCTION WITH THE "REINFORCING STEEL MANUAL OF STANDARD PRACTICE", AS AVAILABLE FROM THE WESTERN REINFORCING CONTRACTORS ASSOCIATION.
3. MINIMUM REINFORCEMENT : CONCRETE CONSTRUCTION SHALL BE REINFORCED CONCRETE EXCEPT WHERE PLAIN CONCRETE (P/C) IS SPECIFIED ON THE DRAWINGS, IN WHICH CASE NO REINFORCEMENT SHALL BE USED. CONCRETE THAT IS NOT DESIGNATED P/C AND HAS NO REINFORCEMENT INDICATED SHALL BE REINFORCED ACCORDING TO THE FOLLOWING SCHEDULES :

   A) STEEL FOR WALLS AND SLABS

	REINFORCEMENT EACH WAY		
THICKNESS	SIZE	SPACING	POSITION
150	10M	300 C/C	ON ℄
200	15M	300 C/C	ON ℄
250	15M	300 C/C	EF
300	15M	300 C/C	EF
350	15M	250 C/C	EF
375	20M	300 C/C	EF
400	20M	300 C/C	EF
450	20M	300 C/C	EF

   MASS CONCRETE SHALL BE REINFORCED WITH 15M BARS AT 300 MINIMUM IN ALL FACES.

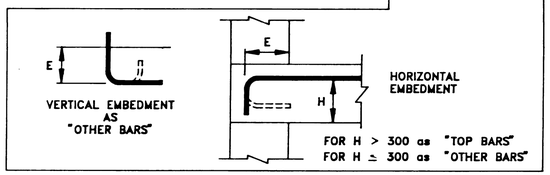
   B) 10M ● 450 SHALL BE USED AS TRANSVERSE TIES IF NO OTHER REINFORCING IS NOTED.
4. CONCRETE COVER : CONCRETE COVER OF REINFORCING BARS, IF NOT SPECIFIED ON THE DRAWINGS, SHALL BE AS FOLLOWS OR SHALL BE EQUAL TO THE DIAMETER OF THE MAIN REINFORCING BAR IT COVERS, WHICHEVER IS LARGER :

CONDITION	SPECIFIED COVER (mm)
A) CONCRETE CAST AGAINST GROUND	75
B) CONCRETE EXPOSED TO EARTH, LIQUIDS OR WEATHER	
I) 20M BARS OR LARGER	50
II) 10M AND 15M BARS	40
C) CONCRETE SLABS OR WALLS NOT EXPOSED TO EARTH, LIQUIDS OR WEATHER	20
D) CONCRETE BEAMS OR COLUMNS	50

5. REINFORCING BAR DEVELOPMENT AND LAP LENGTHS : REINFORCING BAR DEVELOPMENT LENGTH AND LAP SPLICE LENGTHS SHALL BE AS SPECIFIED ON THE DRAWINGS OR IN ACCORDANCE WITH THE FOLLOWING SCHEDULES, WHICHEVER IS THE LONGER LENGTH :

f_c = 30 MPa, f_y = 400 MPa

BAR SIZE	MINIMUM STRAIGHT EMBEDMENT DEVELOPMENT LENGTHS			MINIMUM TENSION EMBEDMENT WITH STANDARD END HOOKS E	
	COMPRESSION	TENSION			
		TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
10M	200	370	300	110	110
15M	280	520	370	160	160
20M	340	630	450	220	200
25M	440	970	690	450	250
30M	530	1360	970	630	300



f_c = 30 MPa, f_y = 400 MPa

BAR SIZE	LAP SPLICE LENGTHS						
	TENSION, CLASSES						COMPRESSION
	BASIC			TOP BARS			
	A	B	C	A	B	C	
10M	300	340	450	370	480	620	330
15M	370	480	630	520	680	800	470
20M	450	590	770	630	820	1080	570
25M	690	900	1180	970	1260	1650	740
30M	970	1260	1650	1360	1770	2310	870

   I) DOWELS SHALL BE THE SAME SIZE AND SPACING AS BARS WITH WHICH THEY ARE LAPPED, UNLESS OTHERWISE NOTED.
   II) LAP SPLICES LOCATED AWAY FROM POINT OF MAXIMUM STRESS SHALL BE CLASS A.
   III) LESS THAN 50% OF THE BARS SPLICED AT MAXIMUM TENSILE STRESS ZONE SHALL BE CLASS B.
   IV) MORE THAN 50% OF THE BARS SPLICED AT MAXIMUM TENSILE STRESS ZONE SHALL BE CLASS C.
   V) THE LENGTH OF LAP SPLICE OF BARS OF DIFFERENT DIAMETER SHALL BE BASED ON THE BAR WITH THE SMALLER DIAMETER.
   VI) TENSION TIE MEMBERS AND CIRCULAR TANK HOOP BAR SPLICES SHALL BE CLASS C.
6. STANDARD HOOKS : BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF CSA CAN3-A23.1
7. ANCHORAGE : IF THE EMBEDMENT LENGTH IS LIMITED DUE TO THE LIMITED EXTENT OF THE CONCRETE STRUCTURE, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION

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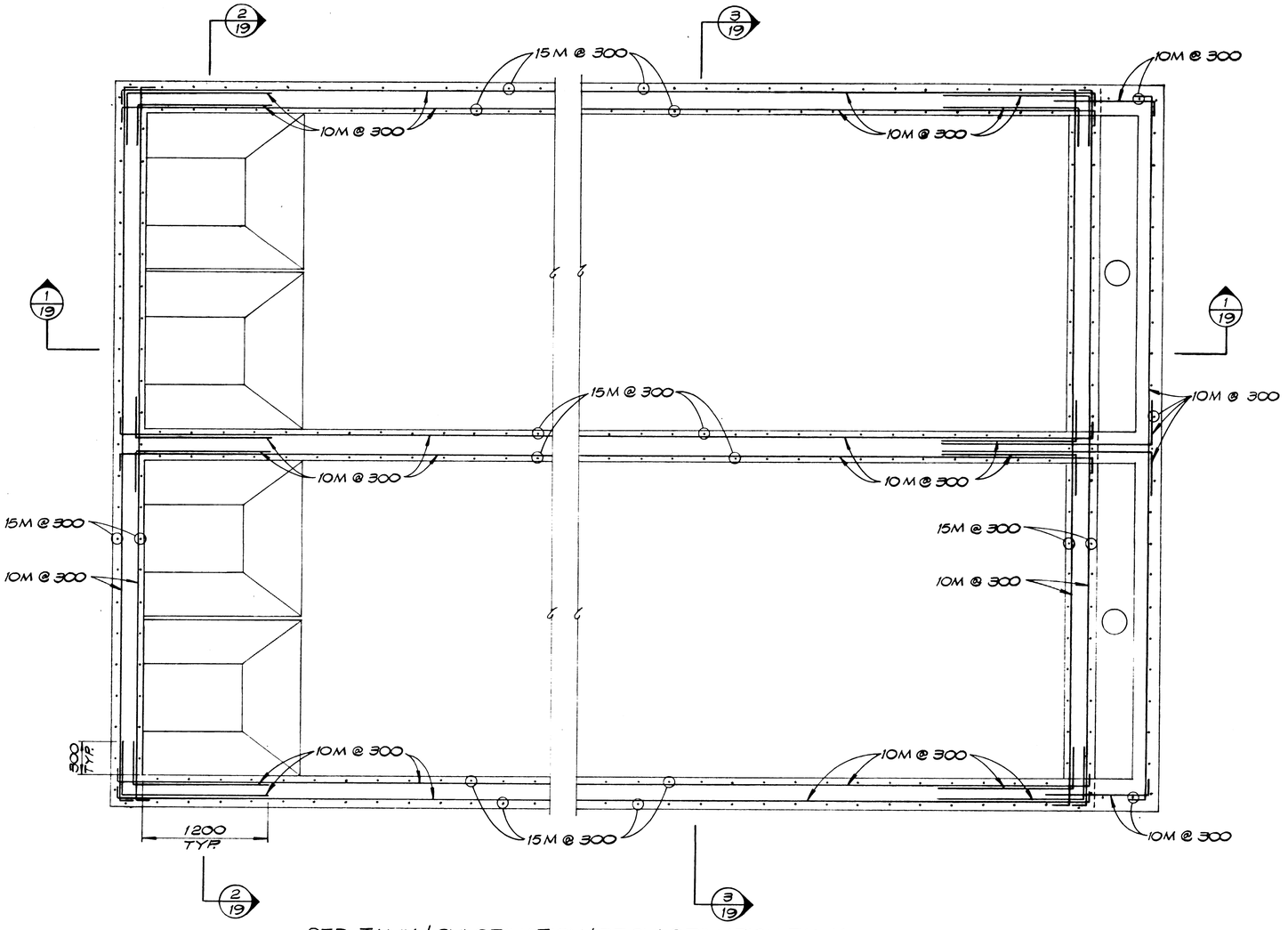
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION - STAGE I
GENERAL STRUCTURAL NOTES

SCALE:
DRAWING No. 93-121-3
SHEET 17 OF 30 ISSUE A

W.P. 1123-23



SED. TANK / CHLORINATION / DECHLORINATION TANK
PLAN
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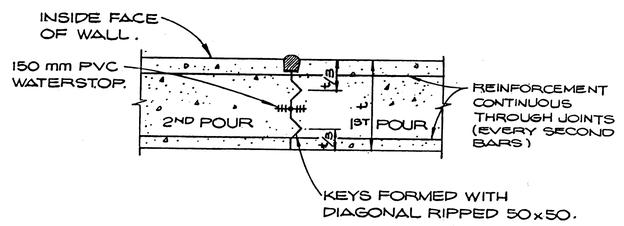
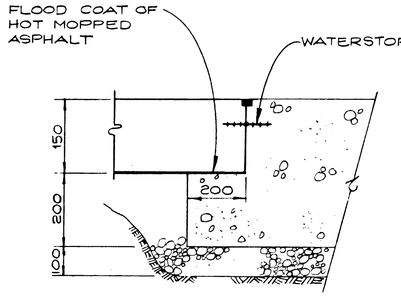


WALL CONSTRUCTION JOINT
DETAIL
N.T.S.



TYP. AERATION TANK
LINER SUPPORT
DETAIL
N.T.S.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

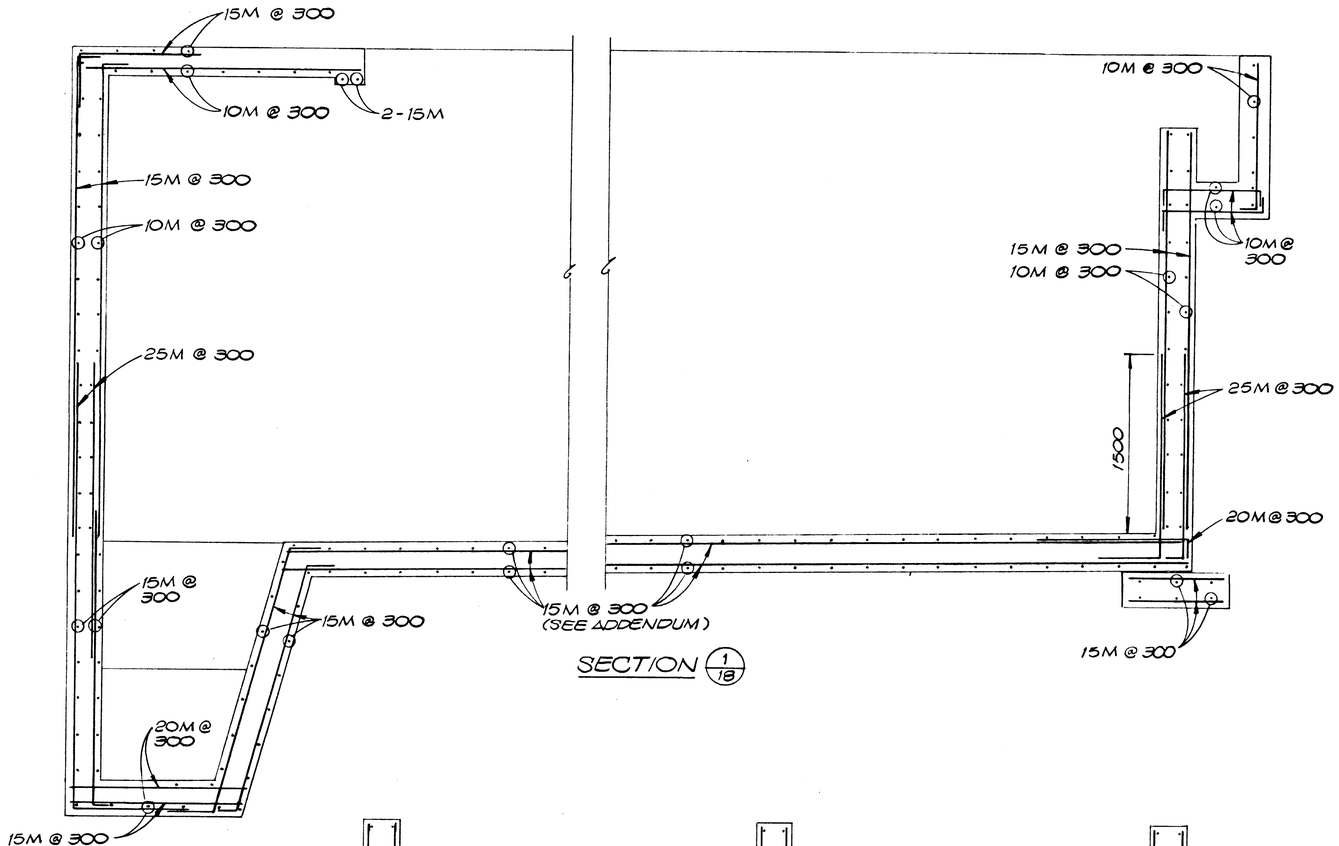
REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION

DESIGNED I.W./A.B.
DRAWN V.B/D.K
CHECKED I.W.

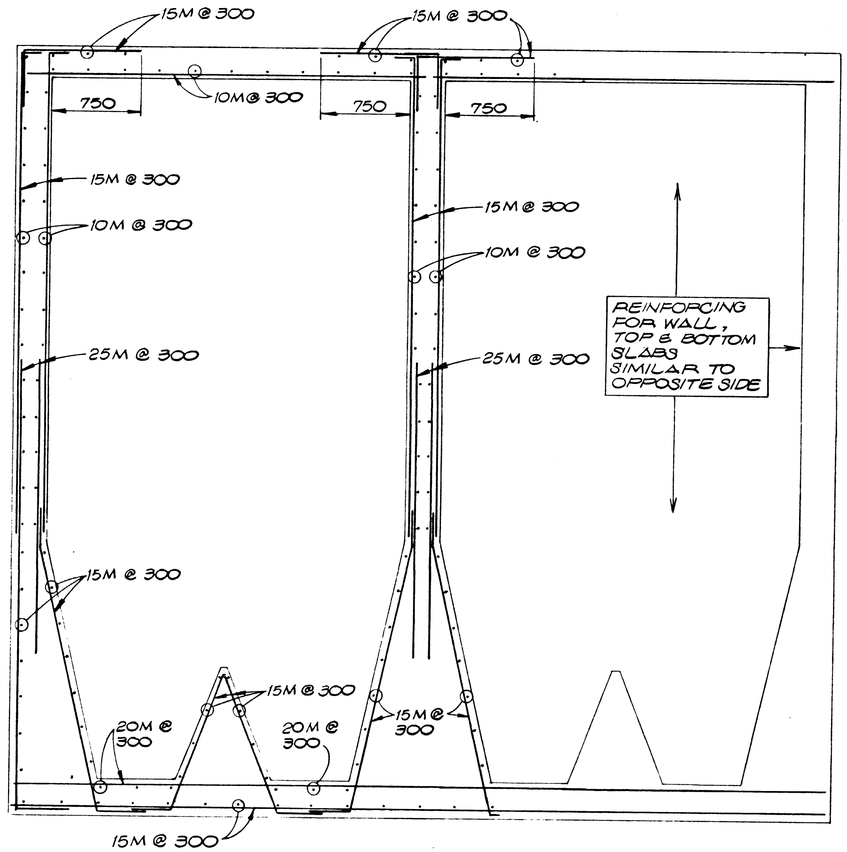
DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
DR M.V 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
SEDIMENTATION TANK AND CHLORINATION TANK
REINFORCING DETAILS

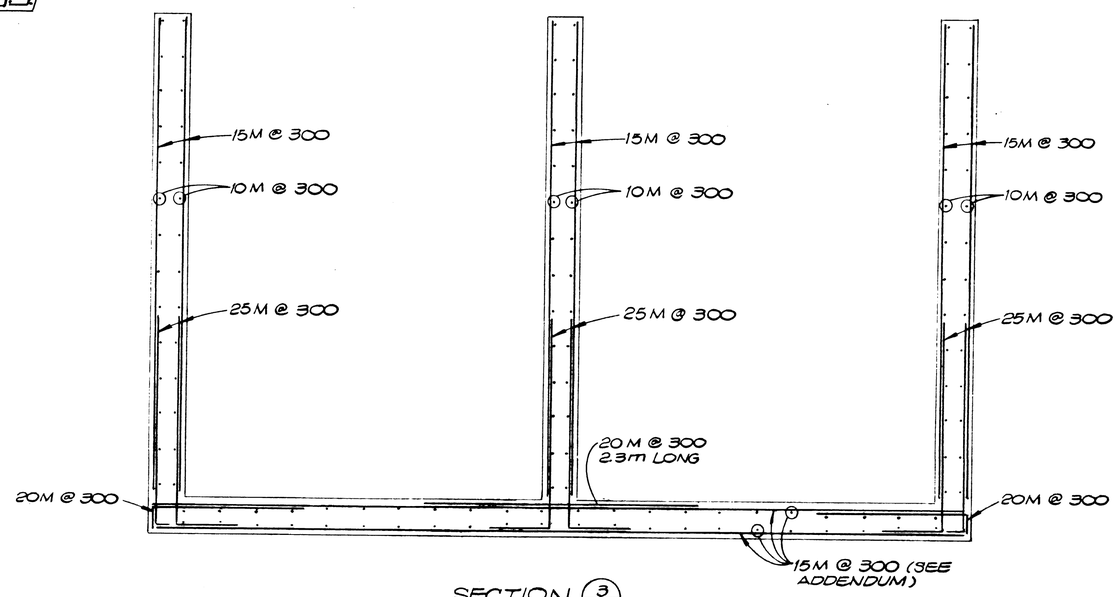
SCALE: AS SHOWN
DRAWING No. 28-121.3
SHEET 18 OF 30 ISSUE A



SECTION 1/18



SECTION 2/18



SECTION 3/18

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. BERZINS

REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
W.T.S. 13221												

DESIGNED I.W./A.B.
DRAWN V.B
CHECKED I.W.

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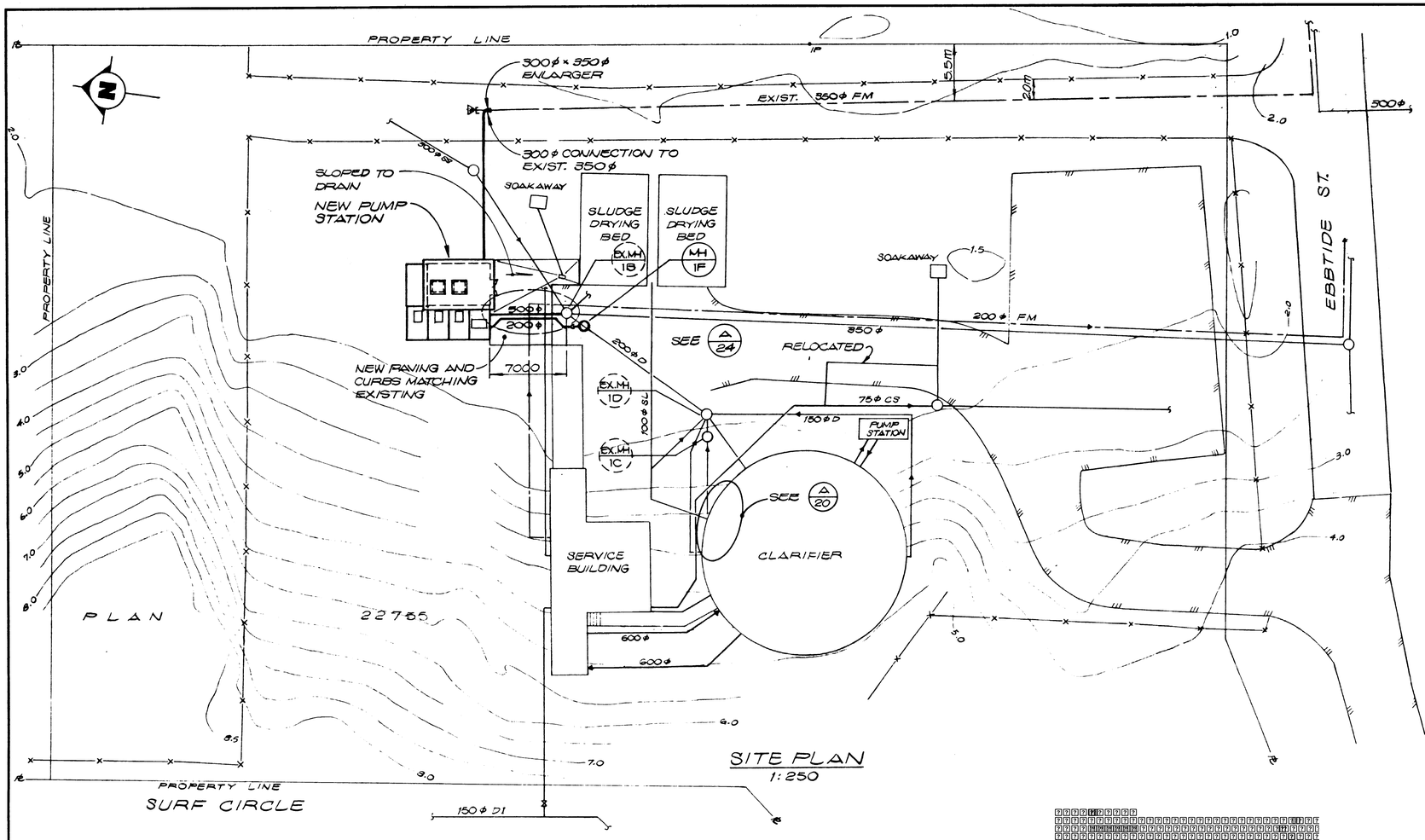
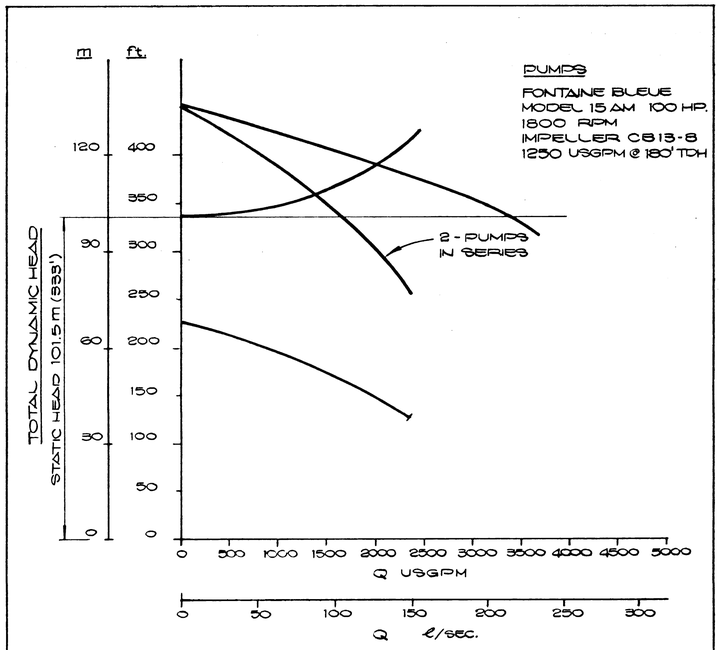
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION – STAGE I
SEDIMENTATION TANK AND CHLORINATION TANK
REINFORCING

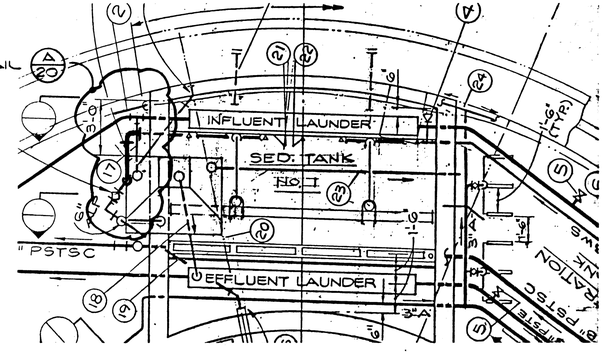
SCALE: 1:25
DRAWING No. 93-181-S
SHEET 19 OF 30 ISSUE A



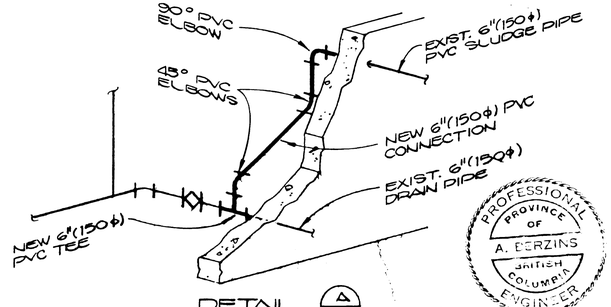
SITE PLAN
1:250



SYSTEM PUMPING CURVE
N.T.S.

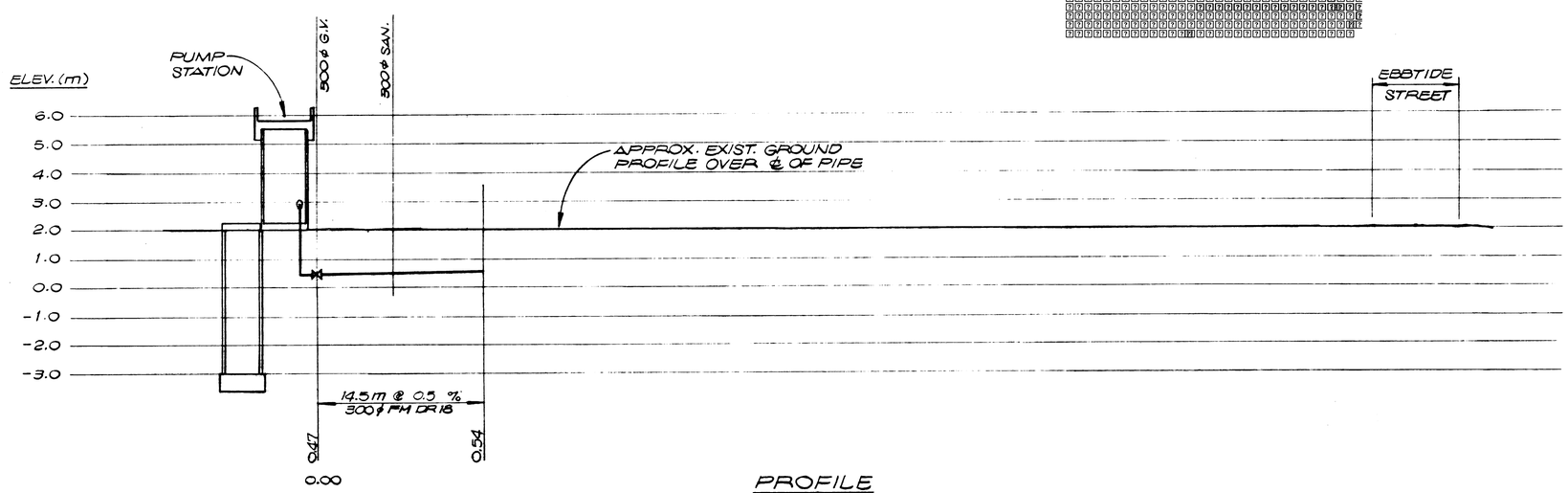


PLAN
N.T.S.



DETAIL △20

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. BERZINS



PROFILE
HORIZ. 1:250, VERT. 1:100

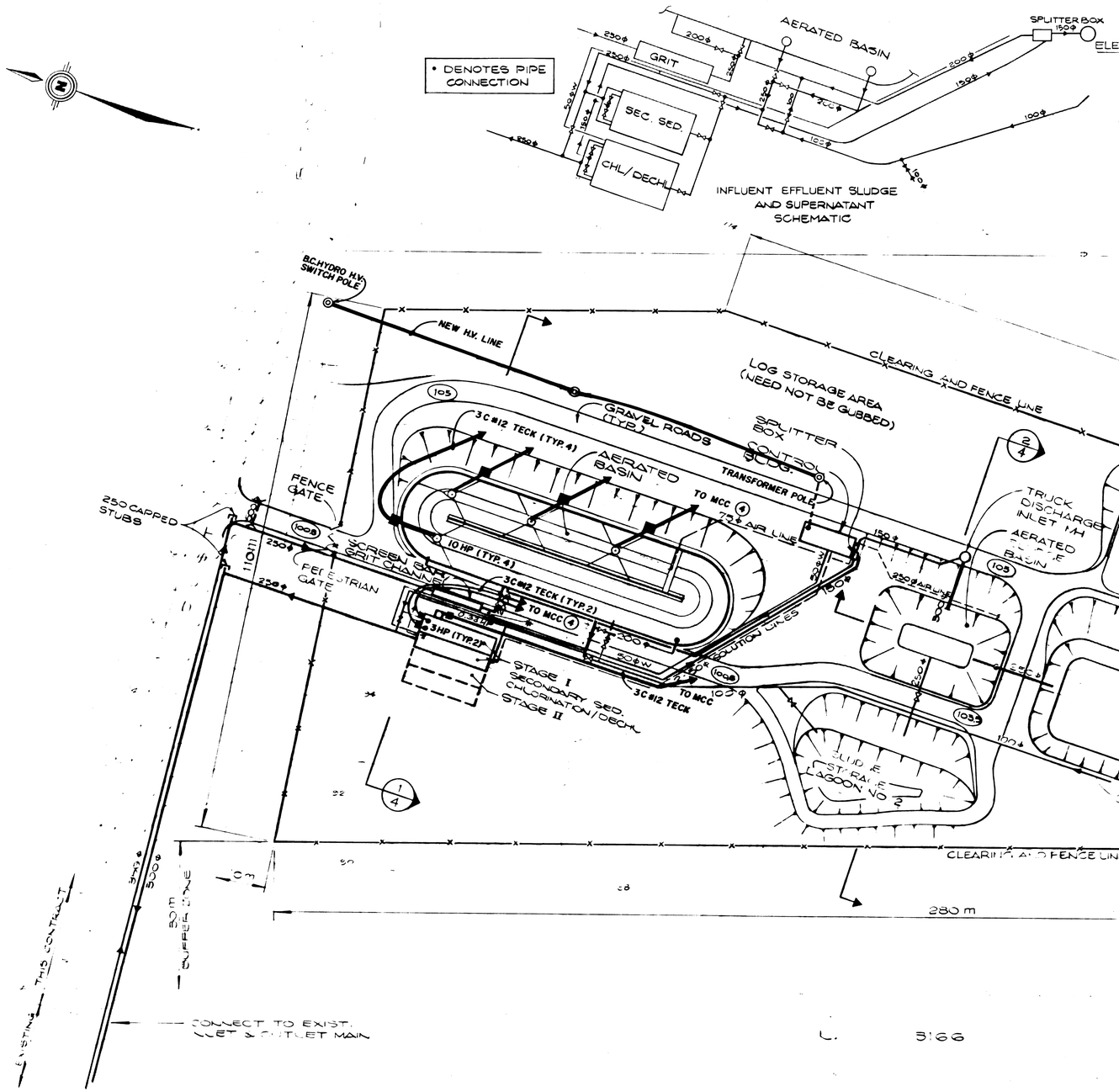
REVISIONS	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION	ISSUE	DATE	DR'N	CH'D	APP'D	DESCRIPTION
	B	OCT. '94	VB			RECORD DRAWING						

DESIGNED E.A.P.
DRAWN VB
CHECKED

DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS
Nov 22/93

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2
AND PUMP STATION — STAGE I
~~PUMP STATION CENTRE No. 1~~ SITE PLAN
SYSTEM PUMPING CURVE, FORCEMAIN

SCALE: AS SHOWN
DRAWING No. 23-121-5
SHEET 20 OF 30 ISSUE B



SITE PLAN (CENTRE No. 2)

REVISIONS	ISSUE	DATE	DRN	CH'D	APP'D	DESCRIPTION
	B	OCT. '94	VB			RECORD DRAWING
	C	95-02-10	RD			ADDED DISCONNECT SWITCHES

DESIGNED N.V./A.B.
DRAWN
CHECKED

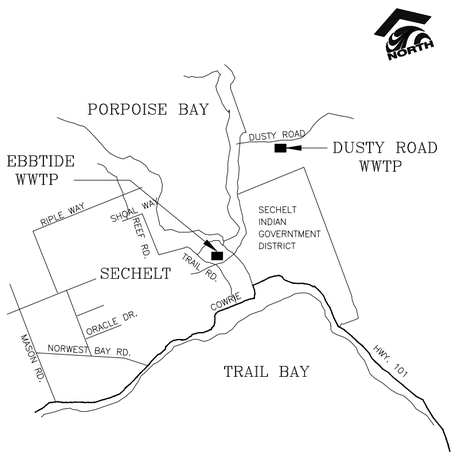
DAYTON & KNIGHT LTD.
CONSULTING ENGINEERS

DISTRICT OF SECHELT
CONSTRUCTION OF GREATER SECHELT W.P.C.C. No. 2 AND PUMP STATION – STAGE I
CENTRE No. 1 – OUTSIDE PIPING – DETAILS
ELECTRICAL – SITE PLAN

SCALE AS SHOWN
DRAWING No. 23.17-3
SHEET 30 OF 30 ISSUE C

DISTRICT OF SECHELT

LOCATION PLAN



DRAWING LIST

DWG. NO.	DESCRIPTION
CIVIL	
C01	TITLE SHEET, LOCATION PLAN & DRAWING LIST
C02	SITE PLAN
C03	YARD PIPING
ARCHITECTURAL	
A01	ADMINISTRATION BUILDING – PLANS, ELEVATIONS & SECTIONS
STRUCTURAL	
S01	AERATION BASIN – PLAN, SECTIONS AND DETAILS
S02	SECONDARY CLARIFIER – PLAN, SECTIONS AND DETAILS
PROCESS	
P01	PROCESS SCHEMATIC & HYDRAULIC PROFILE
P02	AERATION BASIN PLAN
P03	ADMINISTRATION BUILDING MODIFICATIONS
P04	SECONDARY CLARIFIER – PLANS & SECTIONS
P05	RAS/WAS PUMP STATION – PLANS & SECTION
P06	MISCELLANEOUS MODIFICATIONS
P07	EBBTIDE WWTP CHLORINATION/DECHLORINATION SYSTEM MODIFICATIONS
P08	EBBTIDE WWTP CHLORINE CONTACT TANK – PLAN AND SECTIONS
P09	MISCELLANEOUS DETAILS
MECHANICAL	
M01	ADMINISTRATION BUILDING HVAC & PLUMBING
ELECTRICAL	
E01	600V SINGLE LINE DIAGRAM
E02	DISTRIBUTION PANEL BOARDS AND SECURITY CONTROL
E03	CONTROL PANEL AND PLC LAYOUT
E04	I & C PANEL DETAILS
E05	PLC LAYOUT AND I/O SCHEDULE
E06	MISCELLANEOUS DETAILS
E07	ORIGINAL SHOP DRAWINGS FOR REFERENCE ONLY

DUSTY ROAD

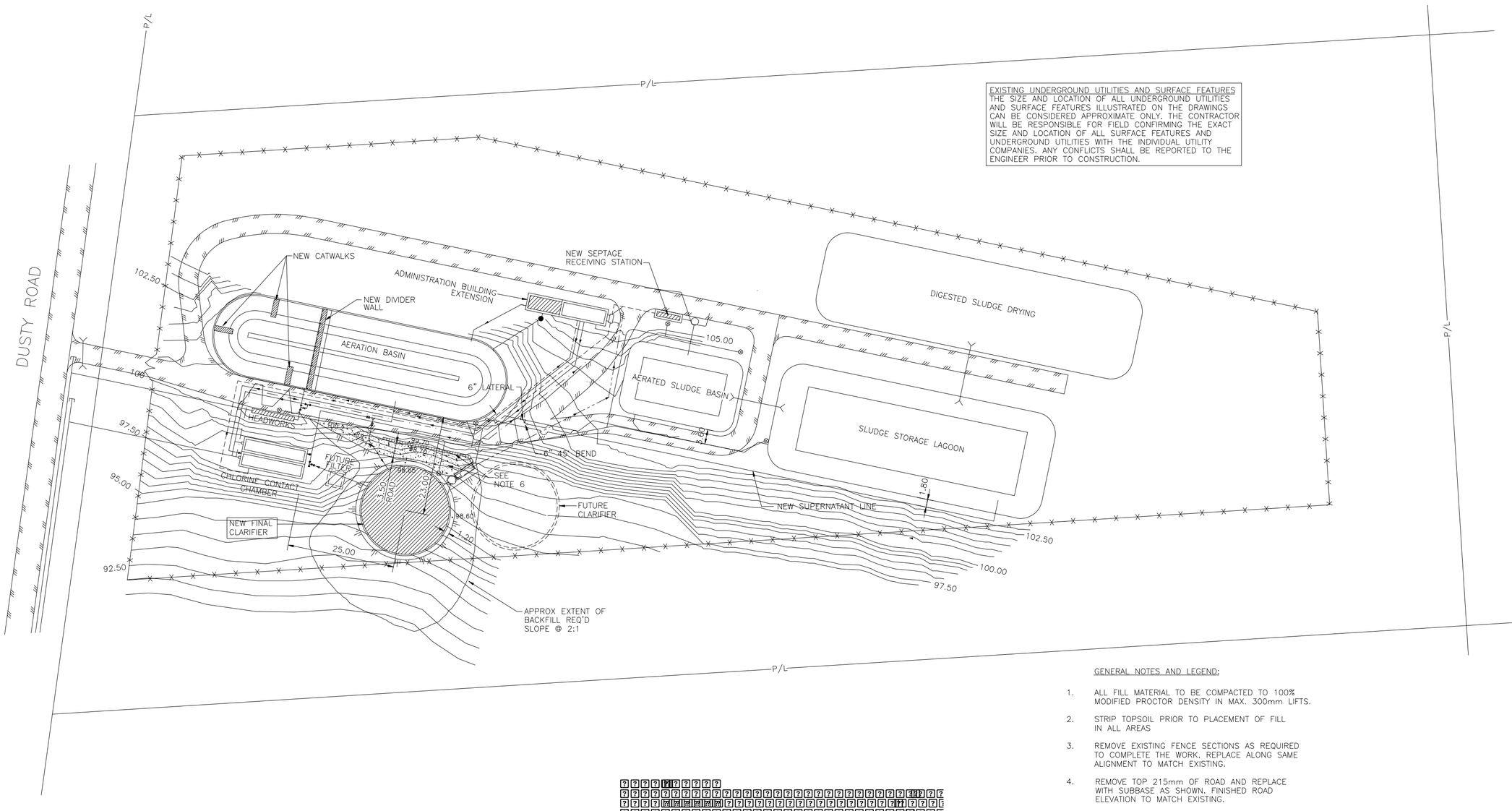
WASTEWATER TREATMENT PLANT UPGRADE

Stanley Consulting

Stanley Consulting Group Ltd.
Suite 1007, 7445–132 St.
Surrey, BC
V3W 1J8
Ph. (604) 597–0422
Fax (604) 591–1856
Email: saelensy@stantech.com

JOB No. 1–17–25100
OCTOBER 1999

1251C01A.dwg



GENERAL NOTES AND LEGEND:

1. ALL FILL MATERIAL TO BE COMPACTED TO 100% MODIFIED PROCTOR DENSITY IN MAX. 300mm LIFTS.
2. STRIP TOPSOIL PRIOR TO PLACEMENT OF FILL IN ALL AREAS
3. REMOVE EXISTING FENCE SECTIONS AS REQUIRED TO COMPLETE THE WORK. REPLACE ALONG SAME ALIGNMENT TO MATCH EXISTING.
4. REMOVE TOP 215mm OF ROAD AND REPLACE WITH SUBBASE AS SHOWN. FINISHED ROAD ELEVATION TO MATCH EXISTING.
5. MODIFY ROAD TOP WIDTH AS REQUIRED TO MATCH EXISTING.
6. CONSTRUCT 3.5m ACCESS ROAD TO CLARIFIER, GRADE/FILL AS REQ'D. INSTALL 2 HIGH x 20m LG. CONC. LOCK BLOCK WALL ON UPPER SIDE. SURFACE ROAD WITH 300mm DEPTH – COMPACTED 19mm CRUSHED GRAVEL BASE

● 98.60 PROPOSED SURFACE ELEVATION

EDGE OF ROADWAY

⊗ PROPOSED YARD HYDRANT

BENCHMARK: TOP OF CONCRETE, SOUTH–EAST CORNER OF HEADWORKS, ELEVATION 101.06

1251C02A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.03.01	RAF

DRAWING STATUS

SEAL

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Stanley Consulting Group Ltd.
Suite 1007, 7445–132 St.
Surrey, BC
V3W 1J8
Ph. (604) 597–0422
Fax (604) 591–1856
Email: saelensy@stantech.com

DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
PH	DAB

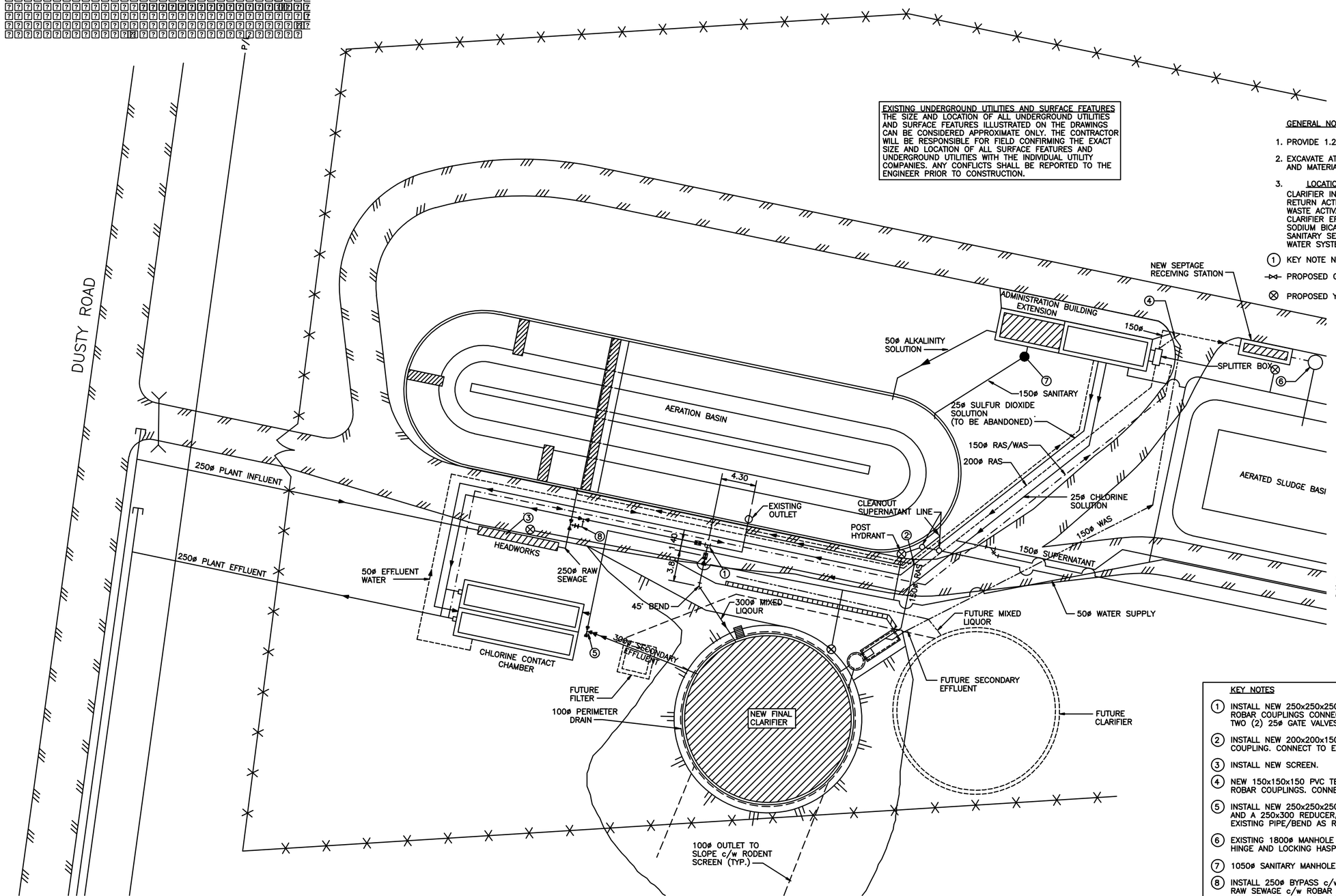
SCALE 1:500

CLIENT: DISTRICT OF SECHELT

TITLE: DUSTY ROAD WWTP UPGRADE

SITE PLAN

DATE DRAWN FEB 1998
SHEET
JOB NO. 1–17–25100
REVISION – / 5 STATUS NO.
DRAWING NO. C02



EXISTING UNDERGROUND UTILITIES AND SURFACE FEATURES
THE SIZE AND LOCATION OF ALL UNDERGROUND UTILITIES AND SURFACE FEATURES ILLUSTRATED ON THE DRAWINGS CAN BE CONSIDERED APPROXIMATE ONLY. THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD CONFIRMING THE EXACT SIZE AND LOCATION OF ALL SURFACE FEATURES AND UNDERGROUND UTILITIES WITH THE INDIVIDUAL UTILITY COMPANIES. ANY CONFLICTS SHALL BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.

GENERAL NOTES AND LEGEND:

1. PROVIDE 1.2m MIN. COVER OVER ALL BURIED PIPING.
2. EXCAVATE AT ALL FITTING LOCATIONS TO CONFIRM PIPE SIZE AND MATERIAL PRIOR TO ORDERING FITTINGS.
3.

LOCATION	DIA.(ø)	MATERIAL
CLARIFIER INFLUENT	300	PVC DR 35
RETURN ACTIVATED SLUDGE (RAS)	150/200	PVC CL 100
WASTE ACTIVATED SLUDGE (WAS)	150	PVC CL 100
CLARIFIER EFFLUENT	300	PVC DR 35
SODIUM BICARBONATE SOLUTION	50	PVC SCH 80
SANITARY SEWER	150	PVC DR 35
WATER SYSTEM	50	PE SERIES 160

(1) KEY NOTE NUMBER
PROPOSED GATE VALVE
⊗ PROPOSED YARD HYDRANT

NOTE:
SEE DWG C02 FOR CONTINUATION OF SUPERNATANT AND WATER LINES

KEY NOTES

1. INSTALL NEW 250x250x250 TEE WITH 250x300 REDUCER. ROBAR COUPLINGS CONNECT TO EXISTING PVC PIPE AS REQUIRED. TWO (2) 25ø GATE VALVES c/w VALVE BOX.
2. INSTALL NEW 200x200x150 PVC WYE c/w ROBAR COUPLING. CONNECT TO EXISTING PIPE AS REQUIRED.
3. INSTALL NEW SCREEN.
4. NEW 150x150x150 PVC TEE c/w THRUST BLOCK AND ROBAR COUPLINGS. CONNECT TO EXISTING PIPE AS REQUIRED.
5. INSTALL NEW 250x250x250 PVC TEE c/w ROBAR COUPLINGS AND A 250x300 REDUCER, INV. ELEV. ±97.40, CONNECT TO EXISTING PIPE/BEND AS REQUIRED.
6. EXISTING 1800ø MANHOLE WELD 75mm GALV. LOCKING BAR c/w HINGE AND LOCKING HASP TO MANHOLE FRAME.
7. 1050ø SANITARY MANHOLE INV. ELEV. 104.10
8. INSTALL 250ø BYPASS c/w 250x250x250 TEE CONNECTION TO RAW SEWAGE c/w ROBAR COUPLINGS, 250ø GATE VALVE AND 250x250x250 TEE CONNECTION TO EXISTING MIXED LIQUOR c/w ROBAR COUPLINGS AS SHOWN.

1251C03A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.03.01	RAF

DRAWING STATUS

SEAL

Stanley Consulting
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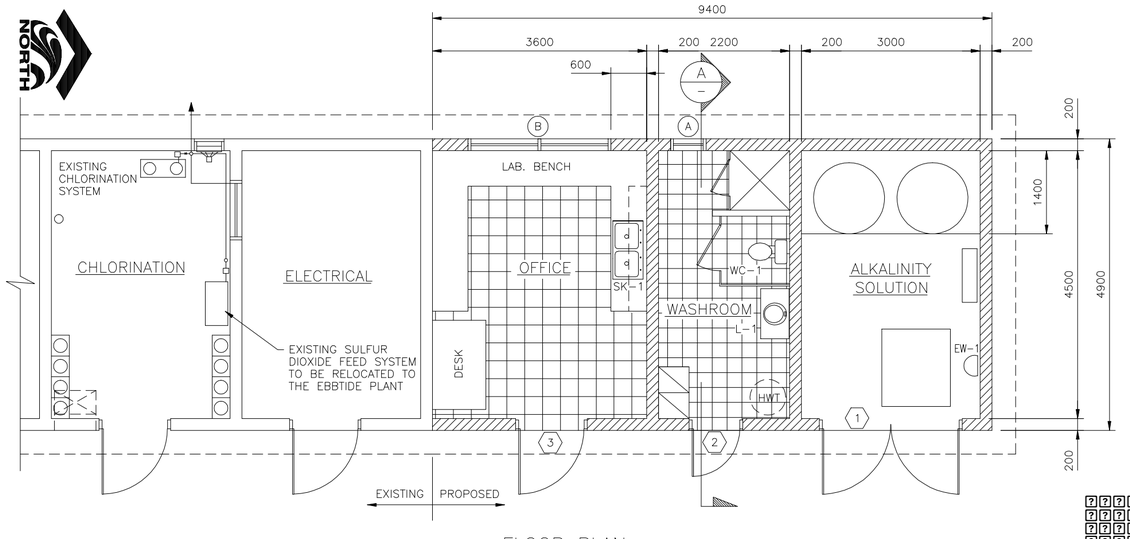
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AMD	DAB
SCALE	1:250

CLIENT: DISTRICT OF SECHELT
TITLE: DUSTY ROAD WWTP UPGRADE
YARD PIPING

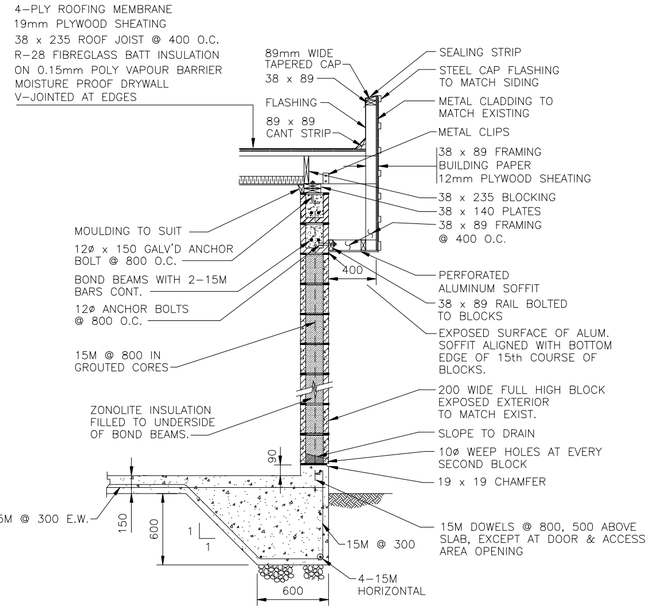
DATE DRAWN MAY 1998
SHEET
JOB NO. 1–17–25100
REVISION – / 5 STATUS NO.
DRAWING NO. C03



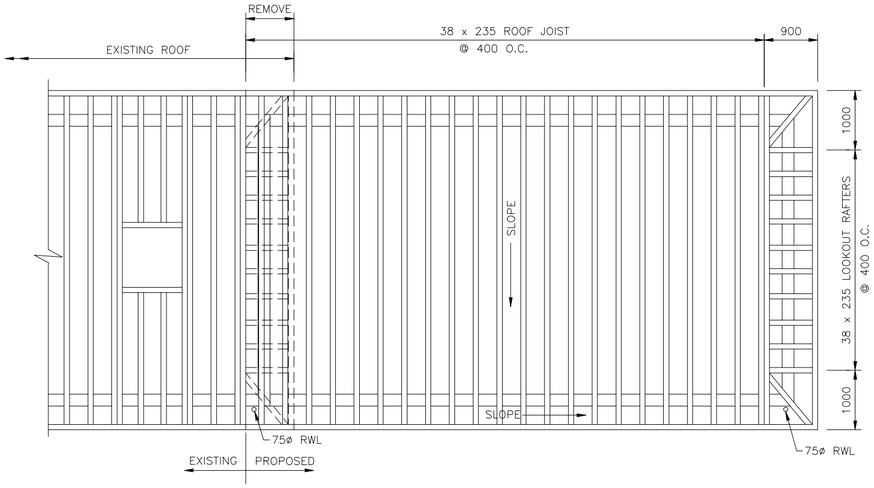
FLOOR PLAN
SCALE 1 : 50

NOTES:

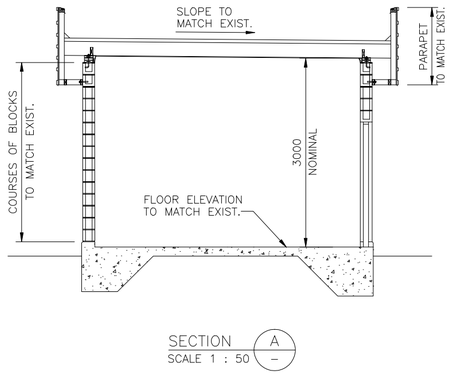
1. MASONRY – 15 MPa STRENGTH UNITS
2. LINTEL – OPENINGS LESS THAN 1200mm
   200 DEEP LINTEL 2–15m
   – OPENINGS GREATER THAN 1200mm
   400 DEEP LINTEL 2–15m
3. FILL ONE CORE c/w 15m EACH SIDE OF OPENING



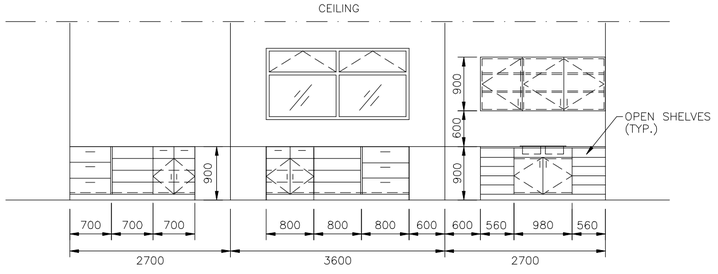
TYPICAL WALL & PARAPET SECTION
SCALE 1 : 25



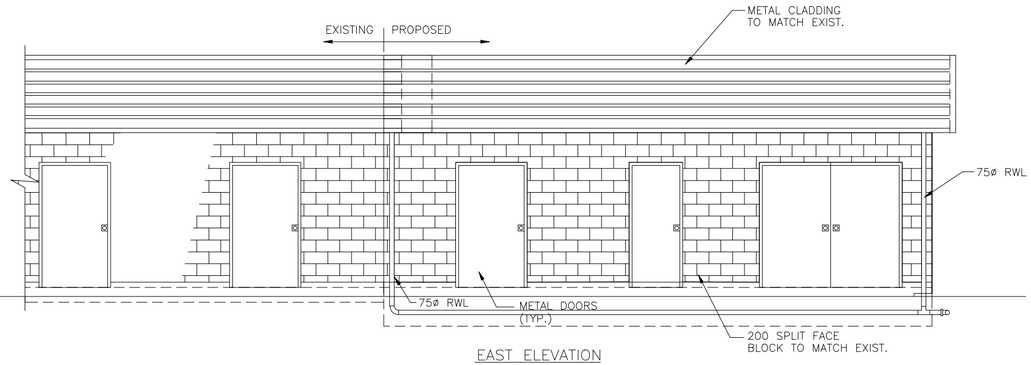
ROOF FRAMING PLAN
SCALE 1 : 50



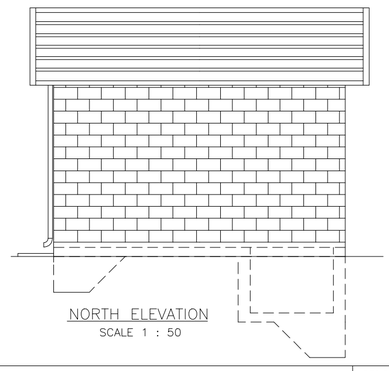
SECTION A
SCALE 1 : 50



OFFICE ELEVATION
SCALE 1 : 50



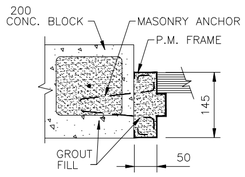
EAST ELEVATION
SCALE 1 : 50



NORTH ELEVATION
SCALE 1 : 50

METAL DOOR
FLUSH FACED VENEER
PAINT FINISH

DOOR TYPE #1



FRAME A

DOOR/WINDOW SCHEDULE

DOOR No.	FROM	TO	SIZE			DOOR TYPE	FRAME TYPE	REMARKS
			WIDTH	HEIGHT	THICK			
1	EXTERIOR	SODIUM BICARBONATE	2x1200	2050	45	1	A	METAL DOOR INSULATED
		ROOM						
2	EXTERIOR	WASHROOM	900	2050	45	1	A	METAL DOOR INSULATED
3	EXTERIOR	OFFICE	1200	2050	45	1	A	METAL DOOR INSULATED
A		WASHROOM	600	400			A	SAFETY GLASS
B		OFFICE	2400	1200			A	SAFETY GLASS

1251A01A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	KJS
4	APPROVAL FOR CONSTRUCTION	98.08.14	KJS
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

SEAL

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Email: saelensy@stantech.com

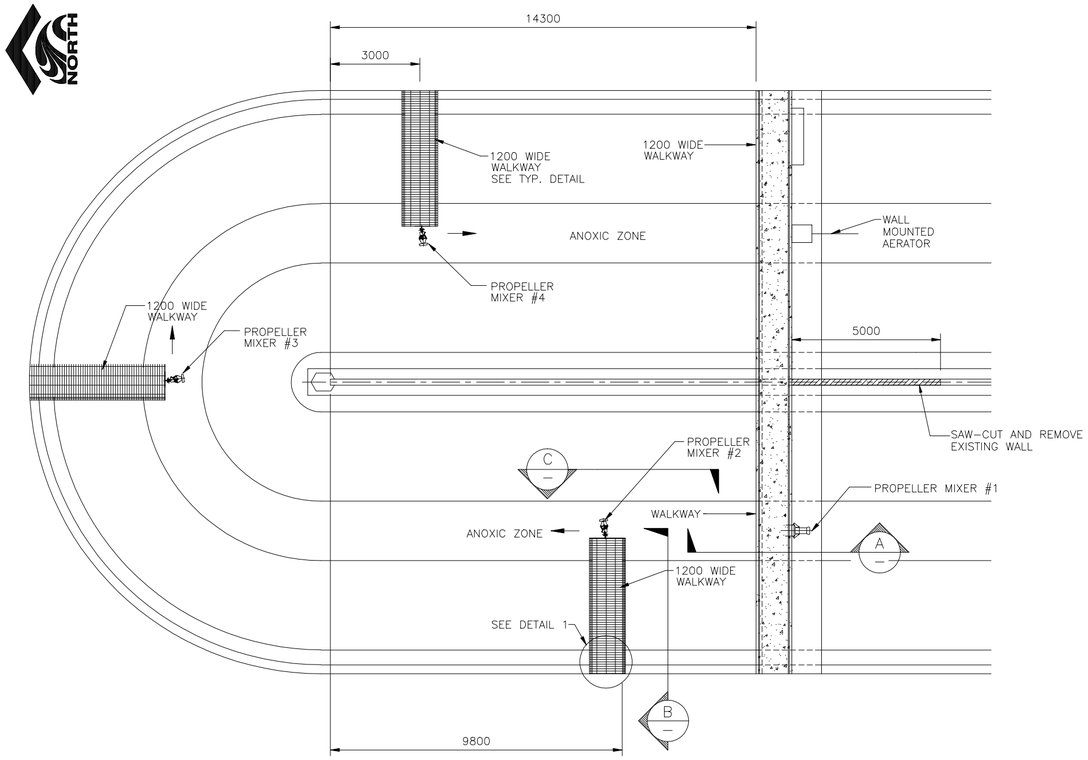
DESIGNED BY	APPROVED BY
DAB	KJS
DRAWN BY	CHECKED BY
AER	DAB

SCALE
AS SHOWN

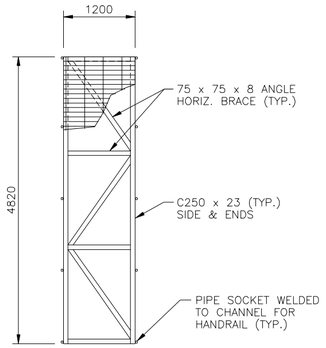
CLIENT
DISTRICT OF SECHELT

TITLE
DUSTY ROAD WWTP UPGRADE
ADMINISTRATION BLDG.–MODIFICATIONS
PLANS, ELEVATIONS & SECTIONS

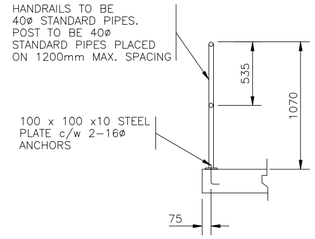
DATE DRAWN APRIL 1998
SHEET
JOB NO. 1–17–25100
REVISION – / STATUS NO. 5
DRAWING NO. A01



PLAN
SCALE 1:100

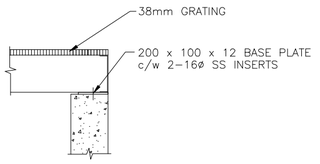


TYPICAL DETAIL OF WALKWAY
SCALE 1:50

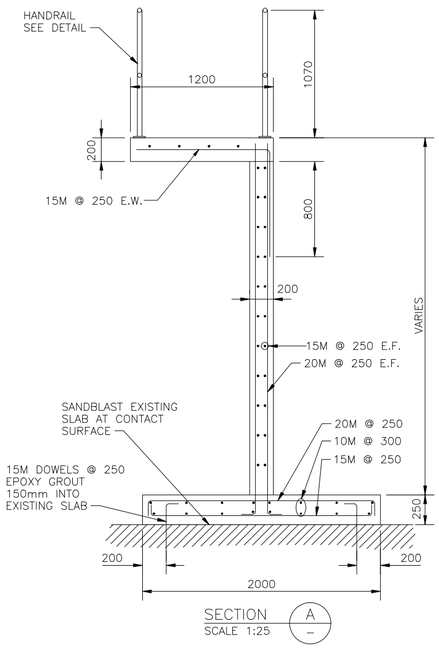


HANDRAIL DETAIL
SCALE 1:25

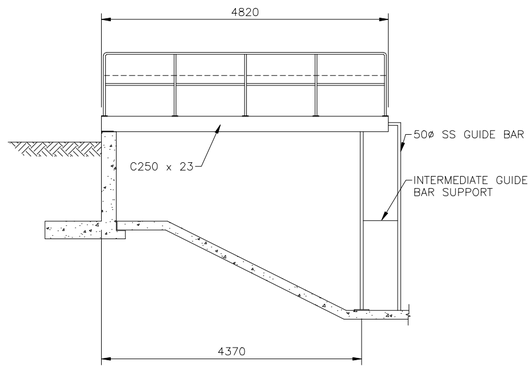
NOTE:
ALL EXPOSED METAL TO BE HOT DIP GALVANIZED UNLESS SPECIFIED OTHERWISE.



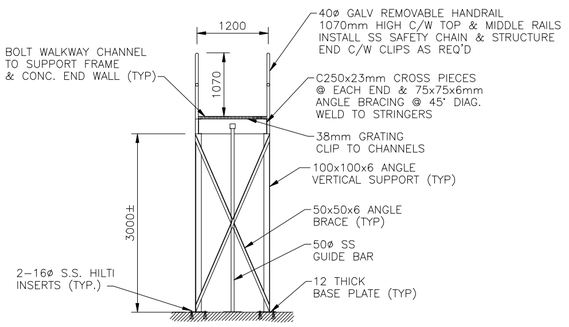
DETAIL 1
SCALE 1:20



SECTION A
SCALE 1:25



SECTION B
SCALE 1:50



SECTION C
SCALE 1:50

1251S01A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	KJS
4	APPROVAL FOR CONSTRUCTION	98.08.14	KJS
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

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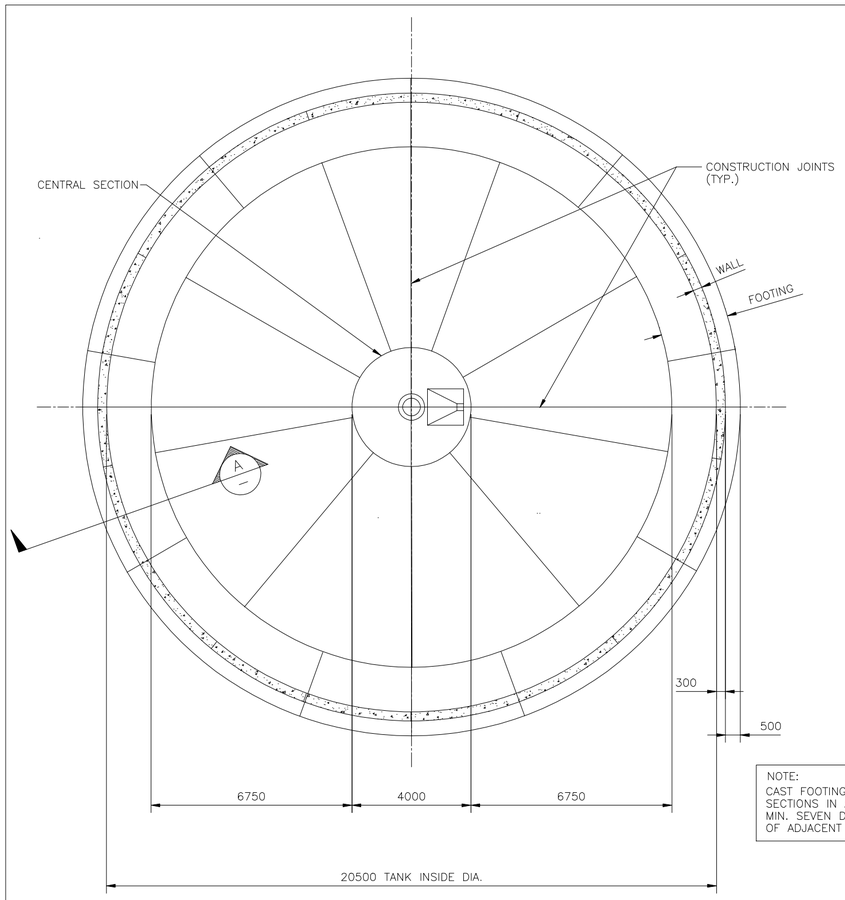
DESIGNED BY	APPROVED BY
KJS	RAF
DRAWN BY	CHECKED BY
AER	KJS

SCALE
AS SHOWN

CLIENT
DISTRICT OF SECHELT

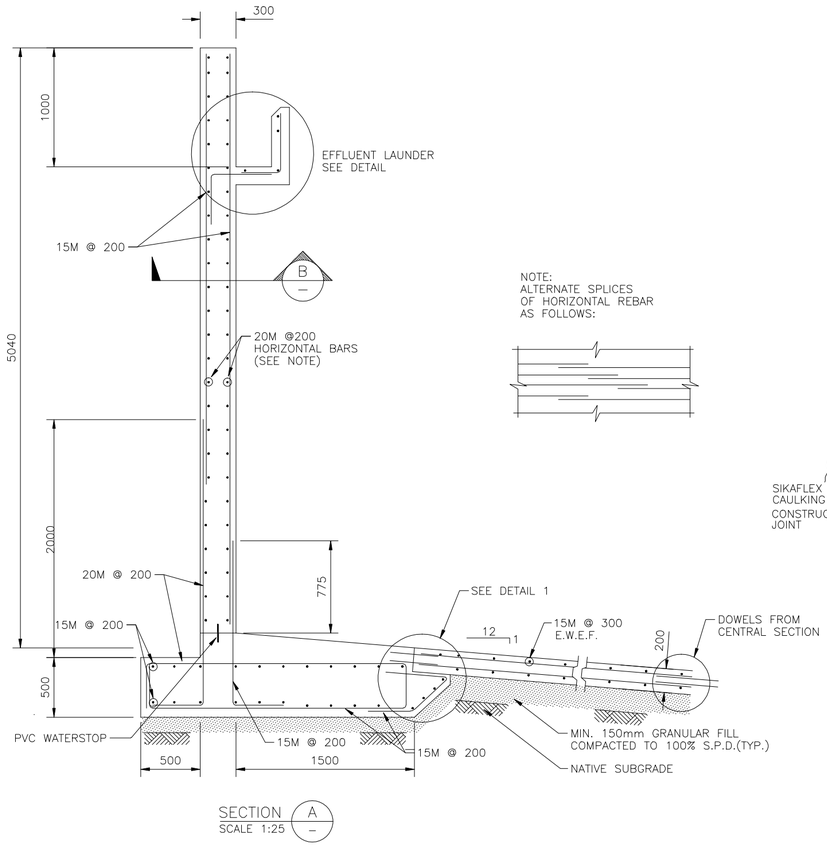
TITLE
DUSTY ROAD WWTP UPGRADE
AERATION BASIN
PLAN, SECTIONS AND DETAILS

DATE DRAWN APRIL 1998
SHEET
JOB NO.
1-17-25100
REVISION –
DRAWING NO. S01
STATUS NO. 5



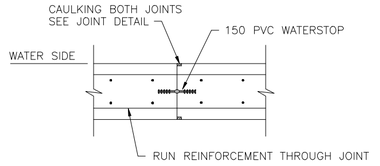
NOTE:
CAST FOOTINGS, WALLS & SLAB SECTIONS IN ALTERNATE POURS WITH MIN. SEVEN DAYS BETWEEN POURS OF ADJACENT SECTIONS.

PLAN – SECONDARY CLARIFIER
SCALE: 1:100



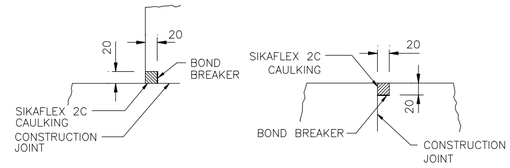
SECTION A
SCALE 1:25

NOTE:
ALTERNATE SPLICES OF HORIZONTAL REBAR AS FOLLOWS:



SECTION B
N.T.S.

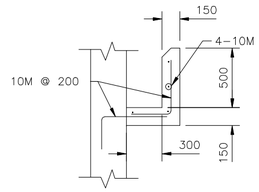
TYPICAL WALL CONSTRUCTION JOINT



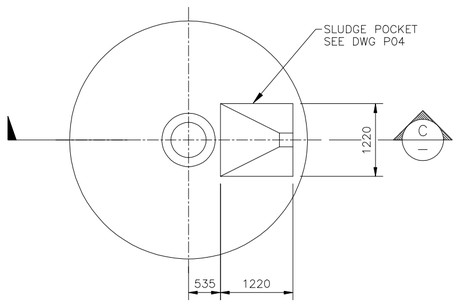
AT CORNERS

FLAT SURFACES

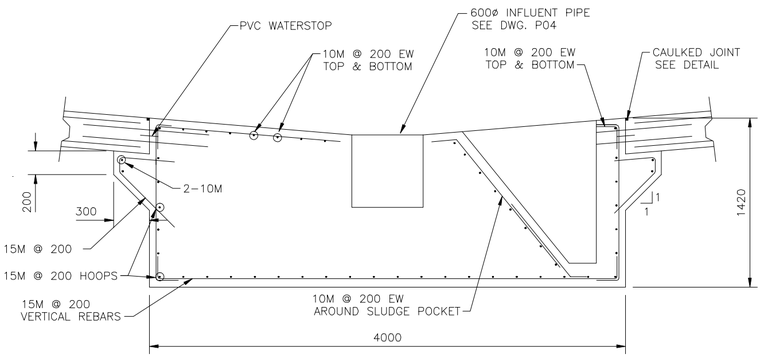
JOINT DETAIL AT SURFACES WHICH ARE IN CONTACT WITH LIQUIDS
N.T.S.



EFFLUENT LAUNDER
SCALE: 1:25

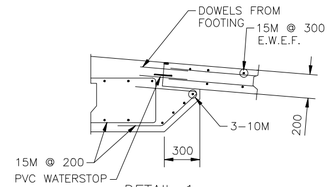


PLAN
SCALE: 1:50

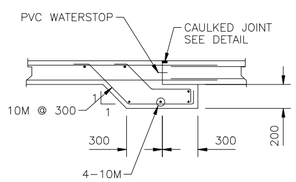


SECTION C
SCALE 1:25

BASE–SLAB CENTRAL SECTION



DETAIL 1
SCALE: 1:25



TYPICAL CONSTRUCTION JOINT IN FLOOR SLAB
SCALE: 1:25

REINFORCING

ALL REINFORCING TO BE GRADE 400. COVER = 75mm FOR CONCRETE CAST AGAINST EARTH, 50mm ELSEWHERE. SPLICE OR ANCHORAGE LENGTHS, UNLESS NOTED:

BAR SIZE	ANCHOR OR SPLICE LENGTH
10M	450mm
15M	625mm
20M	775mm
25M	1175mm
30M	1650mm

CONCRETE NOTES:

ALL CONCRETE TO HAVE A COMPRESSIVE STRENGTH OF 30 Mpa AT 28 DAYS.
MAXIMUM AGGREGATE SIZE 20mm, SLUMP 75 ±25.
AIR 4–6%. MAXIMUM CEMENT CONTENT 335 Kg/m, INCLUDING 20% FLY ASH.

1251S02A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	KJS
4	APPROVAL FOR CONSTRUCTION	98.08.14	KJS
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

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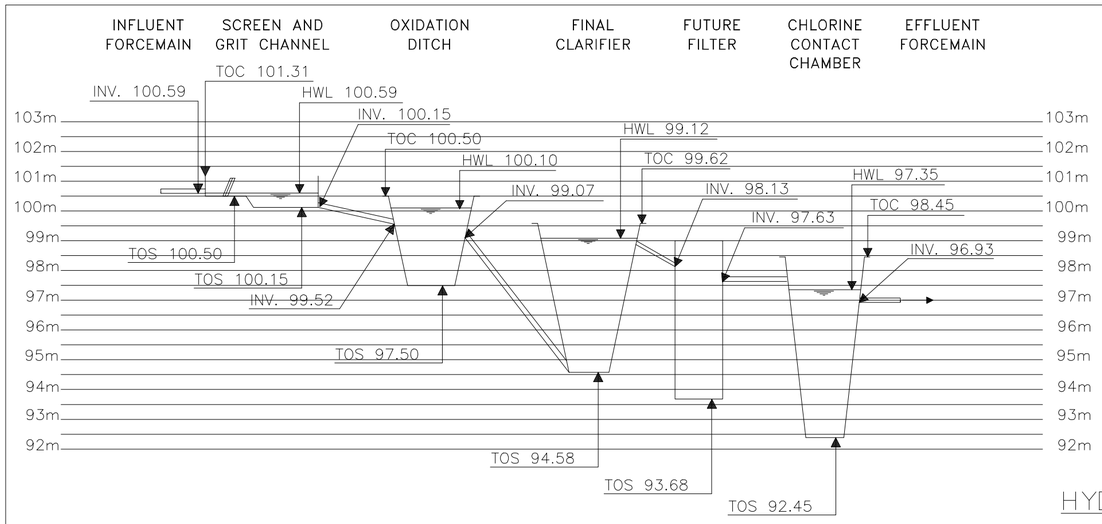
DESIGNED BY	APPROVED BY
KJS	RAF
DRAWN BY	CHECKED BY
AMD	KJS

SCALE
AS SHOWN

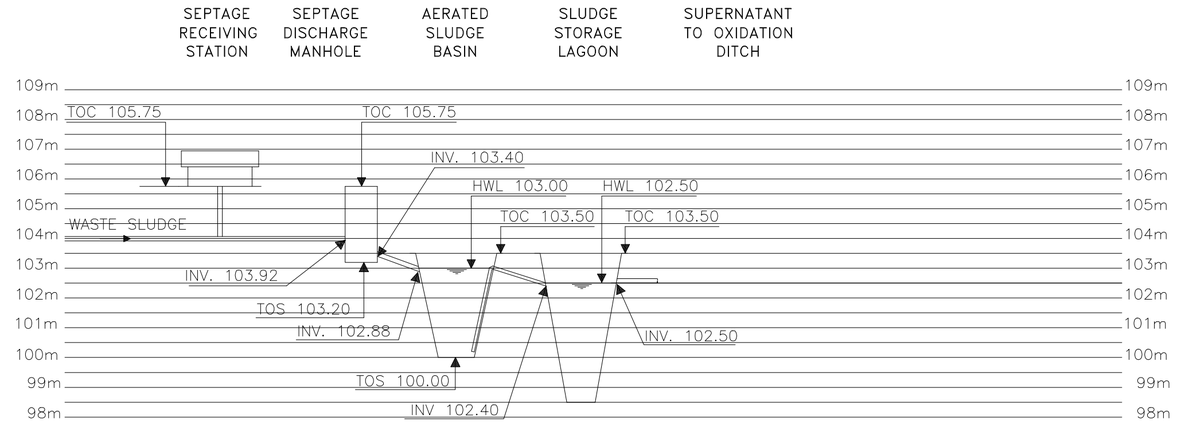
CLIENT
DISTRICT OF SECHELT

TITLE
DUSTY ROAD WWTP UPGRADE
SECONDARY CLARIFIER
PLAN, SECTIONS AND DETAILS

DATE DRAWN JUNE 1998
SHEET
JOB NO. 1–17–25100
REVISION – / STATUS NO. 5
DRAWING NO. S02

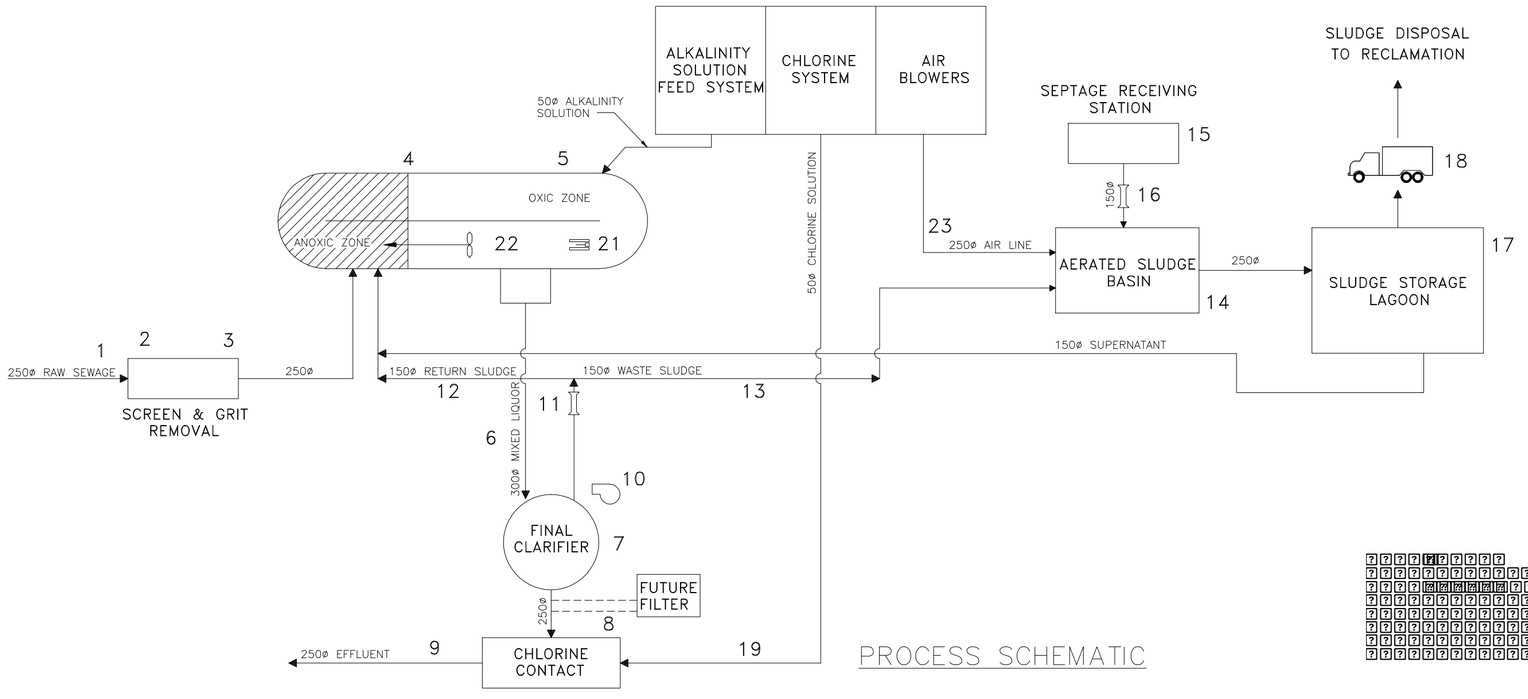


LIQUID PROCESS STREAM



SLUDGE PROCESS STREAM

HYDRAULIC PROFILE



PROCESS SCHEMATIC

1 RAW INFLUENT		2 MECHANICAL BAR SCREEN	3 EXISTING GRIT CHANNEL	4 OXIDATION DITCH ANOXIC ZONE	5 OXIC ZONE	6 MIXED LIQUOR	7 FINAL CLARIFIER	8 EXISTING CHLORINE CONTACT TANK	9 FINAL EFFLUENT	10 RETURN/WASTE ACTIVATED SLUDGE PUMP	11 RETURN/WASTE SLUDGE FLOW	12 RETURN SLUDGE	13 WASTE SLUDGE
2160 m³/d (DESIGN)	7400 m³/d (1PUMP)	11,000 m³/d	11,000 m³/d	810 m³	1650 m³	5400 m³/d	17.8m ø	131 m³	10mg/L BOD	135 m³/h	0–200 m³/h	0–135 m³/h	216 kg/d
5400 m³/d (PDF)	11,000 m³/d (2 PUMPS)	11,000 m³/d							10 mg/L SS				(1%)
14	15	16	17	18	19	20	21	22	23	24	25	26	27
EXISTING AERATED SLUDGE BASIN	SEPTAGE RECEIVING STATION	SEPTAGE FLOW MEASUREMENT	EXISTING SLUDGE STORAGE LAGOON	SLUDGE DISPOSAL TO LAND	EXISTING CHLORINE FEED	ALKALINITY SOLUTION FEED	ASPIRATING AERATORS	MIXED LIQUOR MIXER	AIR LINE				
765 m³	21.7 m³/d	0–150 m³/h	3840 m³	18.8m³/d		0 – 130 l/hr	4 @ 22.4 kw	1 @ 3.7 kw	26.8 m³/min				
				564kg/d				75 L/s	58.6 kPa				

125 P01A DWG

NO.	DATE	DESCRIPTION	BY	APPROVED
6		MICROFILMED		
5		PLAN OF RECORD	99.10.15	DAB
4		APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3		FOR TENDER	98.07.07	RAF
2		FOR APPROVAL	98.06.16	DAB
1		PRELIMINARY	98.05.08	DAB

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED

DRAWING STATUS

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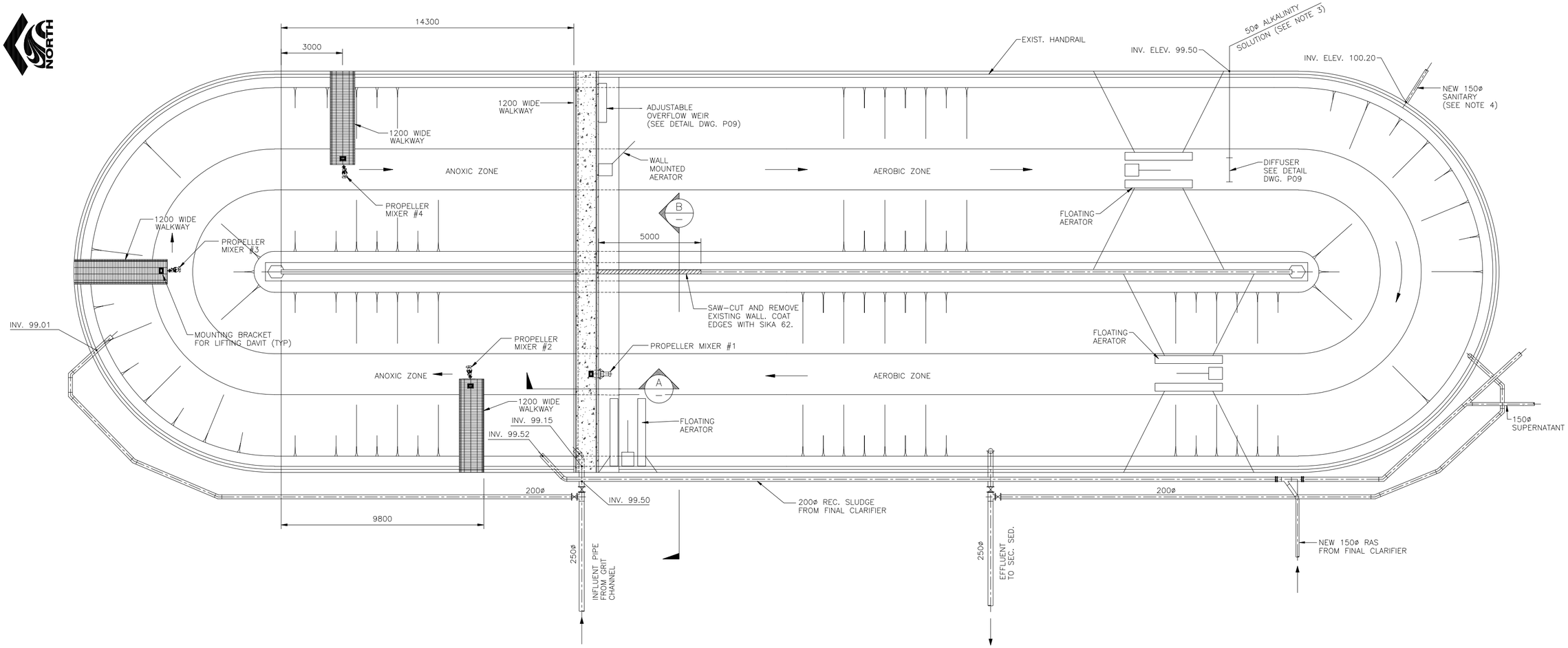
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AER	DAB

SCALE: N.T.S.

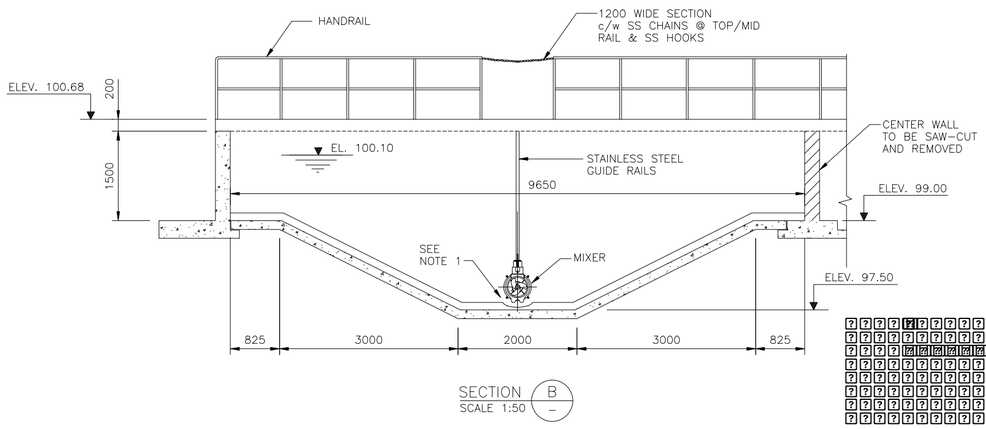
CLIENT: DISTRICT OF SECHELT

TITLE: DUSTY ROAD WWTP UPGRADE
PROCESS SCHEMATIC & HYDRAULIC PROFILE

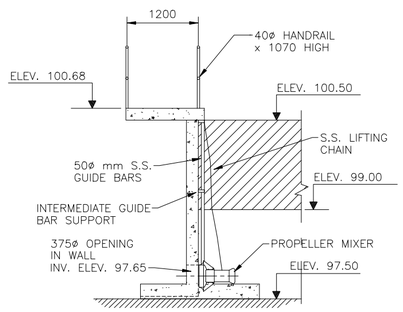
DATE DRAWN APRIL 1998
SHEET
JOB NO. 1–17–25100
REVISION – / STATUS NO. 5
DRAWING NO. P01



PLAN
SCALE 1:100



SECTION B
SCALE 1:50



SECTION A
SCALE 1:50

NOTES:

1. CONTOUR WALL FOOTING TO SUIT MIXER (BOTH SIDES).
2. REMOVE EXISTING HANDRAIL AS REQUIRED TO PROVIDE OPENINGS FOR PROPOSED WALKWAYS. SUPPORT POSTS TO BE PROVIDED AT EACH CUT LOCATION.
3. CORE THROUGH WALL & SEAL WITH CRYSTAL T1 NON-SHRINK GROUT SECURE PIPE TO WALL WITH DIFFUSER BRACKET @1000 ON CENTER.
4. CORE THROUGH WALL & SEAL WITH CRYSTAL T1 NON-SHRINK GROUT.

1251P02A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

SEAL

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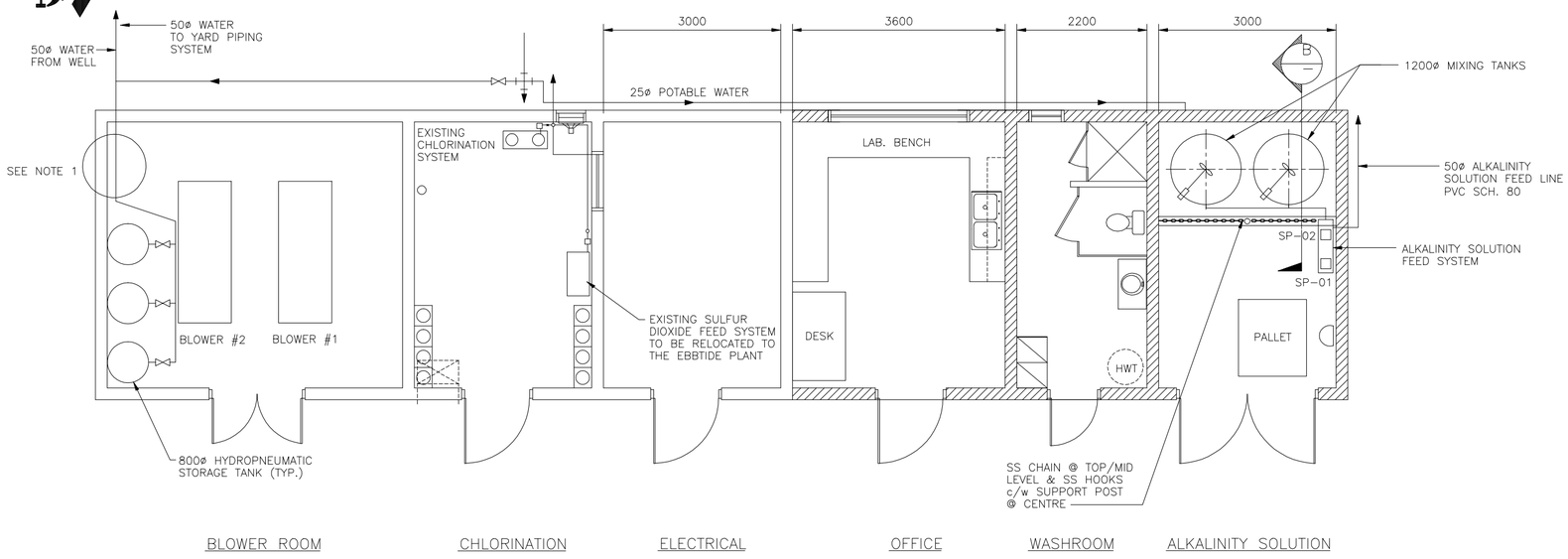
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AER	DAB

SCALE
AS SHOWN

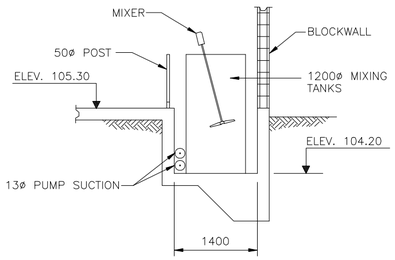
CLIENT
DISTRICT OF SECHELT

TITLE
DUSTY ROAD WWTP UPGRADE
AERATION BASIN PLAN

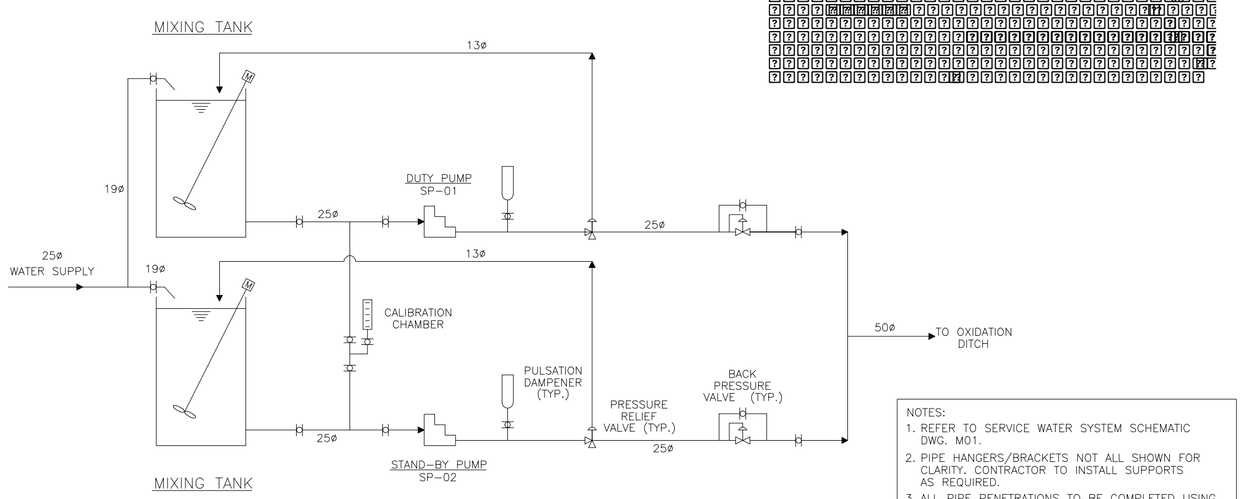
DATE DRAWN APRIL 1998
SHEET
JOB NO. 1-17-25100
REVISION – / 5 STATUS NO.
DRAWING NO. P02



PLAN
SCALE 1:50

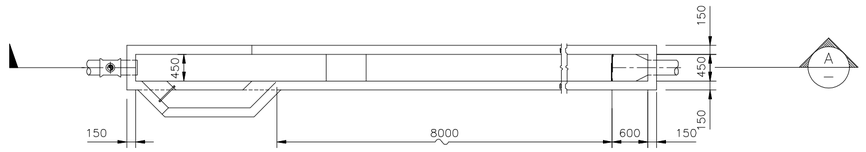


SECTION B
SCALE 1:50

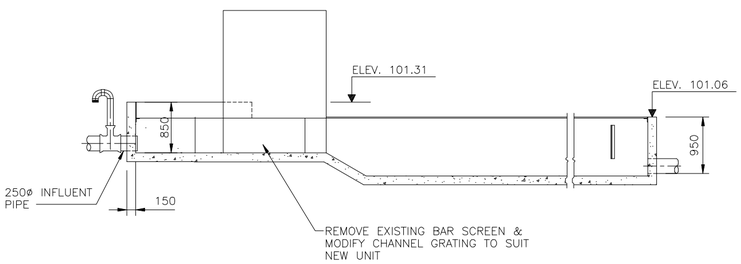


ALKALINITY SOLUTION SYSTEM
N.T.S.

NOTES:
1. REFER TO SERVICE WATER SYSTEM SCHEMATIC DWG. M01.
2. PIPE HANGERS/BRACKETS NOT ALL SHOWN FOR CLARITY. CONTRACTOR TO INSTALL SUPPORTS AS REQUIRED.
3. ALL PIPE PENETRATIONS TO BE COMPLETED USING LINK SEAL AND WALL SLEEVES, UNLESS NOTED OTHERWISE.
4. CONTRACTOR TO PROVIDE VICTAULIC COUPLINGS ADJACENT TO VALVES/FLOW METERS TO ALLOW EASY REMOVAL FOR MAINTENANCE.
5. PROVIDE SEISMIC RESTRAINTS FOR ALL PROCESS EQUIPMENT AS REQUIRED BY CODE.



PLAN
SCALE 1:50



SECTION A
SCALE 1:50

INLET WORKS

1251P03A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

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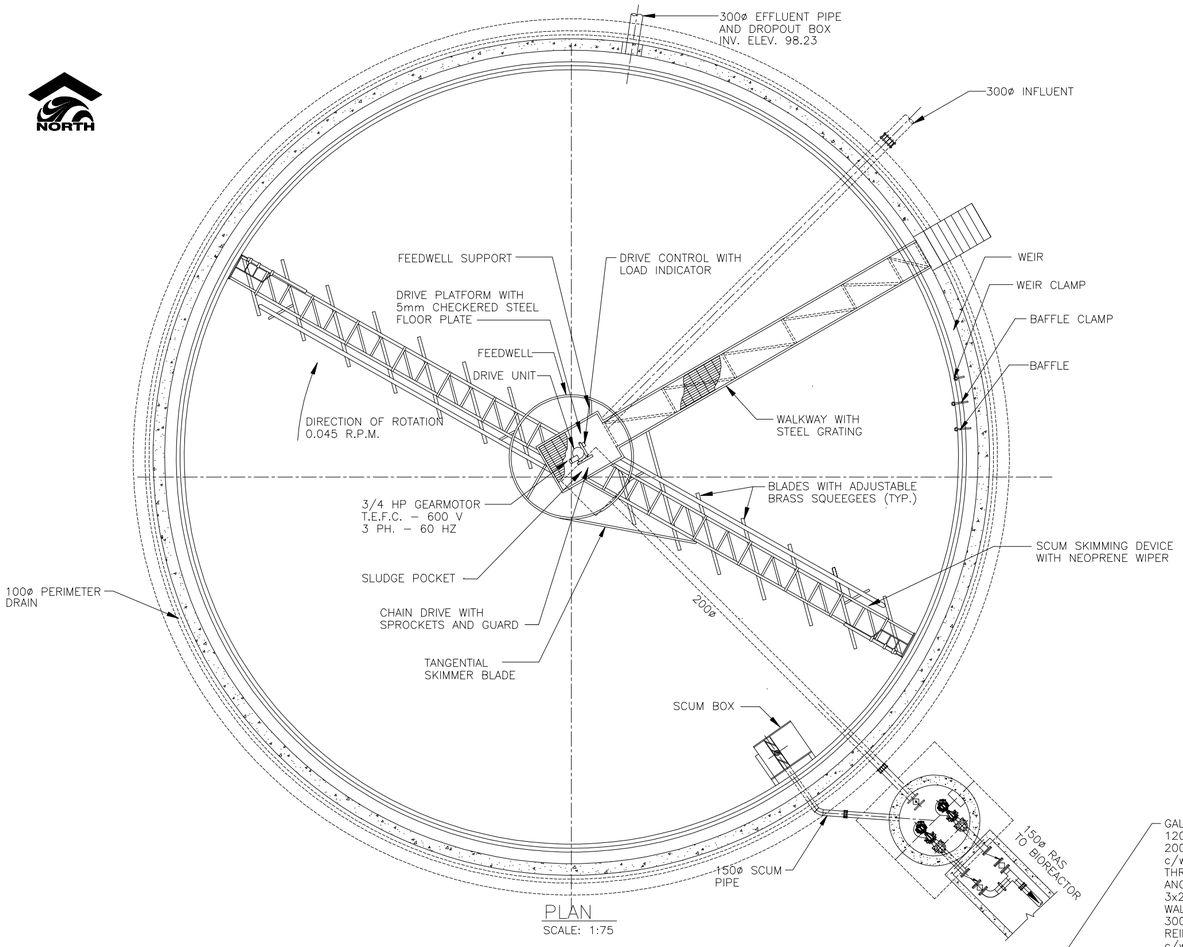
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AER	MC

SCALE
AS SHOWN

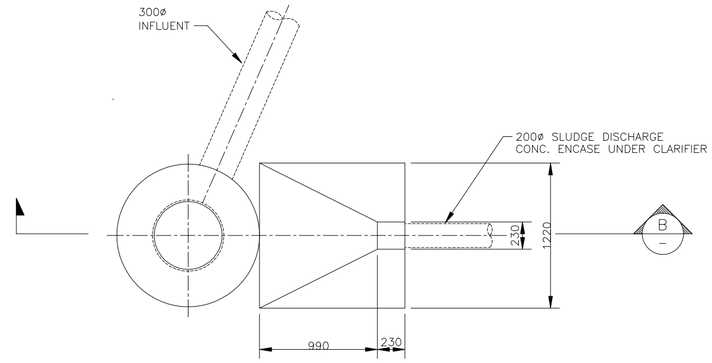
CLIENT
DISTRICT OF SECHELT

TITLE
DUSTY ROAD WWTP UPGRADE
ADMINISTRATION BUILDING MODIFICATIONS

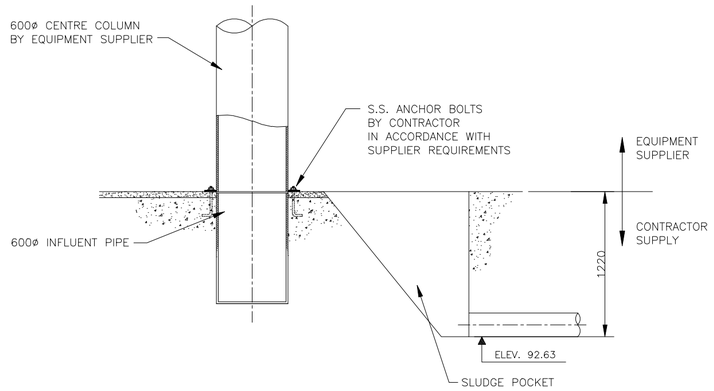
DATE DRAWN APRIL 1998
SHEET
JOB NO. 1-17-25100
REVISION – / 5 STATUS NO.
DRAWING NO. P03



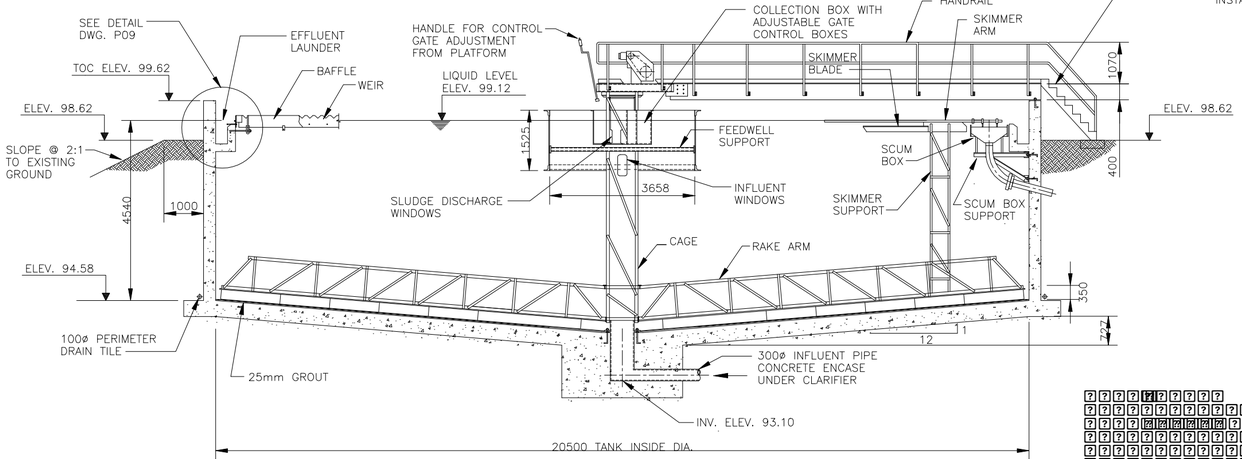
PLAN
SCALE: 1:75



PLAN
SCALE: 1:25



SLUDGE HOPPER DETAIL



TYPICAL SECTION
SCALE: 1:75

SECTION B–
SCALE 1:25

NOTES:
1. SEE SUPPLIERS SHOP DRAWING FOR DETAILS.
2. CONTRACTOR TO SUPPLY ALL ANCHOR BOLTS & GROUT.
3. REFER TO STRUCTURAL DRAWINGS AND SUPPLIER SHOP DRAWINGS FOR STRUCTURAL DETAILS.
4. CONCRETE ENCASE INFLUENT AND SLUDGE DISCHARGE PIPE UNDER CLARIFIER.
5. PIPE HANGERS/BRACKETS NOT ALL SHOWN FOR CLARITY. CONTRACTOR TO INSTALL SUPPORTS AS REQUIRED.
6. ALL PIPE PENETRATIONS TO BE COMPLETED USING LINK SEAL AND WALL SLEEVES, UNLESS NOTED OTHERWISE.
7. CONTRACTOR TO PROVIDE VICTAULIC COUPLINGS ADJACENT TO VALVES/FLOW METERS TO ALLOW EASY REMOVAL FOR MAINTENANCE.
8. PROVIDE SEISMIC RESTRAINTS FOR ALL PROCESS EQUIPMENT AS REQUIRED BY CODE.

125IP04A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

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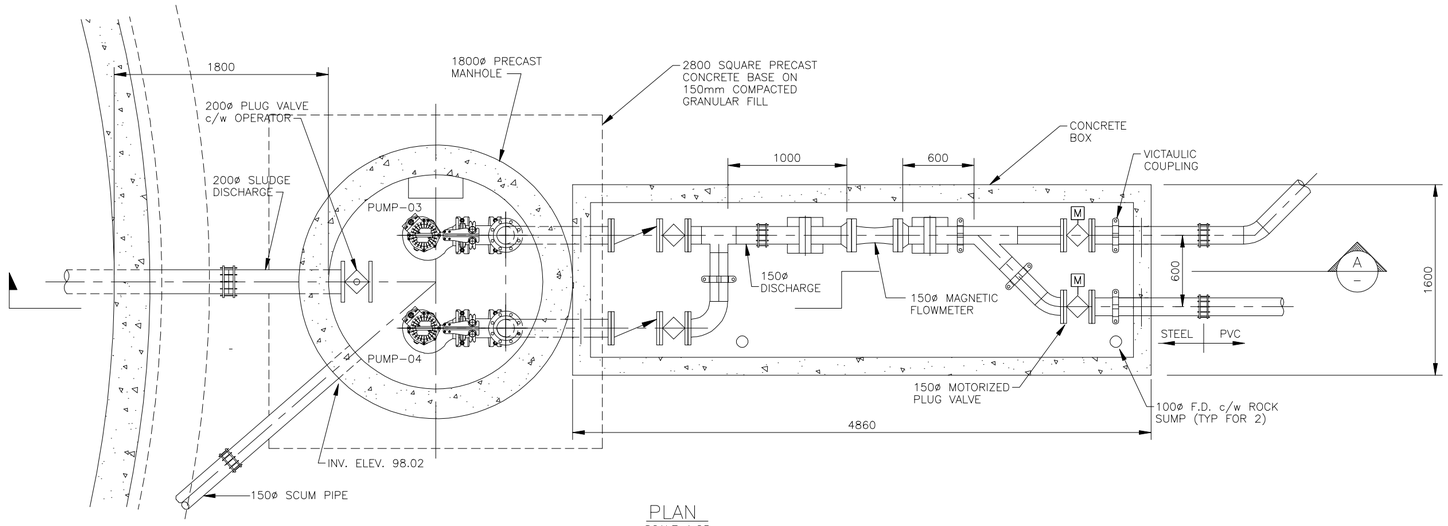
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AMD/AER	RAF

SCALE
AS SHOWN

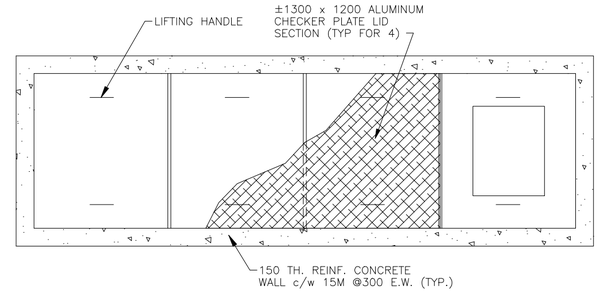
CLIENT
DISTRICT OF SECHELT

TITLE
DUSTY ROAD WWTP UPGRADE
SECONDARY CLARIFIER PLANS & SECTIONS

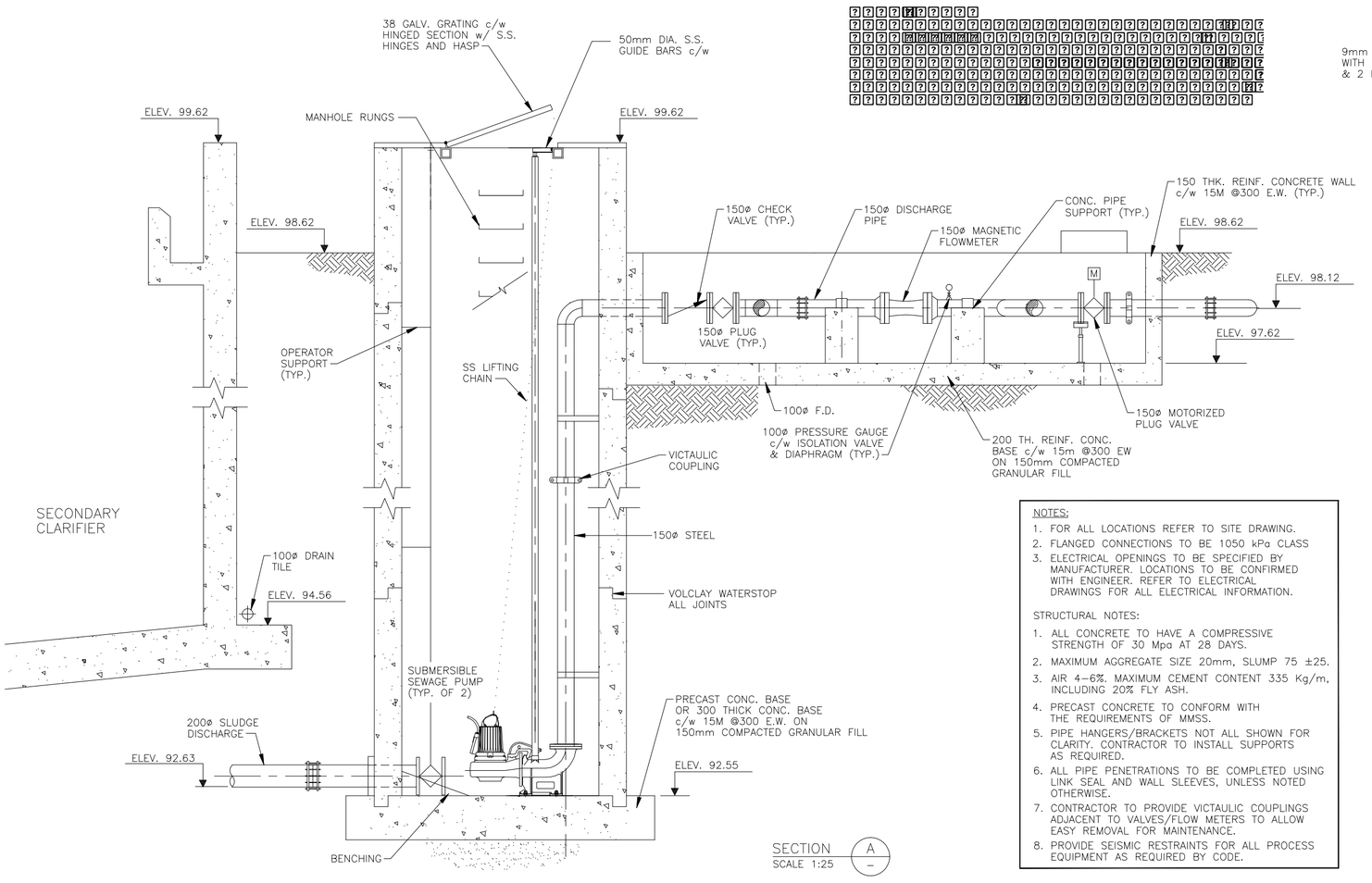
DATE DRAWN APRIL 1998
SHEET
JOB NO.
1–17–25100
REVISION – / 5 STATUS NO.
DRAWING NO.
P04



PLAN
SCALE 1:25



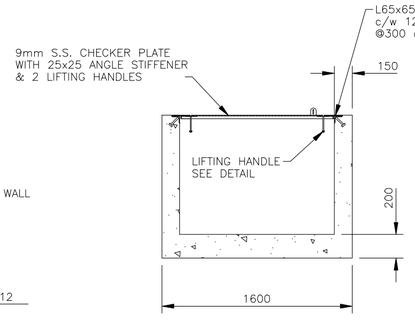
CHAMBER ACCESS HATCH PLAN
SCALE 1:25



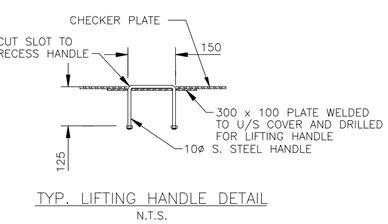
SECTION A–
SCALE 1:25

NOTES:
1. FOR ALL LOCATIONS REFER TO SITE DRAWING.
2. FLANGED CONNECTIONS TO BE 1050 kPa CLASS
3. ELECTRICAL OPENINGS TO BE SPECIFIED BY MANUFACTURER. LOCATIONS TO BE CONFIRMED WITH ENGINEER. REFER TO ELECTRICAL DRAWINGS FOR ALL ELECTRICAL INFORMATION.

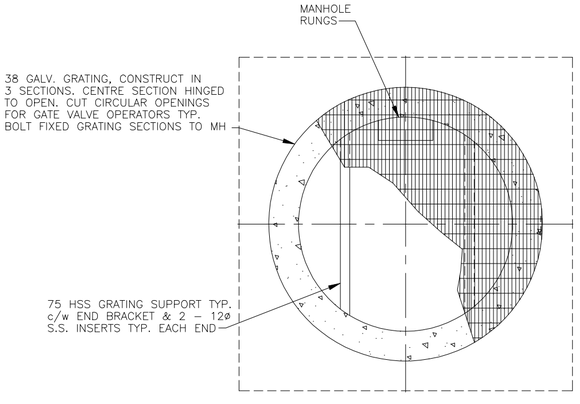
STRUCTURAL NOTES:
1. ALL CONCRETE TO HAVE A COMPRESSIVE STRENGTH OF 30 Mpa AT 28 DAYS.
2. MAXIMUM AGGREGATE SIZE 20mm, SLUMP 75 ±25.
3. AIR 4–6%. MAXIMUM CEMENT CONTENT 335 Kg/m, INCLUDING 20% FLY ASH.
4. PRECAST CONCRETE TO CONFORM WITH THE REQUIREMENTS OF MMSS.
5. PIPE HANGERS/BRACKETS NOT ALL SHOWN FOR CLARITY. CONTRACTOR TO INSTALL SUPPORTS AS REQUIRED.
6. ALL PIPE PENETRATIONS TO BE COMPLETED USING LINK SEAL AND WALL SLEEVES, UNLESS NOTED OTHERWISE.
7. CONTRACTOR TO PROVIDE VICTAULIC COUPLINGS ADJACENT TO VALVES/FLOW METERS TO ALLOW EASY REMOVAL FOR MAINTENANCE.
8. PROVIDE SEISMIC RESTRAINTS FOR ALL PROCESS EQUIPMENT AS REQUIRED BY CODE.



CHAMBER ACCESS HATCH DETAIL
SCALE 1:25



TYP. LIFTING HANDLE DETAIL
N.T.S.



MANHOLE HATCH PLAN
SCALE 1:25

125\P05A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

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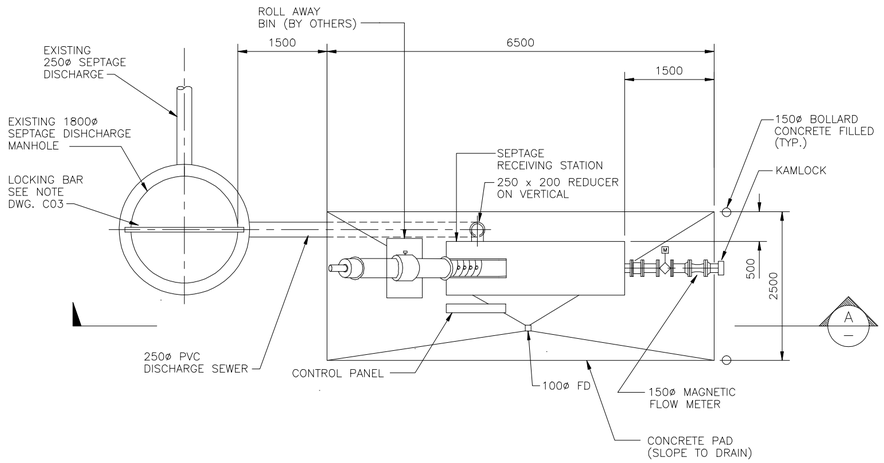
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AER	DAB
SCALE	
AS SHOWN	

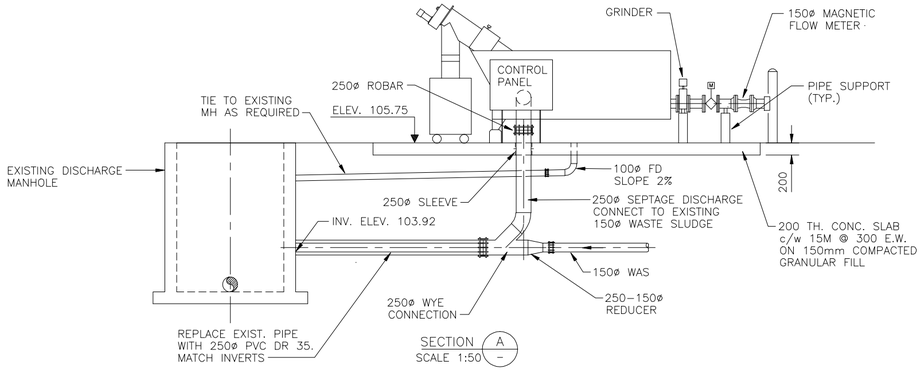
CLIENT: DISTRICT OF SECHELT

TITLE: DUSTY ROAD WWTP UPGRADE
RAS/WAS PUMP STATION
PLANS & SECTION

DATE DRAWN	APRIL 1998
SHEET	
JOB NO.	1–17–25100
REVISION	–
STATUS NO.	5
DRAWING NO.	P05



PLAN
SCALE 1:50



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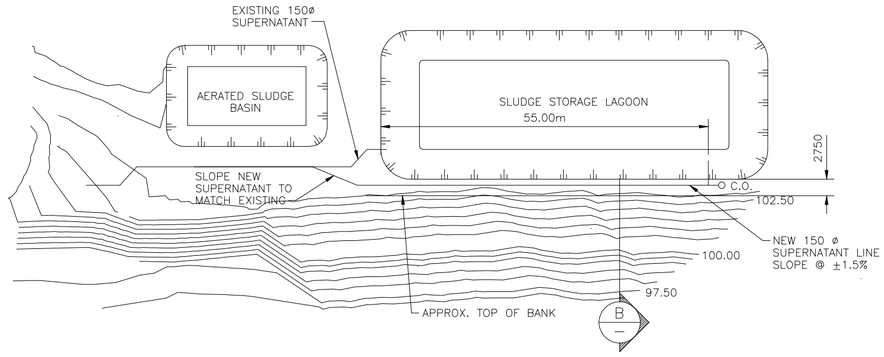
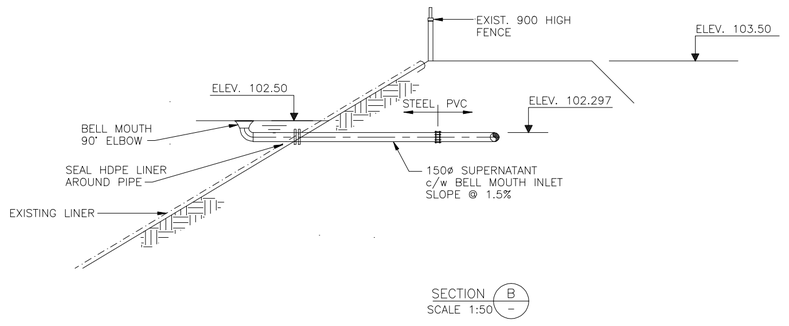


SITE PLAN
SCALE 1:500



SECTION B
SCALE 1:50

NOTES:

1. CONTRACTOR TO UTILIZE CONSTRUCTION METHODS AS REQUIRED TO INSTALL PIPE INCLUDING REMOVAL AND REINSTALLATION OF LINER, DIRECTIONAL DRILLING, ETC.
2. TIE NEW SUPERNATANT LINE TO EXISTING WITH 150ø ROBAR COUPLINGS.
3. RESTORE DISTURBED AREAS INCLUDING LINER, BERN AND FENCE TO MATCH EXISTING.
4. PIPE HANGERS/BRACKETS NOT ALL SHOWN FOR CLARITY. CONTRACTOR TO INSTALL SUPPORTS AS REQUIRED.
5. ALL PIPE PENETRATIONS TO BE COMPLETED USING LINK SEAL AND WALL SLEEVES, UNLESS NOTED OTHERWISE.
6. CONTRACTOR TO PROVIDE VICTAULIC COUPLINGS ADJACENT TO VALVES/FLOW METERS TO ALLOW EASY REMOVAL FOR MAINTENANCE.
7. PROVIDE SEISMIC RESTRAINTS FOR ALL PROCESS EQUIPMENT AS REQUIRED BY CODE.

1251P06A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
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3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

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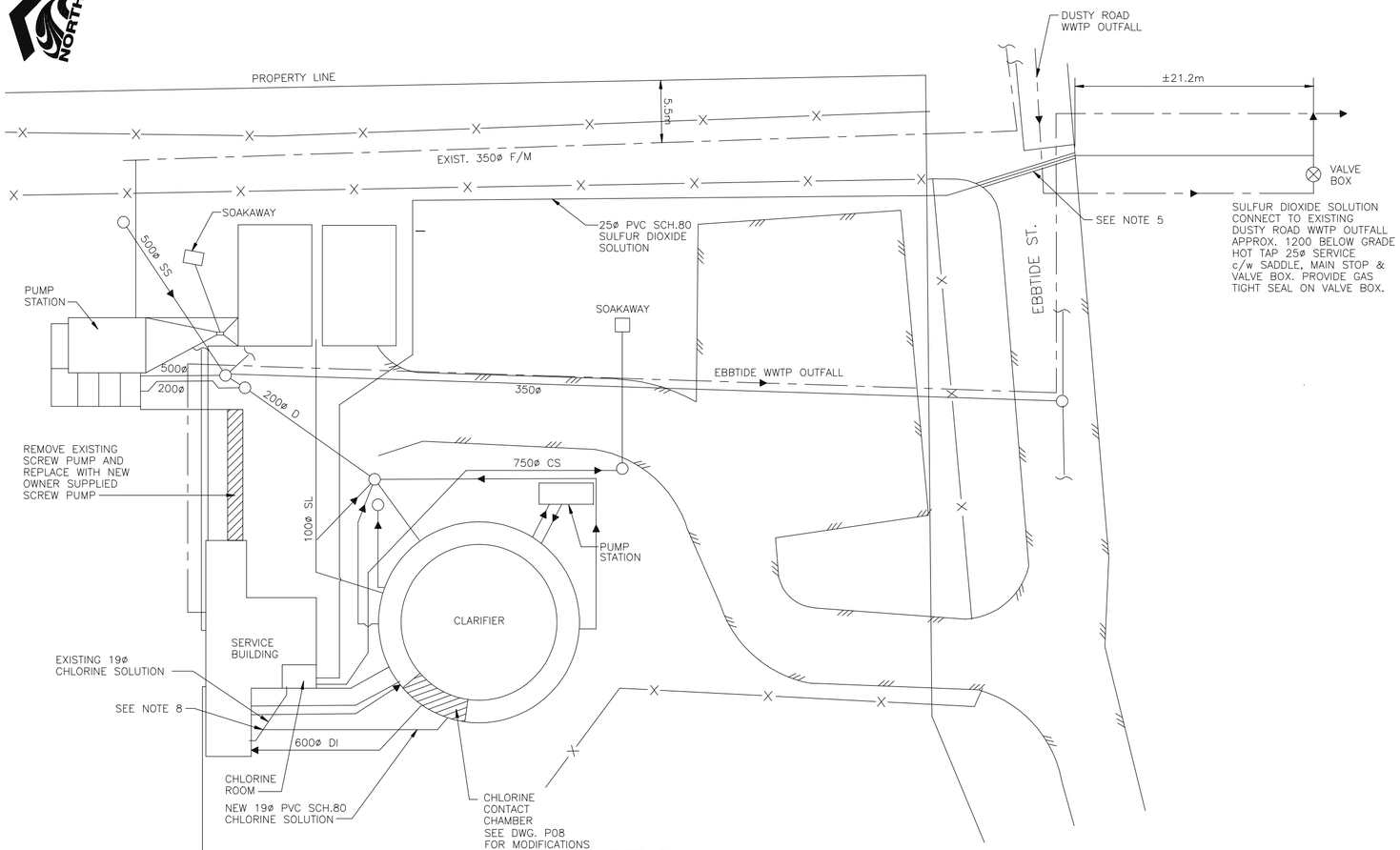
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AMD	RAF

SCALE
AS SHOWN

CLIENT
DISTRICT OF SECHELT

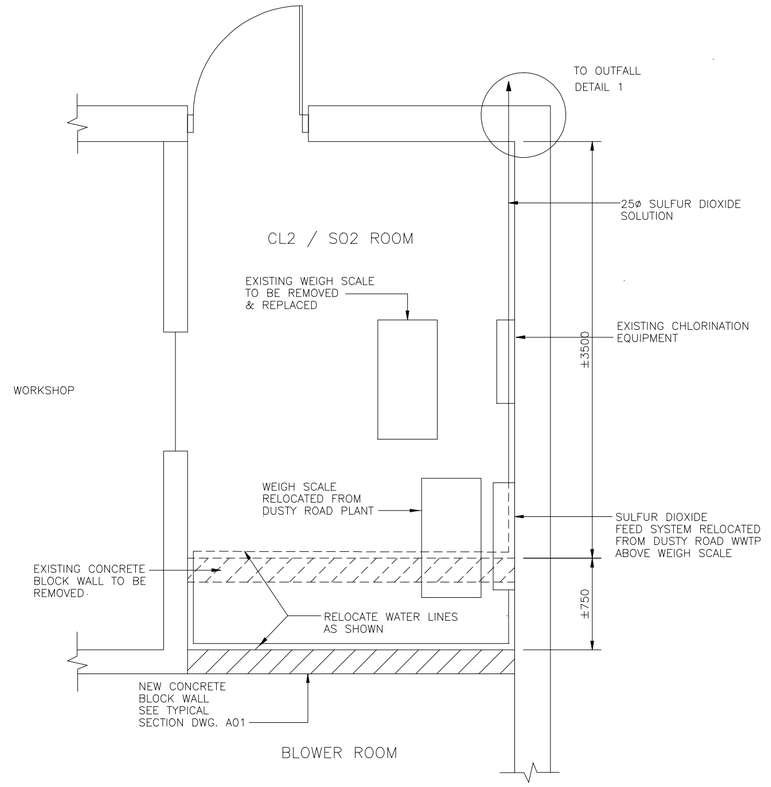
TITLE
DUSTY ROAD WWTP UPGRADE
MISCELLANEOUS MODIFICATIONS

DATE DRAWN MAY 1998
SHEET
JOB NO.
1-17-25100
REVISION -
STATUS NO. 5
DRAWING NO. P06



SITE PLAN

SCALE 1:250



CHLORINE ROOM MODIFICATIONS

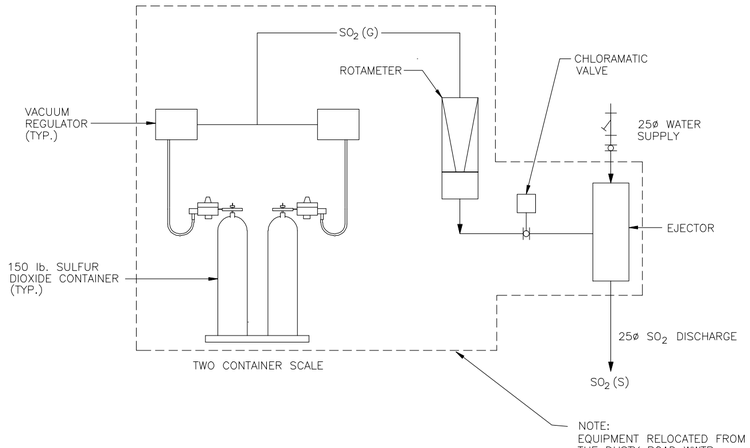
SCALE 1:25

NOTES:

1. SAW CUT PAVED AREAS. RESTORE WITH GRANULAR MATERIAL AND ASPHALT TO MATCH EXISTING.
2. INSTALL SULFUR DIOXIDE SOLUTION PIPING 600mm BELOW GRADE MIN..
3. CHLORINE ROOM MUST BE MAINTAINED AS GASTIGHT. NEW WALL CONSTRUCTION MUST BE COMPLETED PRIOR TO REMOVAL OF OLD WALL.
4. PROVIDE MARKER TAPE ALONG COMPLETE LENGTH OF SULFUR DIOXIDE SOLUTION LINE.
5. SOLUTION LINE UNDER EBBTIDE ST. TO BE ENCASED IN 75ø STEEL PIPE BORED UNDER ROAD.
6. CONNECT NEW 19ø CHLORINE SOLUTION TO EXISTING LINE WITH NEW 19 x 19 x 19 TEE AND FITTINGS AS REQUIRED.
7. PIPE HANGERS/BRACKETS NOT ALL SHOWN FOR CLARITY. CONTRACTOR TO INSTALL SUPPORTS AS REQUIRED.
8. ALL PIPE PENETRATIONS TO BE COMPLETED USING LINK SEAL AND WALL SLEEVES, UNLESS NOTED OTHERWISE.
9. CONTRACTOR TO PROVIDE VICTAULIC COUPLINGS ADJACENT TO VALVES/FLOW METERS TO ALLOW EASY REMOVAL FOR MAINTENANCE.
10. PROVIDE SEISMIC RESTRAINTS FOR ALL PROCESS EQUIPMENT AS REQUIRED BY CODE.

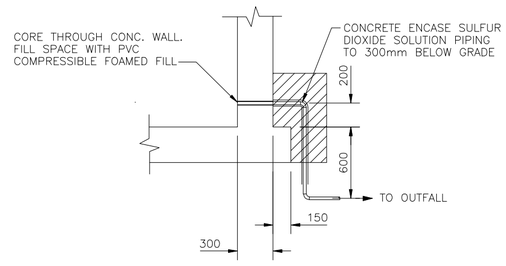
EXISTING UNDERGROUND UTILITIES AND SURFACE FEATURES:

The size and location of all underground utilities and surface features illustrated on the drawings can be considered approximate only. The contractor will be responsible for field confirming the exact size and location of all surface features and underground utilities with the individual utility companies.



SULFUR DIOXIDE SYSTEM SCHEMATIC

N.T.S.



DETAIL 1

SCALE 1:25

125\P07A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

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DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AMD	DAB

SCALE: AS SHOWN

CLIENT: DISTRICT OF SECHELT

TITLE: EBBTIDE WWTP
CHLORINATION/DECHLORINATION
SYSTEM MODIFICATIONS

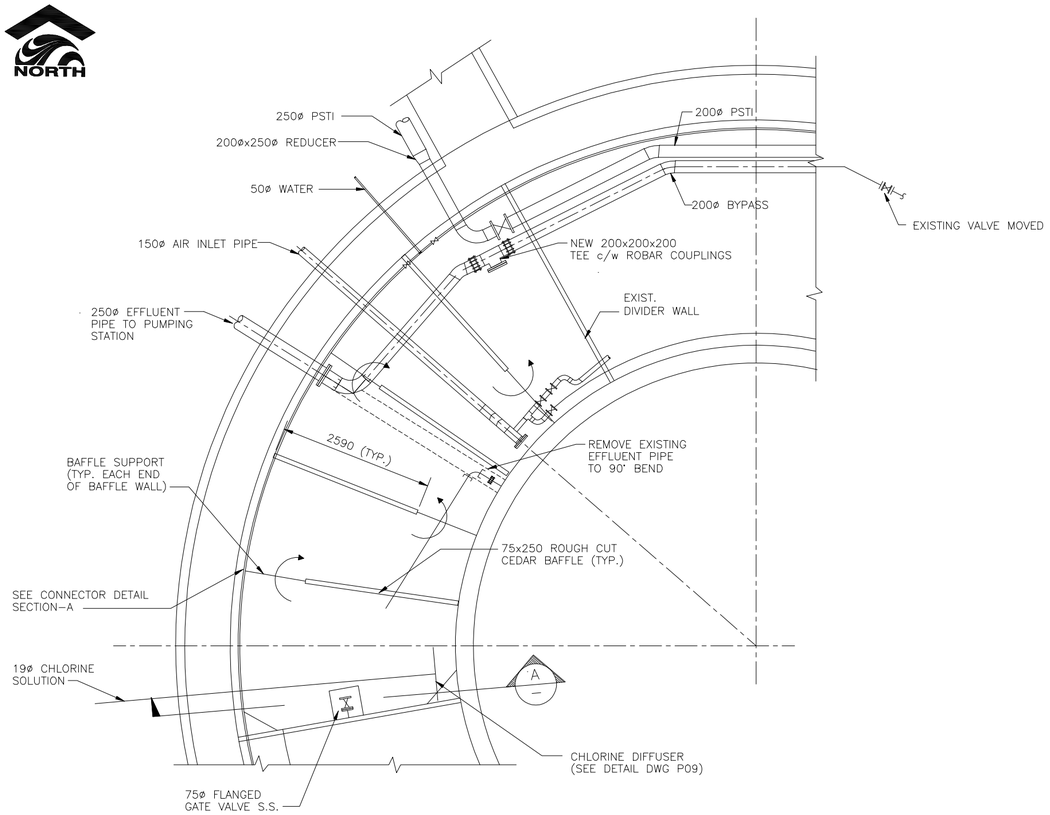
DATE DRAWN MAY 1998

SHEET

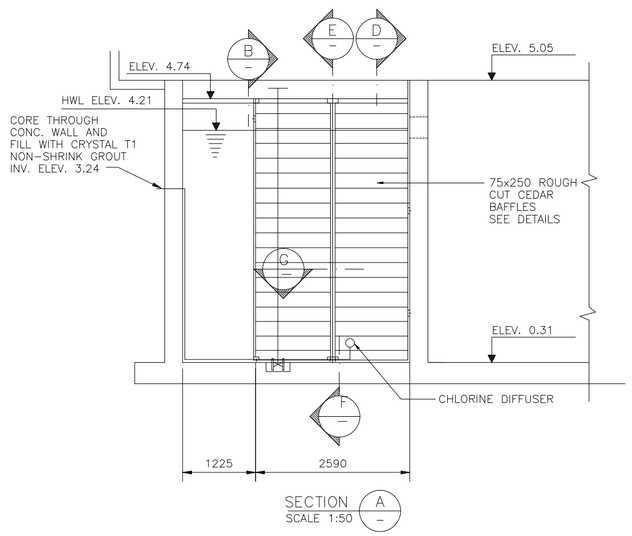
JOB NO. 1-17-25100

REVISION – / STATUS NO. 5

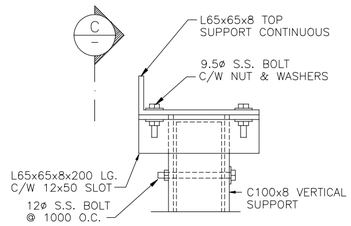
DRAWING NO. P07



PLAN
SCALE 1:50



SECTION A
SCALE 1:50



SECTION B
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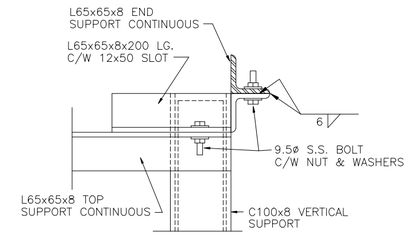

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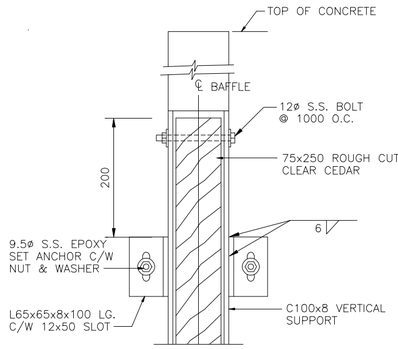

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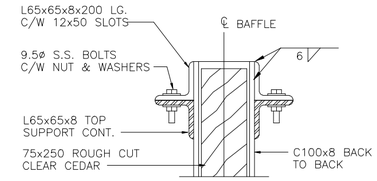
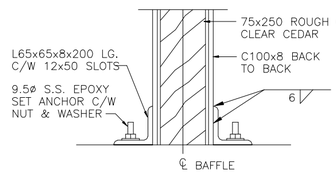
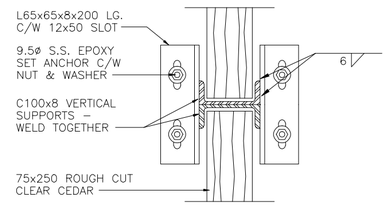


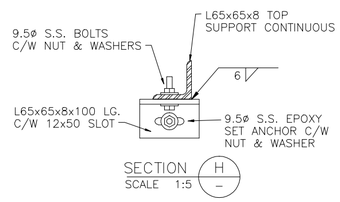
SECTION E
SCALE 1:5



SECTION F
SCALE 1:5



SECTION G
SCALE 1:5



SECTION H
SCALE 1:5

WOOD BAFFLE DETAILS

1251P08A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
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1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

SEAL

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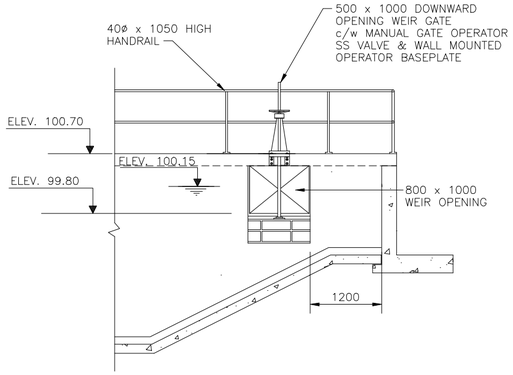
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AMD	DAB

SCALE
AS SHOWN

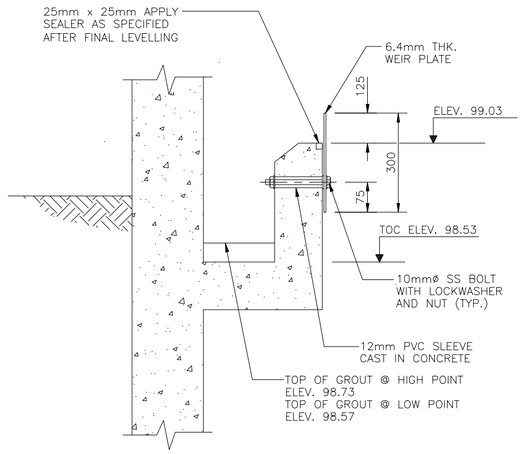
CLIENT
DISTRICT OF SECHELT

TITLE
EBBTIDE WWTP
CHLORINE CONTACT TANK
PLAN AND SECTIONS

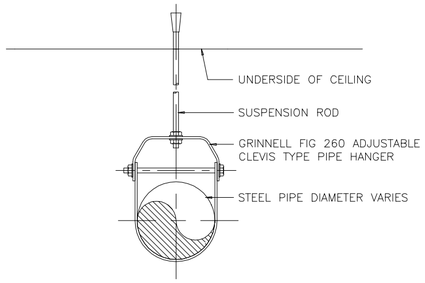
DATE DRAWN MAY 1998
SHEET
JOB NO. 1–17–25100
REVISION – / STATUS NO. 5
DRAWING NO. P08



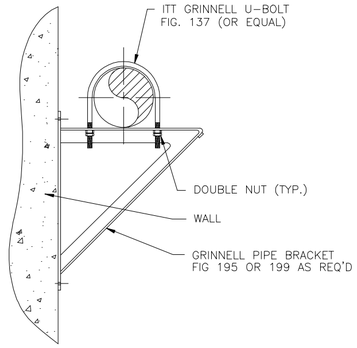
EFFLUENT WEIR GATE DETAIL



FINAL CLARIFIER EFFLUENT WEIR DETAIL



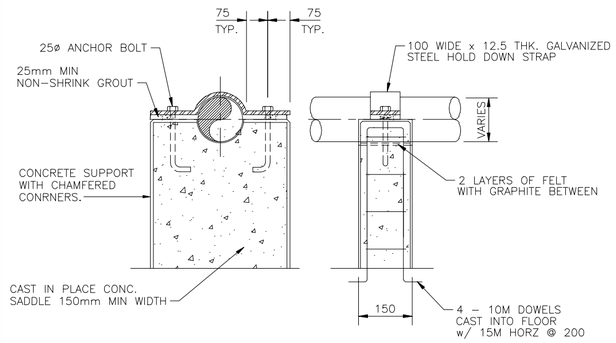
PIPE HANGER DETAIL



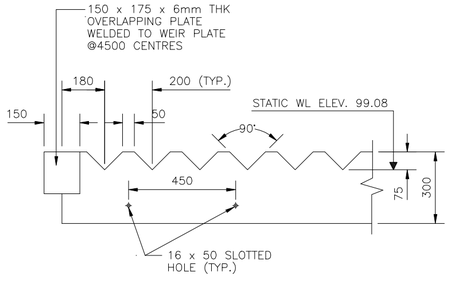
NOTES:

1. USE GRINNELL BRACKET FIG 195 FOR PIPES UP TO 300mm ø
   USE GRINNELL BRACKET FIG 199 FOR PIPES LARGER THAN 300mm ø
2. BRACKET DIMENSIONS SHALL BE SIZED
   ADEQUARELY TO SUPPORT CARRIER PIPE.
3. PIPE SUPPORTS TO BE LOCATED AT MAXIMUM 3m O/C.

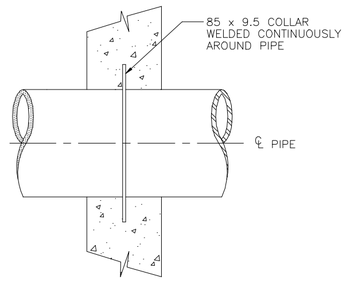
PIPE SUPPORT DETAIL



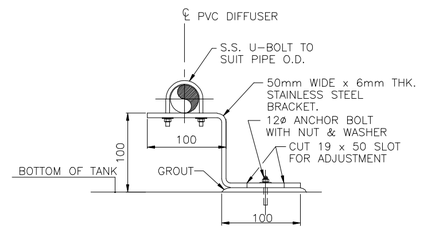
CONCRETE PIPE SUPPORT DETAIL



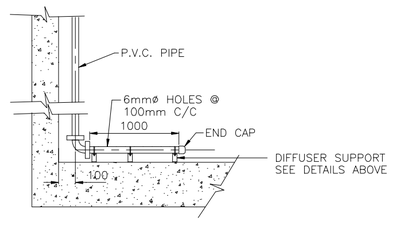
FINAL CLARIFIER EFFLUENT WEIR DETAIL



WALL PENETRATION FOR WATER TIGHTNESS



DIFFUSER SUPPORT BRACKET DETAIL



DIFFUSER DETAIL

1251P09A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
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DRAWING STATUS

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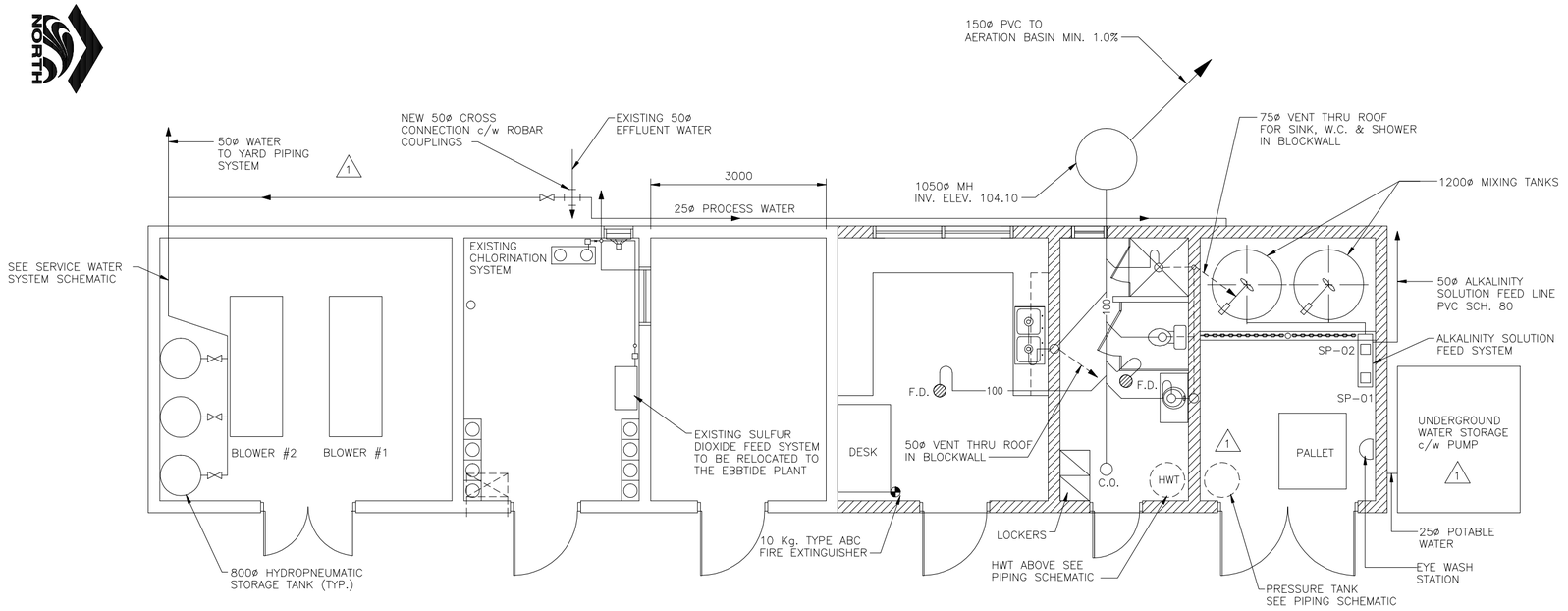
DESIGNED BY	APPROVED BY
DAB	RAF
DRAWN BY	CHECKED BY
AMD	DAB

SCALE: N.T.S

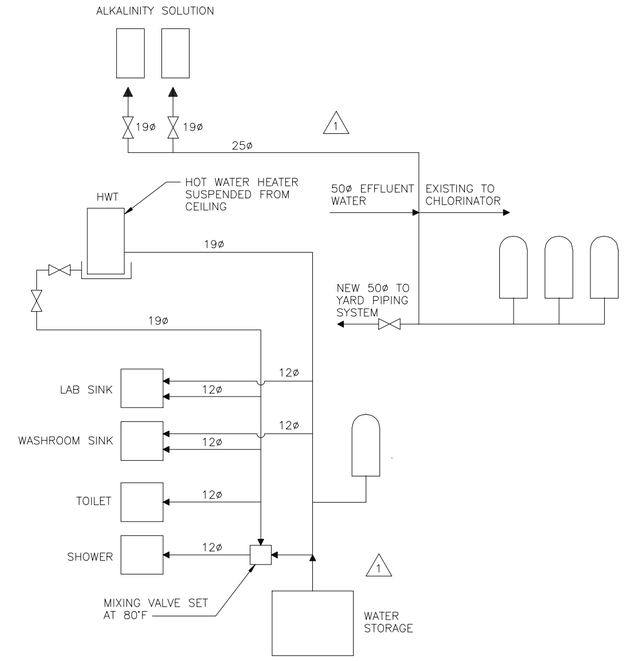
CLIENT: DISTRICT OF SECHELT

TITLE: DUSTY ROAD WWTP UPGRADE
MISCELLANEOUS DETAILS

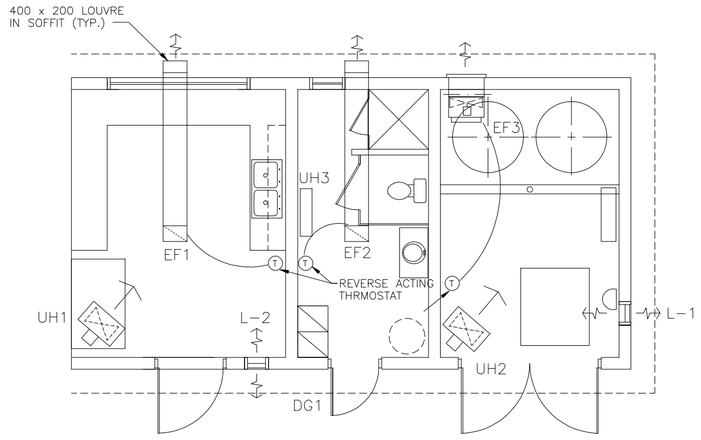
DATE DRAWN MAY 1998
SHEET
JOB NO. 1-17-25100
REVISION - / STATUS NO. 5
DRAWING NO. P09



PLUMBING PLAN
SCALE 1:50



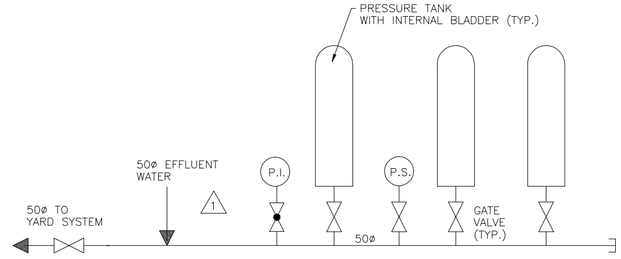
PLUMBING SCHEMATIC
N.T.S.



HVAC PLAN
SCALE 1:50

LEGEND

EF1/2	CABINET EXHAUST FAN, 150 CFM, 120V/1/60 c/w 150 DUCT TO SOFFIT, SPEED CONTROLLER, BACKDRAFT DAMPER WHITE PLASTIC GRILLE, REVERSE ACTING THERMOSTAT, GREENHECK/ SP9 CEILING MOUNTED.
EF3	PENN MODEL P10V, 265 CFM @ 0.25" S.P., BACKDRAFT DAMPER, BIRDSCREEN SPEED CONTROLLER AND REVERSE ACTING THERMOSTAT MOUNTED @ 2.0m A.F.F..
UH1/2	UNIT HEATER, CEILING MOUNTED c/w REMOTE THERMOSTAT. CHROMOLOX BUH-02D, 2 Kw, SINGLE PHASE.
UH3	BASEBOARD HEATER c/w INTEGRAL THERMOSTAT. CHROMOLOX BB 17015, 1.5 Kw, SINGLE PHASE.
DG1	TITUS 300 x 300 DOOR GRILL.
L-1/L-2	400 SQ. ALUMINUM LOUVRE c/w MANUAL CRANK OPERATOR BIRDSCREEN/AIROLITE T645 AND MANUAL BACKDRAFT DAMPER MOUNTED AT 2.0m A.F.F.



PROCESS WATER SYSTEM SCHEMATIC
N.T.S.

NOTES:

1. PIPE HANGERS/BRACKETS NOT ALL SHOWN FOR CLARITY. CONTRACTOR TO INSTALL SUPPORTS AS REQUIRED.
2. ALL PIPE PENETRATIONS TO BE COMPLETED USING LINK SEAL AND WALL SLEEVES, UNLESS NOTED OTHERWISE.
3. CONTRACTOR TO PROVIDE VICTAULIC COUPLINGS ADJACENT TO VALVES/FLOW METERS TO ALLOW EASY REMOVAL FOR MAINTENANCE.
4. PROVIDE SEISMIC RESTRAINTS FOR ALL PROCESS/ BLDG. MECH. EQUIPMENT AS REQUIRED BY CODE.
5. ALL FLOOR DRAINS TO HAVE TRAP PRIMER.

1251M01A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED
1	97.07.20	ADDENDUM NO.1	AMD	RAF

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DAB
4	APPROVAL FOR CONSTRUCTION	98.08.14	DAB
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

SEAL

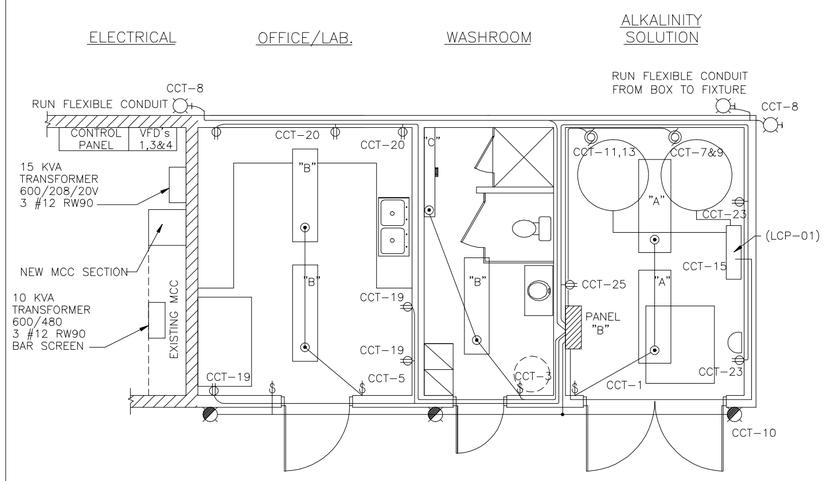
Stanley Consulting Group Ltd.
Suite 1007, 7445-132 St.
Surrey, BC
V3W 1J8
Ph. (604) 597-0422
Fax (604) 591-1856
Email: saelensy@stantech.com

DESIGNED BY	APPROVED BY
MC	RAF
DRAWN BY	CHECKED BY
AER	MC
SCALE	
AS SHOWN	

CLIENT
DISTRICT OF SECHELT

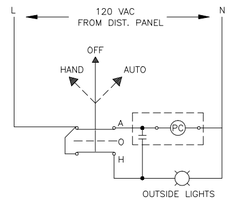
TITLE
DUSTY ROAD WWTP UPGRADE
ADMINISTRATION BUILDING
HVAC & PLUMBING

DATE DRAWN APRIL 1998
SHEET
JOB NO. 1-17-25100
REVISION 1 / STATUS NO. 5
DRAWING NO. M01



ADMINISTRATION BUILDING ELECTRICAL
SCALE 1:50

SYMBOL SCHEDULE	
	SURFACE MOUNTED FLUORESCENT LUMINAIRE
	WALL MOUNTED FLUORESCENT LUMINAIRE
	RECESSED INCANDESCENT LUMINAIRE
	WALL MOUNTED INCANDESCENT LUMINAIRE
	SINGLE POLE SWITCH
	DUPLEX RECEPTACLE
	DISTRIBUTION PANEL
	MOTOR
SEC	SECURITY LIGHT CONTROL PANEL



TYPICAL SECURITY LIGHT CONTROL

PANEL No. DISTRIBUTION LOCATION: MCC
VOLTS: 120/208 PHASE: 3 WIRE: 4 CIRCUIT: 24 FEEDER: _____ BREAKER: 100A BUS: 100A CU MOUNTING: MCC

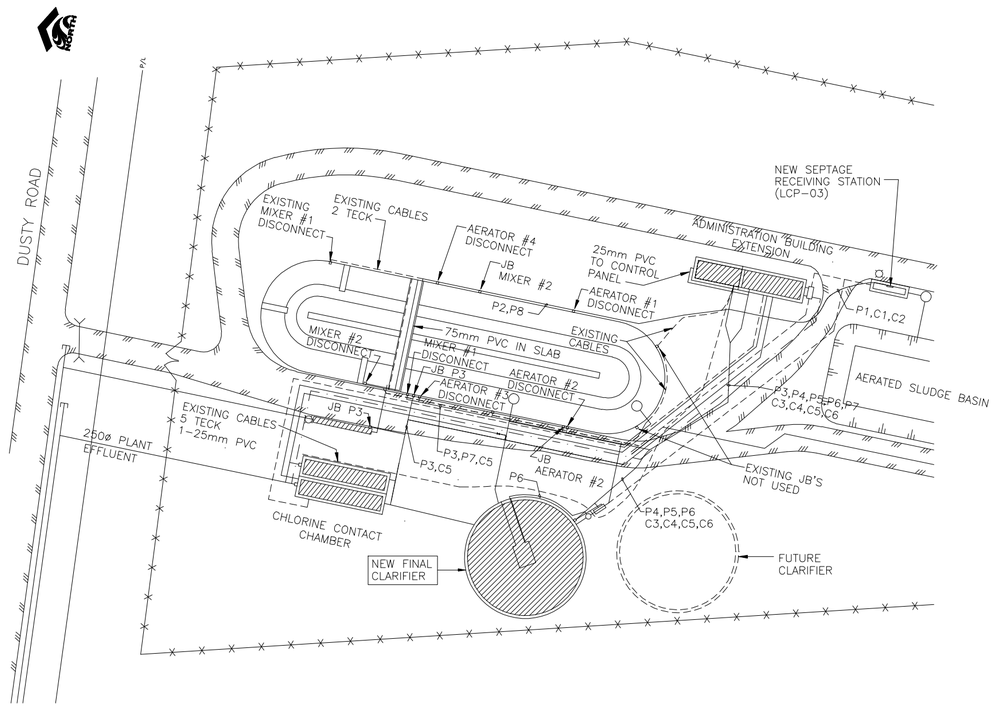
CRC. No.	No. POLES	TRIP AMPS	SERVICE	A ø KVA	B ø KVA	C ø KVA	WIRE SIZE	REMARKS	CRC. No.	No. POLES	TRIP AMPS	SERVOCE	A ø KVA	B ø KVA	C ø KVA	WIRE SIZE	REMARKS
1	1	15	BLOWER RM. H.V.	0,5			#12		2	1	15	SECURITY LIGHTS	0,5			#12	
3	1	15	ELECT. RM. H.V.		0,5		#12		4	1	15	ELECT. RM. LIGHTS		0,2		#12	
5	1	15	CHLORINE RM. H.V.			0,5	#12		6	1	15	CHLORINE RM. LIGHTS			0,2	#12	
7	3	15	CHAIN DRIVE	0,3			#12		8	1	15	BLOWER RM. LIGHTS	0,5			#12	
9	↓	↓			0,3		↓		10	1	15	CHLOR.RM. POTLIGHT		0,5		#12	
11						0,3			12	1	15	BLOWER RM. POTLIGHT			0,5	#12	
13	1	15	MULTI-RANGER	0,1					14	1	15	ELECT. RM. RECEPT.	0,3			#12	
15	1	15	CONTROL SECTION		0,3				16	1	15	CHLORINE RM. RECEPT		0,3		#12	
17	1	15	CONTROL PANEL			0,5		(NEW)	18	1	15	BLOWER RM. RECEPT.			0,5	#12	
19	1	15	CONTROL PANEL RECEPT.	0,3				(NEW)	20			(SPACE)					
21	1	15	SPARE					(NEW)	22			(SPACE)					
23			(SPACE)						24			(SPACE)					
			SUB-TOTAL	1,2	1,1	1,3						SUB-TOTAL	1,3	1,0	1,2		
												TOTAL	2,5	2,1	2,5		

PANEL BOARD "A" UPDATED SCHEDULE

PANEL No. DISTRIBUTION LOCATION: SODA ASH ROOM
VOLTS: 120/208 PHASE: 3 WIRE: 4 CIRCUIT: 30 FEEDER: _____ BREAKER: 100A BUS: 100A CU MOUNTING: WALL

CRC. No.	No. POLES	TRIP AMPS	SERVICE	A ø KVA	B ø KVA	C ø KVA	WIRE SIZE	REMARKS	CRC. No.	No. POLES	TRIP AMPS	SERVOCE	A ø KVA	B ø KVA	C ø KVA	WIRE SIZE	REMARKS
1	1	15	ALK. SOL. RM. LIGHTS	0,2			#12		2	1	15	WASH RM. RECEPT.	0,2			#12	
3	1	15	WASH RM. LIGHTS		0,2		#12		4	1	15	WASH RM. BASE HTR.		0,3		#12	
5	1	15	OFFICE LIGHTS			0,2	#12		6	1	15	WASH RM. BASE HTR.			0,3	#12	
7	2	15	ALKA. SOLUTION	0,4			#12		8	1	15	SECURITY LIGHTS	0,5			#12	
9	↓		MIXER #1		0,4		↓		10	1	15	SECURITY LIGHTS		0,5		#12	
11	2	15	ALKA. SOLUTION			0,4	#12		12	1	15	SECURITY LIGHTS			0,5	#12	
13	↓		MIXER #2	0,4			↓		14	1	15	ALKA. SOL. E.F.	0,5			#12	
15	1	15	ALKA. SOL. PUMPS		0,5		#12		16	2	15	ALKA. SOL. H.V.		0,5		#12	
17	1	15	WASH ROOM E.F.			0,5			18	↓	↓				0,5	#12	
19	1	15	OFFICE - RECEPT	0,3			#12		20	1	15	OFFICE E.F.	0,5			#12	
21	1	15	OFFICE - RECEPT.		0,3		#12		22	2	15	OFFICE H.V.		0,5		#12	
23	1	15	ALKA. SOL. - RECEPT			0,3	#12		24	↓	↓				0,5	#12	
25	1	15					#12		26			(SPACE)					
27	2	15							28			(SPACE)					
29	↓	↓							30			(SPACE)					
			SUB-TOTAL	1,3	1,4	1,4						SUB-TOTAL	1,7	1,8	1,8		
												TOTAL	3,0	3,2	3,2		

NEW PANEL BOARD "B" SCHEDULE



ELECTRICAL SITE PLAN
SCALE 1:500

CABLE SCHEDULE

CABLE TAG	DECRIPTION	FROM	TO	WIRE/CABLE DETAILS
P1	POWER CABLE 600V	MCC	SEPTAGE RECEIVING	3C #12+GND TECK 90-XLPE
P2	POWER CABLE 600V	MCC	AERATOR #4 D.S.	3C #8+GND TECK 90-XLPE
P3	POWER CABLE 600V	MCC	AUTO SPIRAL SCREEN	3C #12+GND TECK 90-XLPE
P4	POWER CABLE 600V	MCC	SUBMERSIBLE PUMP #3 D.S.	3C #12+GND TECK 90-XLPE
P5	POWER CABLE 600V	MCC	SUBMERSIBLE PUMP #4 D.S.	3C #12+GND TECK 90-XLPE
P6	POWER CABLE 600V	MCC	CLARIFIER CONTROL PANEL	3C #12+GND TECK 90-XLPE
P7	POWER CABLE 600V	MCC	PROP MIXER 1 - VFD	3C #10+GND TECK 90-XLPE
P8	POWER CABLE 120V	MCC	AERATOR #4 D.S. (SPACE HTR)	2C #12+GND TECK 90-XLPE
C1	CONTROL CABLE	CONTROL PANEL	SEPTAGE RECEIVING	2PR #18 SHIELDED (4-20ma) 25mm PVC CONDUIT
C2	CONTROL CABLE	CONTROL PANEL	SEPTAGE RECEIVING	8 #14+GND 25mm PVC CONDUIT
C3	CONTROL CABLE	CONTROL PANEL	JB-PUMP STATION	20C #14+GND
C4	CONTROL CABLE	CONTROL PANEL	JB-PUMP STATION	2PR #18 SHIELDED (4-20ma) 25mm PVC CONDUIT
C5	CONTROL CABLE	JB-PUMP STATION	AUTO SPIRAL SCREEN	6C #14+GND
C6	SUBMERS. PMP CON.	CONTROL PANEL	J.B. - PUMP STATION	10C #14+GND

1251E02A.DWG

NO.	DATE	DESCRIPTION	BY	APPROVED

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED
6	MICROFILMED		
5	PLAN OF RECORD	99.10.15	DK
4	APPROVAL FOR CONSTRUCTION	98.08.14	DK
3	FOR TENDER	98.07.07	RAF
2	FOR APPROVAL	98.06.16	DAB
1	PRELIMINARY	98.05.08	RAF

DRAWING STATUS

SEAL

Stanley Consulting
Stanley Consulting Group Ltd.
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Surrey, BC
V3W 1J8
Ph. (604) 597-0422
Fax (604) 591-1856
Email: saelensy@stantech.com

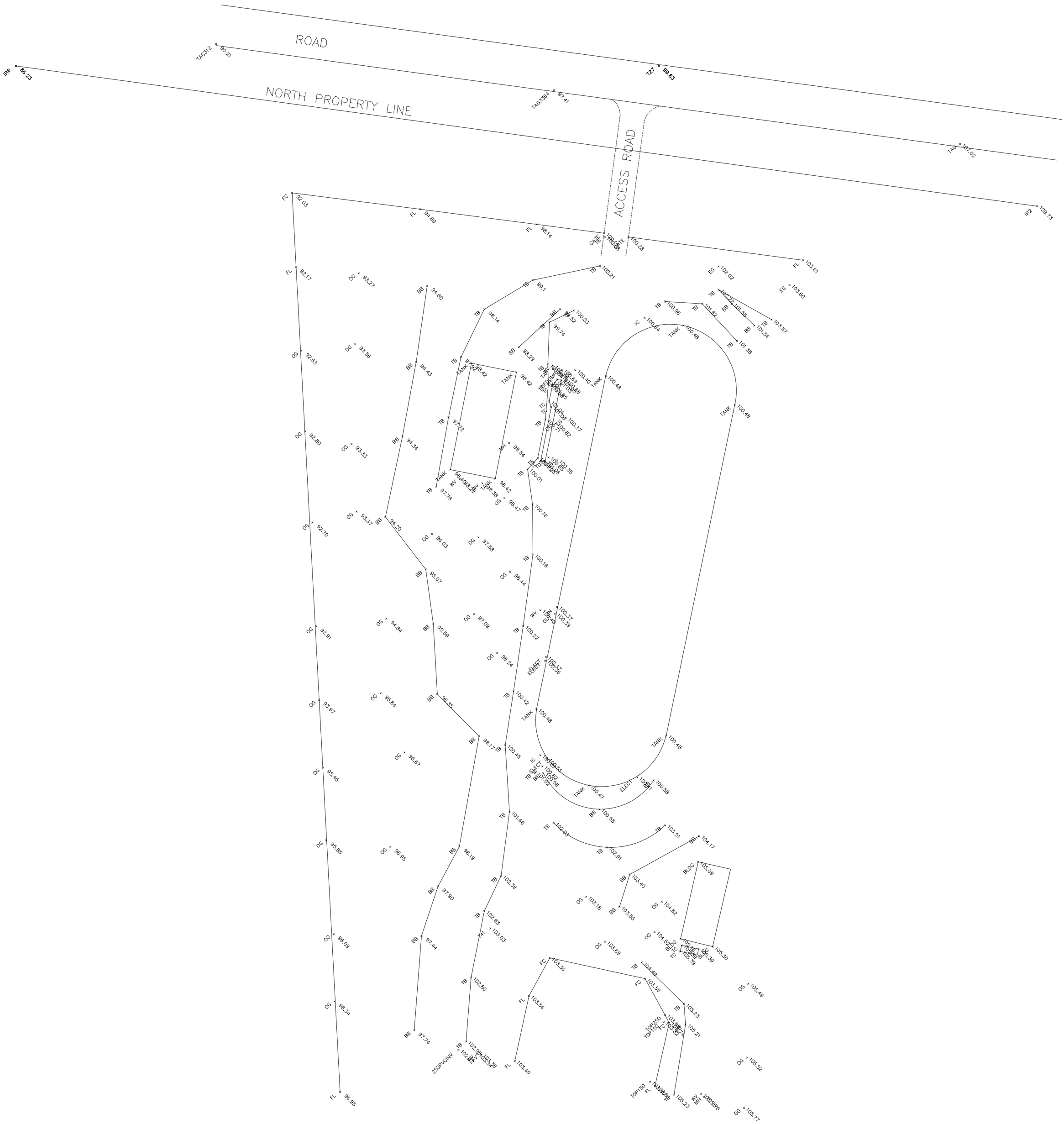
DESIGNED BY	APPROVED BY
JN	DK
DRAWN BY	CHECKED BY
AMD	JN
SCALE	
AS SHOWN	

CLIENT
DISTRICT OF SECHELT

TITLE
DUSTY ROAD WWTP UPGRADE

DISTRIBUTION PANEL BOARDS AND SECURITY CONTROL

DATE DRAWN JUNE 1998
SHEET
JOB NO. 1-17-25100
REVISION - / 5 STATUS NO.
DRAWING NO. E02

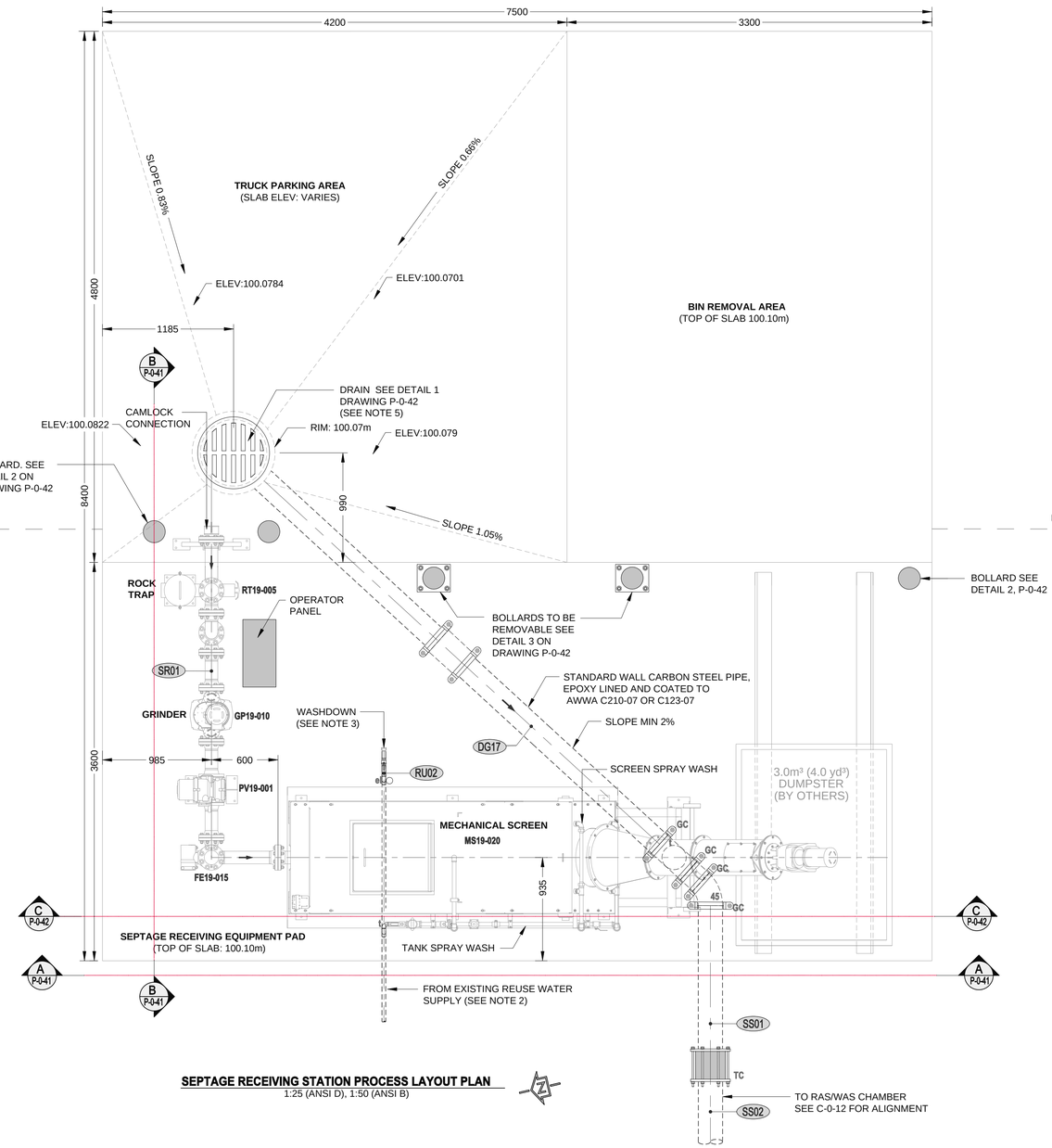

ROAD
NORTH PROPERTY LINE
ACCESS ROAD
IRF 86.23
TAG312 90.21
T27 99.83
TAG3364 97.41
TAG 107.02
IP2 109.73
FC 92.03
FL 94.69
FL 98.14
GATE 100.05
TE 100.28
FL 103.61
FL 92.17
OG 93.27
BB 94.60
TB 100.21
TB 99.1
TB 98.14
EG 102.02
EG 103.60
TB 100.96
TB 101.62
BB 102.22
101.55
TB 103.57
TB 101.56
TB 101.38
IC 100.64
TANK 100.48
BB 100.03
99.52
TB 99.74
BB 98.29
OG 92.63
OG 93.56
BB 94.43
TB 97.92
98.42
TANK 98.42
100.40
TANK 100.48
TANK 100.48
OG 92.80
OG 93.33
BB 94.34
TB 97.72
MH 98.54
100.37
100.82
100.35
TB 100.01
TANK 98.42
TB 97.76
WV 98.28
WV 98.38
OG 98.47
OG 93.37
BB 94.20
OG 96.03
OG 97.58
TB 100.16
OG 92.70
BB 95.07
OG 98.44
WV 100.37
OG 100.40
100.39
OG 92.91
OG 94.84
BB 95.59
OG 97.09
TB 100.22
OG 98.24
ELECT 100.37
100.36
OG 93.97
OG 95.64
BB 96.35
TB 100.42
TANK 100.48
TANK 100.48
OG 95.45
OG 96.67
BB 98.17
TB 100.45
IC 100.55
ELECT 100.52
100.59
TB 101.07
TANK 100.47
ELECT 100.41
100.58
OG 95.85
OG 96.95
BB 98.19
TB 101.66
BB 100.55
TB 102.93
TB 103.51
BB 104.17
BLDG 105.09
TB 102.38
BB 97.90
BB 103.40
OG 103.18
BB 103.55
OG 104.62
OG 96.09
BB 97.44
TB 102.83
103.03
OG 104.52
105.39
105.30
OG 103.68
FC 103.36
TB 104.49
FC 103.56
OG 105.49
TB 102.80
FL 103.56
TB 105.23
TOP250
TOP150
103.38
105.21
BB 97.74
250PVCINV 102.93
103.38
FL 103.49
TOP150 103.38
105.23
OG 105.52
OG 105.77
FL 96.95
OG 96.34

PIPING IDENTIFICATION TABLE

ID	SIZE	FUNCTION	MATERIAL
DG17	200Ø	DRAIN, GENERAL GRAVITY PIPING	STD STEEL EPOXY LINED AND COATED
RU02	25Ø	REUSE WATER PIPING	SCH40 SS
SR01	100Ø	SEPTAGE RECEIVING PIPING	SCH40 SS
SS01	200Ø	SCREENED SEPTAGE PIPING	STD STEEL EPOXY LINED AND COATED
SS02	200Ø	SCREENED SEPTAGE PIPING	SDR 35 PVC

PROCESS NOTES:

1. THE LIMITS OF THE EXISTING EDGE OF GRAVEL ROADWAY ARE APPROXIMATE ONLY.
2. CONNECTED TO EXISTING 50mm DIAMETER REUSE WATER MAIN LOCATED ON NORTH SIDE OF THE EXISTING SCREEN.
3. INSTALLED A 25mm DIAMETER WASHDOWN STATION, C/W INSULATION AND HEAT TRACE.



SEPTAGE RECEIVING STATION PROCESS LAYOUT PLAN
1:25 (ANSI D), 1:50 (ANSI B)

Sechelt

ISSUES

DESCRIPTION	DATE (yy/mm/dd)
FOR PRELIMINARY	13/09/04
FOR APPROVAL	13-09-10
FOR TENDER	–
FOR CONSTRUCTION	13-10-17
FOR RECORD	15/07/15
FOR ARCHIVE	–

ISSUED FOR RECORD JULY 15, 2015 URBAN systems

NO.	yy/mm day	DESCRIPTION	BY	APP'D
7	– –	–	–	–
6	– –	–	–	–
5	– –	–	–	–
4	– –	–	–	–
3	– –	–	–	–
2	– –	–	–	–
1	– –	–	–	–

REVISIONS

DES. JC/EP
DWN. EP
DATE 13/09/10
CHK. DN

P. ENG. D.NASH DATE 13/10/17
SCALE AS SHOWN

Maple Reinders
URBAN systems
VEOLIA WATER Solutions & Technologies

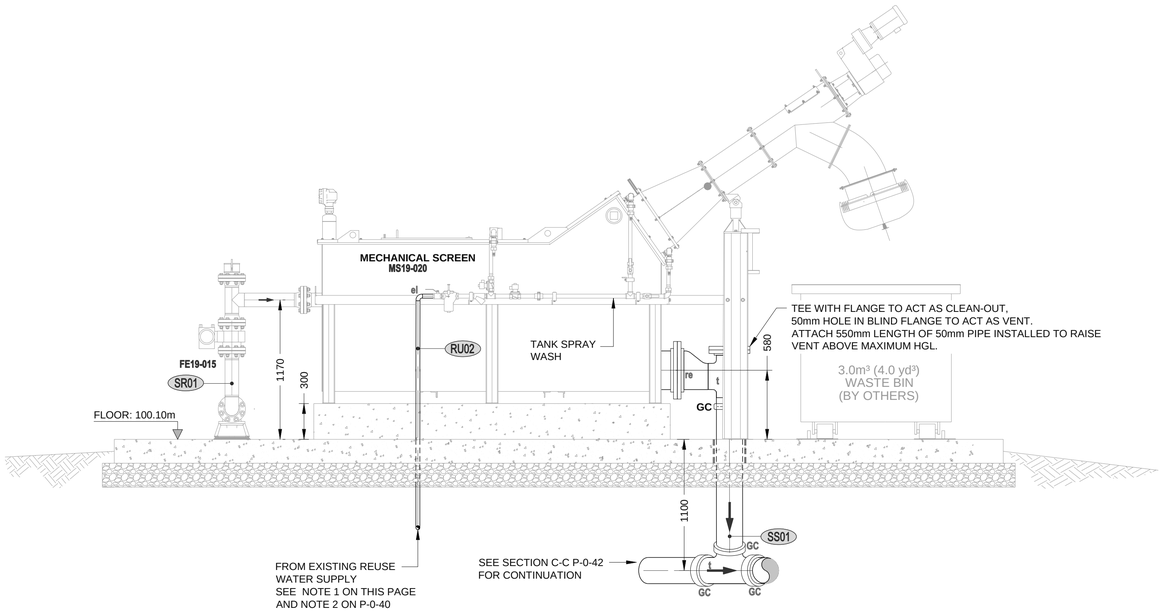
SECHELT WASTEWATER TREATMENT FACILITIES DESIGN BUILD

DUSTY ROAD SEPTAGE RECIEVING STATION PLAN

PROJECT No. 3032.0004.03
SHEET 40 OF 42
DRAWING No. P-0-40
DESTROY ALL PRINTS PRIOR TO R 0

PIPING IDENTIFICATION TABLE			
ID	SIZE	FUNCTION	MATERIAL
DG17	200Ø	DRAIN, GENERAL GRAVITY PIPING	STD STEEL EPOXY LINED AND COATED
RU02	25Ø	REUSE WATER PIPING	SCH40 SS
SR01	100Ø	SEPTAGE RECEIVING PIPING	SCH40 SS
SS01	200Ø	SCREENED SEPTAGE PIPING	STD STEEL EPOXY LINED AND COATED
SS02	200Ø	SCREENED SEPTAGE PIPING	SDR 35 PVC

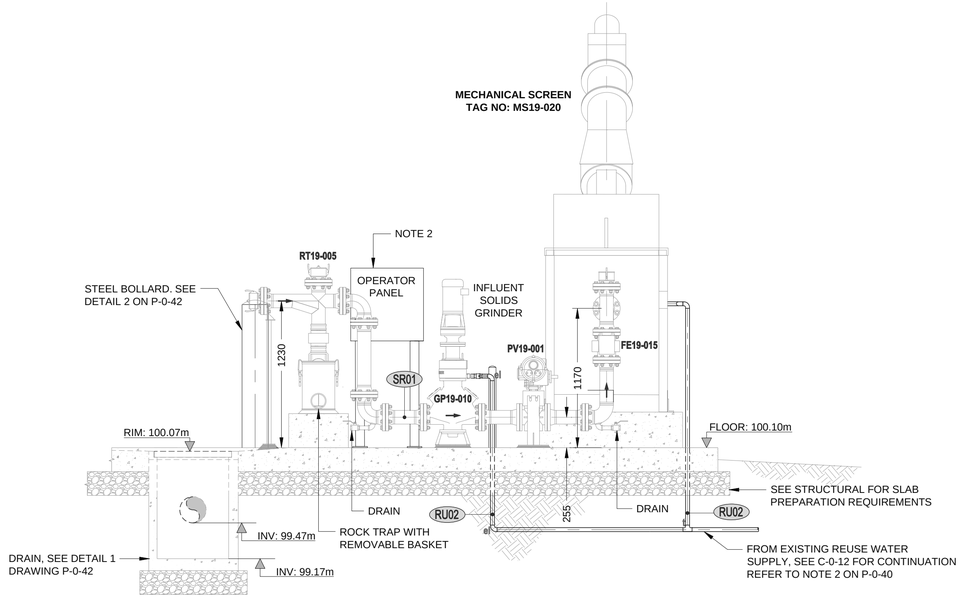
EQUIPMENT MASS TABLE	
EQUIPMENT	MASS
AUGER AND TANK ASSEMBLY (EMPTY)	2023 KG (4450 LB)
INFLUENT GRINDER	250 KG (550LB)



A-A P-0-40 **SECTION - SEPTAGE RECEIVING STATION NORTH/SOUTH VERTICAL PROCESS LAYOUT**
1:25 (ANSI D), 1:50 (ANSI B)

PROCESS NOTES:

1. EXISTING REUSE WATER SUPPLY WAS UTILIZED FOR SERVICE WATER, FOR SCREEN AND FOR CONCRETE RECEIVING PAD WASHDOWN ACTIVITIES.
2. OPERATOR PANEL INSTALLED WITHIN AN ELEVATED WEATHERPROOF ENCLOSURE.



B-B P-0-40 **SECTION - SEPTAGE RECEIVING STATION EAST/WEST VERTICAL PROCESS LAYOUT**
1:25 (ANSI D), 1:50 (ANSI B)

Sechelt

ISSUES

DESCRIPTION	DATE (yy/mm/dd)
FOR PRELIMINARY	13/09/04
FOR APPROVAL	13-09-10
FOR TENDER	–
FOR CONSTRUCTION	13-10-17
FOR RECORD	15/07/15
FOR ARCHIVE	–

ISSUED FOR RECORD
JULY 15, 2015
URBAN systems

NO.	yy/mm/dd	DESCRIPTION	BY	APP'D
7	"	"	–	–
6	"	"	–	–
5	"	"	–	–
4	"	"	–	–
3	"	"	–	–
2	"	"	–	–
1	"	"	–	–

REVISIONS

DES. JC/EP
DWN. EP
DATE 13/09/10
CHK. DN

P. ENG. D.NASH DATE 13/10/17
SCALE AS SHOWN

Maple Reinders
URBAN systems
VEOLIA WATER Solutions & Technologies

SECHELT WASTEWATER TREATMENT FACILITIES DESIGN BUILD

DUSTY ROAD SEPTAGE RECEIVING STATION SECTIONS

PROJECT No. 3032.0004.03
SHEET 41 OF 42
DRAWING No. P-0-41
DESTROY ALL PRINTS PRIOR TO R 0

PROCESS NOTES:

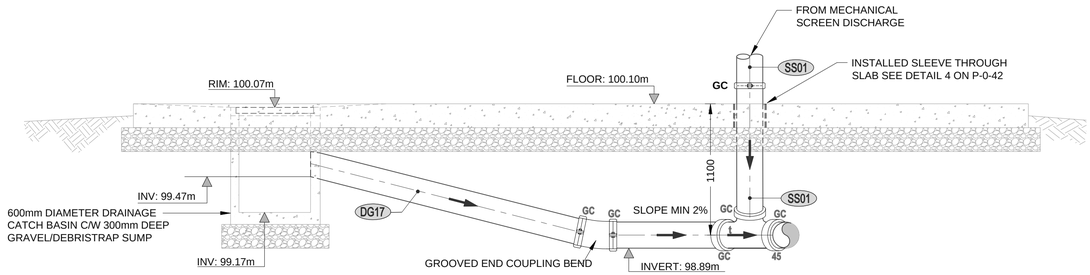
1. ALL BURIED GROOVED COUPLINGS ARE FLEXIBLE TYPE, EPOXY COATED, AND COMPLETELY WRAPPED IN DENSO TAPE.

PIPING IDENTIFICATION TABLE

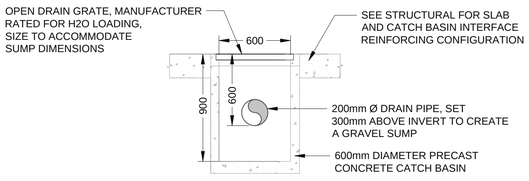
ID	SIZE	FUNCTION	MATERIAL
DG17	200Ø	DRAIN, GENERAL GRAVITY PIPING	STD STEEL EPOXY LINED AND COATED
RU02	25Ø	REUSE WATER PIPING	SCH40 SS
SR01	100Ø	SEPTAGE RECEIVING PIPING	SCH40 SS
SS01	200Ø	SCREENED SEPTAGE PIPING	STD STEEL EPOXY LINED AND COATED
SS02	200Ø	SCREENED SEPTAGE PIPING	SDR 35 PVC

SECTION NOTE:

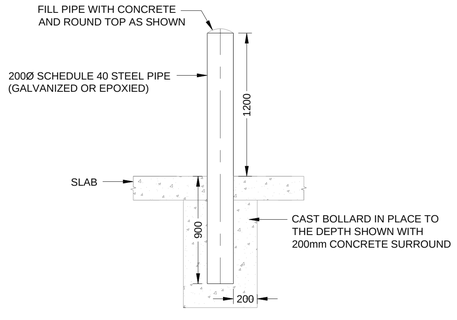
SIMPLIFIED SECTION TO CONVEY UNDERSLAB PIPING ARRANGEMENT ONLY. ABOVE SLAB EQUIPMENT HAS BEEN OMITTED. SEE SECTIONS A-A AND B-B ON P-0-41 FOR DETAILS.



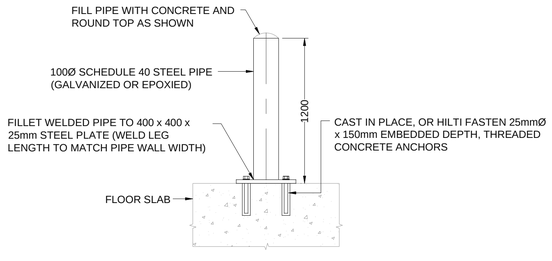
C-C P-0-40 **SECTION - SEPTAGE RECEIVING STATION NORTH EAST/SOUTH WEST VERTICAL UNDERSLAB LAYOUT**
1:25 (ANSI D), 1:50 (ANSI B)



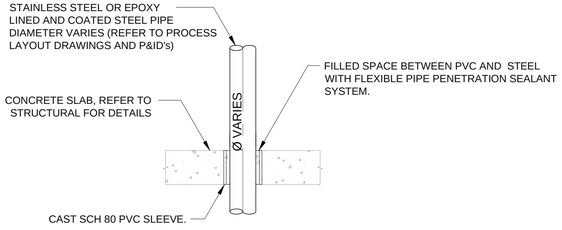
1 P-0-42 **DETAIL - SLAB DRAIN VERTICAL LAYOUT**
1:25 (ANSI D)



2 P-0-42 **DETAIL - STEEL BOLLARD VERTICAL LAYOUT**
1:25 (ANSI D)



3 P-0-42 **DETAIL - REMOVABLE STEEL BOLLARD VERTICAL LAYOUT**
(SCALE: NTS)



4 P-0-42 **DETAIL - CONCRETE FLOOR PROCESS PIPE PENETRATION**
SCALE: NTS

Sechelt

ISSUES

DESCRIPTION	DATE (yy/mm/dd)
FOR PRELIMINARY	13/09/04
FOR APPROVAL	13-09-10
FOR TENDER	–
FOR CONSTRUCTION	13-10-17
FOR RECORD	15/07/15
FOR ARCHIVE	–

ISSUED FOR RECORD JULY 15, 2015 URBAN systems

NO.	yy/mm day	DESCRIPTION	BY	APP'D
7	" "	"	–	–
6	" "	"	–	–
5	" "	"	–	–
4	" "	"	–	–
3	" "	"	–	–
2	" "	"	–	–
1	" "	"	–	–

REVISIONS

DES. JC/EP
DWN. EP
DATE 13/09/10
CHK. DN

P. ENG. D.NASH DATE 13/10/17
SCALE AS SHOWN

Maple Reinders
URBAN systems
VEOLIA WATER Solutions & Technologies

SECHELT WASTEWATER TREATMENT FACILITIES DESIGN BUILD

DUSTY ROAD SEPTAGE RECEIVING STATION SECTION AND DETAILS

PROJECT No. 3032.0004.03
SHEET 42 OF 42
DRAWING No. P-0-42
DESTROY ALL PRINTS PRIOR TO R 0

N
Sechelt
Aerated Basin
Digested Sludge
Drying & Storage
Dusty Rd
Chlorine Contact
Chamber
Clarifier
Aerated Sludge Basin
Sludge Storage Lagoon
Dusty Rd WWTP ROW
1:1,000

District of Sechelt Records –

2017-2022 Septage Load Records

Year	Month	Volume (L)	Company	Volume	Percentage
2017	January	160,470	Bonniebrook	4,551,218	53%
	February	307,490	AAA	1,059,681	12%
	March	430,180	StarTek	2,991,617	35%
	April	478,980			
	May	680,575			
	June	464,370			
	July	809,546			
	August	656,357			
	September	3,490,924			
	October	312,907			
	November	429,210			
	December	381,507			
	Total	8,602,516			

			Company	Volume	Percentage
2018	January	439,592	Bonniebrook	2,540,424	50%
	February	345,946	AAA	834,196	17%
	March	663,837	StarTek	1,661,071	33%
	April	543,252			
	May	627,466			
	June	564,355			
	July	688,490			
	August	709,066			
	September	450,751			
	October	-			
	November	-			
	December	-			
	Total	5,032,755			

			Company	Volume (L)	Percentage
2019	January	512,408	BonnieBrook	2,664,415	43%
	February	268,231	AAA	668,587	11%
	March	557,943	StarTek	2,823,189	45%
	April	603,273	0***	13,088	0%
	May	713,200			
	June	479,651			
	July	636,252			
	August	513,797			
	September	712,339			
	October	563,142			
	November	350,044			
	December	302,592			
	Total	6,212,872			

			Company	Volume (L)	Percentage
2020	January	108,336	BonnieBrook	2,060,045	39%
	February	46,467	AAA	786,106	15%
	March	190,228	StarTek	2,477,965	47%
	April	550,742			
	May	1,103,235			
	June	615,922			
	July	584,623			
	August	663,054			
	September	628,226			
	October	339,864			
	November	271,727			
	December	210,378			
	Total	5,312,802			

			Company	Volume (L)	Percentage	Type	Volume (L)	Percentage
2021	January	229,720	BonnieBrook	439,563	13%	Septic	2,385,576	76%
	February	154,463	StarTek	2,806,372	85%	Septic/Grease Trap	18,912	1%
	March	294,857	48***	40,509	1%	Brew stuff	111,731	4%
	April	207,710				Treatment	604,472	19%
	May	218,183				Other	6,875	0%
	June	299,451						
	July	280,363						
	August	380,928						
	September	211,768						
	October	330,651						
	November	464,861						
	December	213,489						
	Total	3,286,444						

			Company	Volume (L)	Percentage	Type	Volume (L)	Percentage
2022	January	210,746	BonnieBrook	777,045	19%	Septic	3,433,575	87%
	February	302,020	StarTek	3,197,209	80%	Septic/Grease Trap	54,131	1%
	March	389,755	AAA	18,887	0%	Grease	929	0%
	April	456,097	48***	7,560	0%	Brew stuff	65,791	2%
	May	414,027				Treatment	367,641	9%
	June	396,764				Other	9,885	0%
	July	335,627						
	August	380,567						
	September	359,521						
	October	268,958						
	November	316,825						
	December	169,794						
	Total	4,000,701						

			Company	Volume (L)	Percentage	Type	Volume (L)	Percentage
2023	January	331,381	BonnieBrook	187,682	23%	Septic	703,411	88%
	February	144,965	AAA	4,994	1%	Septic/Grease Trap	57,907	7%
	March	327,007	StarTek	610,677	76%	Grease	3,237	0%
	April					Brew Stuff	10,567	1%
	May					Treatment	17,034	2%
	June					Other	11,197	1%
	July							
	August							
	September							
	October							
	November							
	December							
	Total	803,353						

Flow Rates

Average Annual Flow (L/year) 2017-2022 **5,408,015**

Average Monthly Flow (L/month) 2017-2023

January	284,665
February	224,226
March	407,687
April	405,722
May	536,669
June	402,930
July	476,414
August	471,967
September	836,218
October	302,587
November	305,445
December	212,960

Peak Annual Flow (L/year) 2017-2022 **8,602,516 2017**

Peak Monthly Flow (L/month) 2017-2023

January	512,408	2019
February	345,946	2018
March	663,837	2018
April	603,273	2019
May	1,103,235	2020
June	615,922	2020
July	809,546	2017
August	709,066	2018
September	3,490,924	2017
October	563,142	2019
November	464,861	2021
December	381,507	2017

Sechelt Community Archives Records

Paul Antonelli

From: Archives <archives@sechelt.ca>
Sent: March 30, 2023 2:03 PM
To: Paul Antonelli
Subject: RE: Environmental Assessment for 5297 Dusty Road, Sechelt

Hello again!
Lot 1556 boarders, to the north, lots 1438 and 3166 which straddle Dusty Road – I just mentioned it because of the creek named after a pioneer settler J. Irgen.
I should also mention that the District of Sechelt only took over that area in 1990; previously it had been managed by the Sunshine Coast Regional District so there may be information in its archives.
Regards,
Ann

From: Paul Antonelli <pantonelli@trilliumenviro.com>
Sent: Thursday, March 30, 2023 11:44 AM
To: Archives <archives@sechelt.ca>
Subject: RE: Environmental Assessment for 5297 Dusty Road, Sechelt

Hi Anne,

Thank you for your reply and the bit of history. Do you know approximately where Lot 1556 would be? I looked on the cadastral map and couldn't find it. Probably likely that the layout of the parcels in the area have changed since then.

I'll contact the District as well – I apprecite the advice.

Kindly

Paul

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trill
Paul Antonelli, M.Sc., P.Ag.
Environmental Scientist, Project Manager

Trillium Environmental Ltd.
126 Ingram Street, Suite 203
Duncan, BC V9L 1P1
m: (250) 574-1983

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From: Archives <archives@sechelt.ca>
Sent: Thursday, March 30, 2023 10:50 AM
To: Paul Antonelli <pantonelli@trilliumenviro.com>
Subject: RE: Environmental Assessment for 5297 Dusty Road, Sechelt

Hello Paul,
I have looked at the data we have on the lots around Dusty Road. We have the names of, and some history about, the early settlers.
They seemed to have logged their lots and one, J. Irgens, (after whom Irgens Creek is named) is listed as a logger and rancher on Lot 1556.
There are the two gravel pits in the area (Swanson's and Stockwell's) which have been running for many years. If you need to come into the archives next Tuesday I can open the archives for you. I have a dental appointment at 11.30 so before that or after say 1.00pm.
Have you looked into the District of Sechelt's archives? There is probably more information there.
Cheers,
Ann

From: Paul Antonelli <pantonelli@trilliumenviro.com>
Sent: Tuesday, March 28, 2023 2:57 PM
To: Archives <archives@sechelt.ca>
Subject: Environmental Assessment for 5297 Dusty Road, Sechelt

Hello Anne,

I left a rather long voicemail just now but thought it might be better to touch base via email.

As mentioned, we are conducting an environmental assessment for the District of Sechelt's "Dusty Road Septage Receiving Facility" at 5297 Dusty Road. Part of the assessment involves a historical review of the parcel and surrounding area for any past activities of environmental concern. As such, I am wondering if there is any information available in the archives that can help us define the site history.

I am planning to be in Sechelt next Tuesday and could visit the archives if you are available (I see that it is usually only open on Thursdays)

Thank you kindly,

Paul

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trill
Paul Antonelli, M.Sc., P.Ag.
Environmental Scientist, Project Manager

Trillium Environmental Ltd.
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Appendix D

Government Records

Federal Contaminated Sites Inventory

Treasury Board of Canada Secretariat

DFRP/FCSI - Map Navigator

Area: Sunshine Coast D, Sechelt **Content:** 0 Federal Property, 0 Federal Building, 3 Federal Contaminated Sites

Scale: 1 : 27,137

Latitude: 49.48504

Longitude: -123.73507

Layers

- Federal Properties
- Federal Buildings
- Federal Contaminated Sites
- Economic Region
- Census Divisions
- Census Subdivisions
- Metropolitan Areas
- Federal Electoral Districts
- Treaty Areas

[1] This layer is visible only when the map scale is smaller than 1:3,000,000.

[2] Suspected Active Closed

[3] Google base maps are only available when the map scale is smaller than 1:60,000.

IMPORTANT NOTE: The tables below are currently not synchronized with the map content.
Please click on the following button if you want to update the tables content: UPDATE TABLES

Federal Properties (0) / Parcels (0) | **Federal Buildings (0)** | **Federal Contaminated Sites (0)**

No record found.

NRCED Database Search Results

Record Type	Issued On	Issued To	Summary	Issuing Agency	Legislation Act	Regulation	Section	Sub Section	Paragraph	Description	Offence	Penalties	Site/Project	Location	Latitude	Longitude
Inspection	2023-01-10	Suncoast Industries Inc.	Trieaer or reason for inspection: Complaint: Authorization Number: UA176891: Source of inspected reauirement(s): Environmental Manaement Act	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				4367 Aeua Rd. Sechelt. BC	49.4516	-123.7134
Inspection	2023-01-09	Suncoast Industries Inc.	Trieaer or reason for inspection: Complaint: Authorization Number: HW171580: Source of inspected reauirement(s): Environmental Manaement Act	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				4367 Aeua Rd. Sechelt. BC	49.451	-123.711
Inspection	2022-10-27	Evenerwen Hospitality Group	Trieaer or reason for inspection: Planned: Authorization Number: UA197266: Source of inspected reauirement(s): Environmental Manaement Act	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				4748 Sunshine Coast Hiahwav. Sechelt. BC	49.4469	-123.78
Inspection	2021-10-27	Suncoast Industries Inc.	Trieaer or reason for inspection: Complaint: Authorization Number: HW171580: Source of inspected reauirement(s): Environmental Manaement Act	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				4367 Aeua Rd. Sechelt. BC	49.45155	-123.71149
Inspection	2021-10-27	Suncoast Industries Inc.	Trieaer or reason for inspection: Complaint: Authorization Number: UA176891: Source of inspected reauirement(s): Environmental Manaement Act	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				4367 Aeua Rd. Sechelt. BC	49.4515	-123.7134
Inspection	2020-11-12	Swanson's Ready-Mix Ltd.	Trieaer or reason for inspection: Planned: Authorization Number: 109854: Source of inspected reauirement(s): Code of Practice for Concrete and Concrete Products	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				Swanson's Ready-Mix Ltd.. Sechelt BC	49.49936	-123.74162
Inspection	2020-11-12	SWANSON'S READY-MIX LTD.	Trieaer or reason for inspection: Planned: Authorization Number: 3260: Source of inspected reauirement(s): Permit	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				Swanson's Ready-Mix Ltd.. Sechelt. BC	49.4995	-123.74181
Inspection	2019-09-30	SWANSON'S READY-MIX LTD.	Trieaer or reason for inspection: Planned: Authorization Number: UA105434: Source of inspected reauirement(s): Environmental Manaement Act	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				5417 Burnett Road. Sechelt. BC	49.49936	-123.74162
Inspection	2019-09-18	Stockwell Enterprises Ltd.	Trieaer or reason for inspection: Planned: Authorization Number: 108325: Source of inspected reauirement(s): Code of Practice for Concrete and Concrete Products	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				5178 Allen Road. Sechelt BC. V0N 3A3	49.4079	-123.7172
Inspection	2019-04-23	Sechelt Indian Band	Trieaer or reason for inspection: Planned: Authorization Number: 11933: Source of inspected reauirement(s): Permit	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				Sechelt Indian Band. Sechelt. Port Stalashen. British Columbia	49.427	-123.7137
Inspection	2018-12-18	INTERNATIONAL FOREST PRODUCTS LIMITED	Trieaer or reason for inspection: Planned: Authorization Number: 12735: Source of inspected reauirement(s): Permit	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				Clowham Main Road near the head of Salmon Inlet (northead of Sechelt). BC Dryland Loaaort	49.7125	-123.5417
Inspection	2018-12-17	Sunshine Coast Reaional District	Trieaer or reason for inspection: Planned: Authorization Number: 106060: Source of inspected reauirement(s): Oaerational Certificate	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				Sechelt Municipal Solid Waste Landfill. Sechelt	49.48833	-123.71136
Inspection	2018-12-17	SUNSHINE COAST REGIONAL DISTRICT	Trieaer or reason for inspection: Planned: Authorization Number: 2547: Source of inspected reauirement(s): Permit	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				SECHELT LANDFILL municipal landfill	49.48833	-123.71136
Inspection	2018-12-17	James White. dba Sechelt Pick Up Truck Recyclers 2013-2	Trieaer or reason for inspection: Planned: Authorization Number: 100486: Source of inspected reauirement(s): Vehicle Dismantline and Recvcline Industrv Environmental Plannine Reaulation	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				2000 Field Road. Sechelt. BC	49.45338	-123.70854
Inspection	2018-11-15	SWANSON'S READY-MIX LTD.	Trieaer or reason for inspection: Planned: Authorization Number: 3260: Source of inspected reauirement(s): Permit	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				5417 Burnet Road. Sechelt	49.4995	-123.74181
Inspection	2018-11-15	SWANSON'S READY-MIX LTD.	Trieaer or reason for inspection: Planned: Authorization Number: UA105434: Source of inspected reauirement(s): Environmental Manaement Act	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				5417 Burnet Road. Sechelt	49.4995	-123.74181
Inspection	2018-11-15	SWANSON'S READY-MIX LTD.	Trieaer or reason for inspection: Planned: Authorization Number: 2434: Source of inspected reauirement(s): Permit	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				5417 Burnet Road. Sechelt. BC	49.4995	-123.74181
Inspection	2018-11-15	SWANSON'S READY-MIX LTD.	Trieaer or reason for inspection: Planned: Authorization Number: HW105439: Source of inspected reauirement(s): Hazardous Waste Reaulation	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				5417 Burnet Road. Sechelt	49.4995	-123.74181
Inspection	2018-10-18	SUNSHINE COAST REGIONAL DISTRICT	Trieaer or reason for inspection: Planned: Authorization Number: 2547: Source of inspected reauirement(s): Permit	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				SECHELT LANDFILL municipal landfill	49.48833	-123.71136
Inspection	2018-08-20	DISTRICT OF SECHELT	Trieaer or reason for inspection: Non-compliance report: Authorization Number: 100667: Source of inspected reauirement(s): Municipal Wastewater Reaulation	Ministry of Environment and Climate Change Strateav	Environmental Manaement Act		109			Inspection to verify compliance with reaulatory reauirement.				5678 Surf Circle. Sechelt BC V0N 3A3	49.4779	-123.7593
Ticket	2007-01-01	Unpublished		Conservation Officer Service	Environmental Manaement Act	Open Burnine	8	1			230 Dollars - Fined			Sechelt / Davis Bav		
Ticket	2007-01-01	Stronabridge Real Estate Corp.		Conservation Officer Service	Environmental Manaement Act	Open Burnine	8	1			230 Dollars - Fined			Sechelt / Davis Bav		
Ticket	2006-04-01	Unpublished		Conservation Officer Service	Environmental Manaement Act		12	2			115 Dollars - Fined			Sechelt		
Ticket	2006-04-01	Sladev Timber Ltd.		Conservation Officer Service	Environmental Manaement Act	Open Burnine	9				230 Dollars - Fined			Sechelt		

AMS Database Search Results

AMS Authorizations

Waste Type	State	Primary BCMECID	Secondary BCMECID	QTY	WSR Regulation	WSR Schedule Doc or Tec	Administrative Area	Regional District	Program Area	Nearest Municipality	Facility Type - Description	Facility Address	Latitude	Longitude	Legal Land Description	Mailing Address
Effluent	Active	913000 Administration - Local, Municipal, Regional	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Residential Subdivision	5320 Susan Way, Halfmoon Bay BC V0N 1Y2	49.51054	-123.99367	Lot 93, District Lot 2398, Plan VAP22995	1975 FIELDROAD SECHELT, BC V0N 3A1
Effluent	Active	327300 Manufacturing - Cement & Concrete		L	Schedule 2	Concrete and Concrete Products IndustryCode of Practice for the Concrete and Concrete Products Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Gravel Wash Plant and Ready-Mix Trucks	5417 Burnett Road, Sechelt BC V0N 3A4	49.5001	-123.762476	DL 1556 Plan 5836, Lot 4, 5	BOX 372 5417 BURNETT RD SECHELT, BC V0N 3A0
Refuse	Cancelled	913000 Administration - Local, Municipal, Regional	562190 Solid Waste Management	M	Schedule 1	Municipal Solid Waste Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	municipal landfill	SECHELT LANDFILL	49.4883333	-123.7533333	Block C, District Lot 7519, Group 1, New Westminster District	1975 FIELDROAD SECHELT, BC V0N 3A1
Air	Active	327300 Manufacturing - Cement & Concrete		L	Schedule 2	Concrete and Concrete Products IndustryCode of Practice for the Concrete and Concrete Products Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Ready-Mix Concrete Plant	5417 Burnett Road, Sechelt	49.4995	-123.761909	SECHELT	BOX 372 5417 BURNETT RD SECHELT, BC V0N 3A0
Effluent	Cancelled	913000 Administration - Local, Municipal, Regional	562220 Sewage Treatment	M	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Municipal waste water treatment plant. 2 separate waste water treatment plants each with disinfection facilities and a common outfall	Sechelt	49.4781	-123.741	SECHELT SEWAGE TREATMENT PLANT AND OCEAN OUTFALL	5930 LOCUST DRIVE SECHELT, BC V0N 3A0
Effluent	Active	913300 Administration - Private	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Sewage treatment plant serving a residential complex under strata plan	MADEIRA PARK, 2.5 KM SOUTH	49.47861	-124.01331	MADEIRA PARK, 2.5 KM SOUTH	PO Box 140, Madeira Park, BC V0N 2H0
Effluent	Active	913000 Administration - Local, Municipal, Regional	562210 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Domestic and Commercial Sources	SECRET COVE, SUNSHINE COAST	49.5165	-123.96189	Lot D, District Lot 1535, Group 1, New Westminster District, Plan 17988. Strata Plan VIS 757 and Lot 3, Plan	1975 FIELD ROAD SECHELT, BC V0N 3A1
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt		PENDER HARBOUR	49.56067	-123.97967	PENDER HARBOUR	5356 Old Il Cove Road, Halfmoon Bay BC V0N 1Y2
Effluent	Active	913300 Administration - Private	562210 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Campground and Recreational Vehicle Park Creekside Campground & RV Park, 6516 Sunshine Coast Highway, Sechelt, BC V0N 3A0	Wilson Creek, near Sechelt	49.5122	-123.7086	Parcel A, District Lot 1029, Plan 564, New Westminster District	6516 SUNSHINE COAST HWY, SECHELT BC V0N 3A1
Effluent	Active	913300 Administration - Private	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Mobile Home Park	Rockland Wynd Mobile Home Park, 6116 Browning Road, Sechelt BC	49.4394	-123.6953	Lot 7, Block 1, of District Lot 1081, Group 1, New Westminster District, Plan 8662	49-5221 Oakmount crec, Burnaby BC, V5H 4N6
Air	Active	327300 Manufacturing - Cement & Concrete		L	Schedule 2	Concrete and Concrete Products IndustryCode of Practice for the Concrete and Concrete Products Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Ready-Mix Concrete Plant	6347KEMAN, SUNSHINE COAST	49.6218865	-123.981056	6347KEMAN, SUNSHINE COAST	BOX 372 5417 BURNETT RD SECHELT, BC V0N 3A0
Effluent	Active	913000 Administration - Provincial & Territorial	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Sewage X unit washroom building, discharging to separate greywater and blackwater septic tanks, with separate drain fields.	SECHELT, PORPOISE BAY PROVINCIAL PARK	49.5038	-123.753	SECHELT, PORPOISE BAY PROVINCIAL PARK	PO BOX 9339 PROV GOV, Victoria BC V8W9M2
Effluent	Active	311300 Food - Animal Feed		L	Schedule 2	Fish Products Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Fish Processing Plant	PENDER HARBOUR	49.6246058	-124.0427168	PENDER HARBOUR	7857 Hudson Road, Delta BC V4G0G6
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	residential, two residential houses.	CATFISH ISLAND, BURRARD BAY	49.599196	-123.027838	Lot 6228, Group 1, New Westminster District	4112 Pugh Drive, Vancouver BC, V6L 2V8
Refuse	Active	212300 Mining - Quarries	562210 Solid Waste Management	L	Schedule 1	Municipal Solid Waste Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	MSW landfill	IRMIN INLET, TREAT CREEK	49.8605916	-123.873433	IRMIN INLET, TREAT CREEK	BOX 11000 1850 HILLSIDE AVE COQUITLAM, BC V1J 6Z7
Air	Active	113311 Forest Sector - Logging	562210 Solid Waste Management	L	Schedule 1	Burning or Incineration of Wood Residue	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	LOGGING INDUSTRY LOGGING INDUSTRY	EGMONT, KHRIS CREEK	49.7365399	-123.889195	Lot 9831, Group 1, New Westminster District	Suite #311, 195 - 911 Yates St, Victoria BC V8V 4Y9
Refuse	Active	113311 Forest Sector - Logging	562210 Solid Waste Management	L	Schedule 1	Burning or Incineration of Wood Residue	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	LOGGING INDUSTRY LOGGING INDUSTRY	EGMONT, SKREE CREEK	49.7365399	-123.889195	Lot 9831, Group 1, New Westminster District	Suite #311, 195 - 911 Yates St, Victoria BC V8V 4Y9
Effluent	Active	913000 Administration - Aboriginal	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Community Sewer System	SECHELT, SOUTH END OF FIELD ROAD	49.427	-123.7137	Tsleweylnu-Indian Reserve No. 1, New Westminster District (C.L.S.R.) Plan 57303 and Plan 56968	PO Box 720, 5555 Sunshine Coast Highway, Sechelt, BC V0N 3A0
Effluent	Active	913300 Administration - Private	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Marina	6781 Redrogate Road, Egmont BC	49.7282	-123.95	EGMONT TO SECHELT INLET	6781 REDROGATE ROAD EGMONT, BC V0N 1N0
Refuse	Active	113311 Forest Sector - Logging	562210 Solid Waste Management	L	Schedule 2	Wood Processing Industry - Primary	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Dryland sopsort	Clowhom Main Road near the head of Salmon Inlet (northeast of Sechelt), BC	49.7125	-123.5417	SALMON INLET, CLOWHOM LOGGING CAMP	BOX 392 238-1 NO TIMBER ST, SECHELT, BC V0N 3A0
Air	Cancelled	113311 Forest Sector - Logging	562190 Solid Waste Management	L	Schedule 1	Burning or Incineration of Wood Residue	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	log handling facility	SALMON INLET, (HEAD OF) CLOWHOM LOGGING CAMP	49.716698	-123.539167	SALMON INLET, (HEAD OF) CLOWHOM LOGGING CAMP	
	Cancelled	422110 Storage - Fuel		L	N/A		Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt		SECHELT, 5002 WHARF ST	49.476926	-123.75392	SECHELT, 5002 WHARF ST	4370 DOMINION STREET BURNABY, BC V5G 4M7
Refuse	Active	212300 Mining - Quarries		L	Schedule 1	Pulp Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Aggregate Mine Operational aggregate mine producing commercial grade sand and gravel.	5781 Sechelt Inlet Road, Sechelt BC V0N 3A0	49.6799	-123.765939	property owned or leased by Lehigh Hanson Materials Limited in Sechelt BC described as: The whole of Lot	PO BOX 5790, Sechelt BC V0N 3A0
	Active	112500 Aquaculture - Land Based		L	Schedule 2	Aquaculture - Land-based Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt		SECHELT, 8 FM SOUTH	49.4654051	-123.754666	LOT 16, DISTRICT LOT 1028, GROUP 1, NEW WESTMINSTER DISTRICT, PLAN 6682	BOX 609 666 SUNSHINE COAST HWY SIBSONS, BC V0N 1V0
	Active	569990 Waste Treatment - Land Application of Solids		L	Schedule 2	Composting Operations	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt		7353 Sechelt Inlet Road, Sechelt BC V0N0A3	49.53891	-123.762167		7353 SECHELT INLET ROAD SECHELT, BC V0N 3A3
	Cancelled	517000 Aquaculture - Land Based		L	Schedule 2	Aquaculture - Land-based Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt		EGMONT, PO BOX 18	49.9922501	-124.013191	EGMONT, PO BOX 18	5279 159 - 968 GRIBURG WAY RR #7 SIBSONS, BC V0N 1V7
Refuse	Active	562000 Administration - Provincial & Territorial	212300 Mining - Metal	L	Schedule 1	Contaminated Site Contaminant Management	Land Remediation	Sunshine Coast	Authorizations - South Region	Sechelt	mine mine	Lion Beck on the Britannia Mine Site	49.60736	-123.5491	District Lot 1887, Group 1, New Westminster District	PO BOX 9120 STN PROV GOVT, Victoria BC V8W9K2
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt		6822 Wolfer Road, Pender Harbour, BC V0N2H0	49.6233	-124.0078	Block 1, DL 5510, Nanaimo Land District, VIP67240	5356 Old Il Cove Road, Halfmoon Bay BC V0N 1Y2
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Septic tank treatment and subsurface disposal to ground	6822 Wolfer Road, Pender Harbour, BC V0N2H0	49.6233	-124.0078	Block 1, DL 5510, Nanaimo Land District, VIP67240	5356 Old Il Cove Road, Halfmoon Bay BC V0N 1Y2
	Cancelled	569990 Waste Treatment - Land Application of Solids		N/A			Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt		SECHELT, 5784 SECHELT INLET ROAD	49.486012	-123.768927	SECHELT, 5784 SECHELT INLET ROAD	427 SEVENTH STREET NEW WESTMINSTER, BC V3M 3L2
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	M	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Residential Condo Complex	5160 Davis Bay Road, Sechelt BC, V0N 3A0	49.427	-123.719	Lot 1, Block 21, District Lot 1954, Group 1, NWD, Plan BCP 22056	PO BOX 187, Sechelt BC, V0N 3A0
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt		SECHELT, 3694 SOUTHEAST	49.4586961	-123.730536	SECHELT, 3694 SOUTHEAST	
Effluent	Active	913000 Administration - Local, Municipal, Regional	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	60 lot residential subdivision near Garden Bay, BC	6302 Wilkin Road, Garden Bay BC V0N3J1	49.6650422	-124.06169	Lot 11, District Lot 1915, Group 1, NWD, Plan BCP23871	1975 FIELDROAD SECHELT, BC V0N 3A1
Effluent	Active	913000 Administration - Local, Municipal, Regional	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	STEP baedic tank effluent aumainist system followed by MicroMAST secondary treatment. UV disinfection and disposal to ground for 2 vacaste discharges	12849 Laisson Road. Madeira Park BC V0N2H1	49.6147	-124.0266	Lots 66 to 69, DL 1029, PL 7238	1975 FIELD ROAD SECHELT, BC V0N 3A1
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	High quality secondary sewage treatment plant and UV disinfection facility and disposal fields	11021 Pender Landing Road, Pender Harbour BC V0N3S1	49.633932	-124.050499	Lot 01, Block 9, District Lot 2951, Plan BCP13994, NWD	1975 FIELD ROAD SECHELT, BC V0N 3A1
Air	Expired	321300 Administration - Private	412110 Storage - Fuel	L	N/A		Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	air curtain controlled burning. air curtain controlled burning facility	2224 Field Road, Sechelt BC V0N 3A1	49.6346	-123.7358	DL 4390, Except Plan 21587, Grp 1, NWD	2224 Field Road, Sechelt BC, V0N 3A1
Effluent	Active	913000 Administration - Local, Municipal, Regional	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Residential and development youth camp	6565 Maple Road, Madeira Park BC V0N2H1	50.365	-123.8533	District Lot 5567, Group 1, NWD	1975 FIELDROAD SECHELT, BC V0N 3A1
	Cancelled	327300 Manufacturing - Cement & Concrete		L	N/A		Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Temporary mobile concrete batch plant unit	17 km Northeast of Sechelt, BC. Access via head of Salmon Inlet	49.8116	-123.3993	Crown Filo No. 210252	Suite 950, Oceanic Plaza, 1066 West Hastings Street, Vancouver BC V6E 3X1
	Active	562920 Waste Treatment - Material Recovery Facilities		L	Schedule 2	Vehicle Dismantling and Recycling Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Automotive recycler Automotive recycler	2000 Field Road, Sechelt BC V0N 3A8	49.631671	-123.728538	DL 3223A	5313 Wakefield Road, Sechelt BC V0N 3A8
	Active	112500 Aquaculture - Land Based		L	Schedule 2	Aquaculture - Land-based Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	land based fish hatchery with an annual production of 350,000 kg.	7353 Sechelt Inlet Road, Sechelt BC V0N 3A4	49.536868	-123.762332	Site plan provided quotes " Lots 5 to 8 except Part in Plan 13918, 51/2 D.L. 1610, Plan 6718	7353 Sechelt Inlet Rd, Sechelt BC V0N 3A4
	Active	457210 Storage - Fuel		L	Schedule 2	Petroleum Storage	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Retail Cardlock and Bulk Storage and Transfer Facility	5812 Sechelt Inlet Road, Sechelt, BC,	49.535	-123.757	Lot 1DL, Plan EMP27726, Group 1, New Westminster Land District, Sechelt Band Lands #2	4336 Nelson Drive, Nanaimo BC V9T1Y9
	Cancelled	569990 Waste Treatment - Land Application of Solids		L	Schedule 2	Composting Operations	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Composting Facility - Compost for sale to the public.	4399 Duncy Road, Sechelt BC V0r 0V0	49.48686	-123.71709	DL 7519, District of Sechelt	PO BOX 54, Sechelt BC V0N 3A0
	Active	569990 Waste Treatment - Land Application of Solids		L	Schedule 2	Composting Operations	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Site is located on self governed band lands: Operations consist of the utilization of the Giant Cover System so as to compost complex organic wastes into a "Classic A" compost via static aeration treatment and processing. The facility is located on approx. a 5 acre paved pad. Power and lighting is supplied to site and there is a	5800 Klein Beer Rd, Sechelt BC	49.493377	-123.747339	Lot 157, Sechelt Lands No. 2, Group 1, New Westminster, District Plan EMP27732	5898 Sechelt Inlet Road, Sechelt BC V0N 3A3
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	M	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	not provided	n/a	49.4333	-123.6612	Rem Lot 1, Block 6 & 7, DL 3118, Plan 13851	Box 1985, Gibsons BC, V0N 1V0
Refuse	Active	913000 Administration - Local, Municipal, Regional	562190 Solid Waste Management	L	Schedule 1	Municipal Solid Waste Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Municipal Solid Waste Landfill municipal landfill	4901 Duncy Road, Sechelt	49.4883333	-123.711333	Block C, District Lot 7519, Group 1, New Westminster District	1975 FIELD ROAD SECHELT, BC V0N 3A1
	Active	327300 Manufacturing - Cement & Concrete		L	Schedule 2	Concrete and Concrete Products IndustryCode of Practice for the Concrete and Concrete Products Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Concrete "dry mix" batch plant	5378 Allen Road, Sechelt BC V0N 3A3	49.4979	-123.7372	Lot B, Plan VAP38856	5422 Norwood Road, Sechelt BC V0N 3A3
Effluent	Active	562210 Waste Treatment - Commercial Treatment & Disposal	562220 Sewage Treatment	L	Schedule 1	Municipal Sewage Management	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Municipal Wastewater Treatment Plant	5678 Surf Crescent, Sechelt BC V0N 3A1	49.4778	-123.7556	Lot B and C, Block 6, DL 3041, Plan 22755	PO BOX 129, Sechelt BC V0N 3A0
	Cancelled	327300 Manufacturing - Cement & Concrete		L	N/A		Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Concrete Batch Plant for producing concrete to construct a run of river hydropower facility on Chickwat Creek a tributary of the Toquine River. This is a component of the Narrows Inlet Hydropower	Chickwat Creek Batch plant coordinates: 4499338 E 5539982 N, near Sechelt, BC	49.83053	-123.704832		6375 Ft Airport Road, Hope BC V0X 1L2
	Active	327300 Manufacturing - Cement & Concrete		L	Schedule 2	Concrete and Concrete Products IndustryCode of Practice for the Concrete and Concrete Products Industry	Southern Interior	Sunshine Coast	Authorizations - South Region	Sechelt	Ready-Mix Concrete Batch Plant	5417 Burnett Road, Sechelt BC V0N 3A4	49.499359	-123.761625	DL 1556, Plan 5836, Lot 6	PO BOX 372, Sechelt BC V0N 3A0

AMS Waste Discharges

Authorisation Number	Status	Authorisation Type	Discharge Type	Receiving Body (Facility)	Work Site & Parties and Roles	Discharge Site Activity Status	Work Activities	Work Description	Facility Type Description	Discharge Code Name	Discharge Contaminant	Discharge Min	Discharge Max	Discharge Units	Maximum Hourly Rate	Discharge End Date	Proposed Treatment to Disposal	Administration Area	Receiving Area	Receiving Subzone	Receiving Waterbody	Facility Address	Eastings	Northings	Grid Zone	Facility Name
8428	Active	SOLUBRIQ HILLS ESTATES LTD.	Permit	Air	Primary: 115911 Forest Sector - Logging Secondary: 562200 Solid Waste Measurement	2238220: STACK - N/A Permitted Discharge	Low	Schedule 1	Burning or Incineration of Wood Residue	Logging Industry: An Auxiliary Air Blower, Air Delivery Piping, Earth Mound Basin Pit (Trench)	controlled open burning of unsalvageable wood residue from a log handling facility (dock/area)	Total Particulate Matter		12.000 kg/t	1999-01-15 0:00	2003-12-31 0:00	Open Burning	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	DIAMONT, EARLE CREEK	-89.748599	123.685820	1992-12-29 0:00	
8428	Active	SOLUBRIQ HILLS ESTATES LTD.	Permit	Air	Primary: 115911 Forest Sector - Logging Secondary: 562200 Solid Waste Measurement	2238220: STACK - N/A Permitted Discharge	Low	Schedule 1	Burning or Incineration of Wood Residue	Logging Industry: An Auxiliary Air Blower, Air Delivery Piping, Earth Mound Basin Pit (Trench)	controlled open burning of unsalvageable wood residue from a log handling facility (dock/area)	Nitrogen Oxides		500 kg/t	1999-01-15 0:00	2003-12-31 0:00	Open Burning	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	DIAMONT, EARLE CREEK	-89.748599	123.685820	1992-12-29 0:00	
8428	Active	SOLUBRIQ HILLS ESTATES LTD.	Permit	Refuse	Primary: 115911 Forest Sector - Logging Secondary: 562200 Solid Waste Measurement	2238220: - N/A Permitted Discharge	Low	Schedule 1	Burning or Incineration of Wood Residue	Logging Industry: An Auxiliary Air Blower, Air Delivery Piping, Earth Mound Basin Pit (Trench)	controlled open burning of unsalvageable wood residue from a log handling facility (dock/area)	General Refuse		1,000 t/t	2015-09-21 0:00	1999-12-31 0:00	Landfill	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	DIAMONT, EARLE CREEK	-89.748599	123.685820	1992-12-29 0:00	
8428	Active	SOLUBRIQ HILLS ESTATES LTD.	Permit	Air	Primary: 115911 Forest Sector - Logging Secondary: 562200 Solid Waste Measurement	2238220: STACK - N/A Permitted Discharge	Low	Schedule 1	Burning or Incineration of Wood Residue	Logging Industry: An Auxiliary Air Blower, Air Delivery Piping, Earth Mound Basin Pit (Trench)	controlled open burning of unsalvageable wood residue from a log handling facility (dock/area)	Carbon Monoxide		65.000 kg/t	1999-01-15 0:00	2003-12-31 0:00	Open Burning	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	DIAMONT, EARLE CREEK	-89.748599	123.685820	1992-12-29 0:00	
8428	Active	SOLUBRIQ HILLS ESTATES LTD.	Permit	Air	Primary: 115911 Forest Sector - Logging Secondary: 562200 Solid Waste Measurement	2238220: STACK - N/A Permitted Discharge	Low	Schedule 1	Burning or Incineration of Wood Residue	Logging Industry: An Auxiliary Air Blower, Air Delivery Piping, Earth Mound Basin Pit (Trench)	controlled open burning of unsalvageable wood residue from a log handling facility (dock/area)	Sulfur Oxides		20.0 kg/t	1999-01-15 0:00	2003-12-31 0:00	Open Burning	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	DIAMONT, EARLE CREEK	-89.748599	123.685820	1992-12-29 0:00	
8428	Active	SOLUBRIQ HILLS ESTATES LTD.	Permit	Air	Primary: 115911 Forest Sector - Logging Secondary: 562200 Solid Waste Measurement	2238220: STACK - N/A Permitted Discharge	Low	Schedule 1	Burning or Incineration of Wood Residue	Logging Industry: An Auxiliary Air Blower, Air Delivery Piping, Earth Mound Basin Pit (Trench)	controlled open burning of unsalvageable wood residue from a log handling facility (dock/area)	Opacity		40.00 %	1999-01-15 0:00	2003-12-31 0:00	Open Burning	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	DIAMONT, EARLE CREEK	-89.748599	123.685820	1992-12-29 0:00	
8428	Active	SOLUBRIQ HILLS ESTATES LTD.	Permit	Air	Primary: 115911 Forest Sector - Logging Secondary: 562200 Solid Waste Measurement	2238220: STACK - N/A Permitted Discharge	Low	Schedule 1	Burning or Incineration of Wood Residue	Logging Industry: An Auxiliary Air Blower, Air Delivery Piping, Earth Mound Basin Pit (Trench)	controlled open burning of unsalvageable wood residue from a log handling facility (dock/area)	Volatile Organic Compounds		5.000 kg/t	1999-01-15 0:00	2003-12-31 0:00	Open Burning	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	DIAMONT, EARLE CREEK	-89.748599	123.685820	1992-12-29 0:00	
7761	Active	JACK CEWE LIMITED	Permit	Refuse	Primary: 212300 Mine - Quarries Secondary: 562200 Solid Waste Measurement	2238720: - N/A Permitted Discharge	Low	Schedule 1	Structural Solid Waste Measurement	Mine Landfill	General Refuse			639.1 t/wk	1999-05-31 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	JERVIS INLET - TRUIT CREEK	-89.800766	123.671403	1987-04-18 0:00	
7706	Active	DR. L. RUPKEMEINE INC.	Permit	Effluent	Primary: 562210 Waste Treatment - Commercial Treatment & Disposal Secondary: 562210 Sewage Treatment	2238671: OUTFALL - 67 SEPTIC TANK Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Residences: A Cubic Metre Septic Tank And A Submerged Outfall Extending 250 Metres Offshore Discharging At A Depth Of 12.2 Metres Below Mean Low Water	two residential homes	Biochemical Oxygen Demand		150.000 mg/L	2014-07-17 0:00	1999-12-31 0:00	Septic Tank And Submerged Marine Outfall	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	CATFISH ISLAND - BARNSON BAY	-89.599196	124.017804	1987-04-01 0:00	
7706	Active	DR. L. RUPKEMEINE INC.	Permit	Effluent	Primary: 562210 Waste Treatment - Commercial Treatment & Disposal Secondary: 562210 Sewage Treatment	2238671: OUTFALL - 67 SEPTIC TANK Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Residences: A Cubic Metre Septic Tank And A Submerged Outfall Extending 250 Metres Offshore Discharging At A Depth Of 12.2 Metres Below Mean Low Water	two residential homes	Total Suspended Solids		150.000 mg/L	2014-07-17 0:00	1999-12-31 0:00	Septic Tank And Submerged Marine Outfall	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	CATFISH ISLAND - BARNSON BAY	-89.599196	124.017804	1987-04-01 0:00	
7515	Active	NORTH DELTA SEAFOODS LTD.	Permit	Effluent	Primary: 311100 Food - Animal Feed	2238386: OUTFALL - OUTFALL Permitted Discharge	Low	Schedule 2	Fish Products Industry	Fish Processor Plant	PE-7515 PENDER HARBOUR FISH CO - PROCESS EFFL	Biochemical Oxygen Demand		100.000 mg/L	2019-10-16 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	PENDER HARBOUR	-89.626058	124.042168	1987-02-25 0:00	
7515	Active	NORTH DELTA SEAFOODS LTD.	Permit	Effluent	Primary: 311100 Food - Animal Feed	2238386: OUTFALL - OUTFALL Permitted Discharge	Low	Schedule 2	Fish Products Industry	Fish Processor Plant	PE-7515 PENDER HARBOUR FISH CO - PROCESS EFFL	Total Suspended Solids		70.000 mg/L	2019-10-16 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	PENDER HARBOUR	-89.626058	124.042168	1987-02-25 0:00	
7509	Active	BC PARKS	Permit	Effluent	Primary: 912200 Administration - Provincial & Territorial Secondary: 562210 Sewage Treatment	2238160: TITLE 9012: - Toilet and sink disposal field Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Sewage: An Existing Two Compartment 27.3 M3 Capacity Septic Tank, Two Existing Disposal Fields Each Containing A Minimum Of 162 Metres Of Disposal Tile	Shower facilities at the B-unit washroom	Biochemical Oxygen Demand,		150.00 mg/L	2021-09-14 0:00	1999-12-31 0:00	Existing Disposal Field	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SECHELT, PORPOISE BAY PROVINCIAL PARK	-89.5058	123.753	1987-06-18 0:00	
7509	Active	BC PARKS	Permit	Effluent	Primary: 912200 Administration - Provincial & Territorial Secondary: 562210 Sewage Treatment	2238160: TITLE 9012: - Toilet and sink disposal field Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Sewage: An Existing Two Compartment 27.3 M3 Capacity Septic Tank, Two Existing Disposal Fields Each Containing A Minimum Of 162 Metres Of Disposal Tile	Shower facilities at the B-unit washroom	Total Suspended Solids		150.00 mg/L	2021-09-14 0:00	1999-12-31 0:00	Existing Disposal Field	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SECHELT, PORPOISE BAY PROVINCIAL PARK	-89.5058	123.753	1987-06-18 0:00	
7509	Active	BC PARKS	Permit	Effluent	Primary: 912200 Administration - Provincial & Territorial Secondary: 562210 Sewage Treatment	2238185: TITLE 9012: - DISTRIBUTION BOX DAY USE AREA Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Sewage: An Existing Two Compartment 16.0 M3 Capacity Septic Tank, An Existing Disposal Field Containing Approximate Of 180 Metres Of Disposal Tile	an 8 unit washroom building	Biochemical Oxygen Demand,		150.00 mg/L	2021-09-14 0:00	1999-12-31 0:00	Disposal Field	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SECHELT, PORPOISE BAY PROVINCIAL PARK	-89.5058	123.753	1987-06-18 0:00	
7509	Active	BC PARKS	Permit	Effluent	Primary: 912200 Administration - Provincial & Territorial Secondary: 562210 Sewage Treatment	2238185: TITLE 9012: - DISTRIBUTION BOX DAY USE AREA Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Sewage: An Existing Two Compartment 16.0 M3 Capacity Septic Tank, An Existing Disposal Field Containing Approximate Of 180 Metres Of Disposal Tile	an 8 unit washroom building	Total Suspended Solids		150.00 mg/L	2021-09-14 0:00	1999-12-31 0:00	Disposal Field	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SECHELT, PORPOISE BAY PROVINCIAL PARK	-89.5058	123.753	1987-06-18 0:00	
6895	Active	SAVANORO'S READY-MIX LTD.	Permit	Air	Primary: 327300 Manufacturing - General & Concrete	2238720: STACK - CRUSHER DUST UNIT Permitted Discharge	Low	Schedule 2	Concrete and Concrete Products Industry\Code of Practice for the Concrete and Concrete Products Industry	Ready-Mix Concrete Plant	R4-4880 CRUSHER DUST COLLECTOR SYSTEM #1	Total Particulate Matter		700.00 mg/m3	1999-05-26 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SCHOOL RD - WILSON CREEK	-89.611665	123.68700	1989-05-16 0:00	
6895	Active	SAVANORO'S READY-MIX LTD.	Permit	Air	Primary: 327300 Manufacturing - General & Concrete	2238720: STACK - CRUSHER DUST UNIT Permitted Discharge	Low	Schedule 2	Concrete and Concrete Products Industry\Code of Practice for the Concrete and Concrete Products Industry	Ready-Mix Concrete Plant	R4-4880 CRUSHER DUST COLLECTOR SYSTEM #1	Particle Fallout Rate		1.70 cm/day/50	1999-05-26 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SCHOOL RD - WILSON CREEK	-89.611665	123.68700	1989-05-16 0:00	
6356	Active	PATH HOLDINGS LTD.	Permit	Effluent	Primary: 531300 Administration - Private Secondary: 562220 Sewage Treatment	2238530: TITLE 9012: - FINAL CLARIFIER/SEWAGE TREATMENT PLANT Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Mobile Home Park: A Secondary Treatment Plant And Dual Disposal Fields, Each With A Minimum 525 Metres Of Disposal Pipe.	a seven-user salmon service a mobile home park	Biochemical Oxygen Demand,		45.00 mg/L	1994-11-30 0:00	1999-12-31 0:00	Secondary Treatment And Ground Disposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	Rockland Weed Mobile Home Park, 4138 Brownrigg Road, Sechelt BC	-89.6996	123.6951	1982-12-09 0:00	
6356	Active	PATH HOLDINGS LTD.	Permit	Effluent	Primary: 531300 Administration - Private Secondary: 562220 Sewage Treatment	2238530: TITLE 9012: - FINAL CLARIFIER/SEWAGE TREATMENT PLANT Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Mobile Home Park: A Secondary Treatment Plant And Dual Disposal Fields, Each With A Minimum 525 Metres Of Disposal Pipe.	a seven-user salmon service a mobile home park	Total Suspended Solids Residue Non-Filterable		45.00 mg/L	1994-11-30 0:00	1999-12-31 0:00	Secondary Treatment And Ground Disposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	Rockland Weed Mobile Home Park, 4138 Brownrigg Road, Sechelt BC	-89.6996	123.6951	1982-12-09 0:00	
5751	Active	SUNSHINE COAST CHAMPIONSHIP GROUP LTD. doing business as DRIFTWOOD CAMPGROUND AND RV PARK	Permit	Effluent	Primary: 531300 Administration - Private Secondary: 562220 Sewage Treatment	2238630: TITLE 9012: - DISCHARGE FROM CLARIFIER Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Contaminated And Recreational Vehicle Park	PHILLIPS RESORTS PV-5751 SANITARY EFFLUENT	Biochemical Oxygen Demand,		45.00 mg/L	1987-01-06 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	Wilson Creek, near Sechelt	-89.6422	123.7385	1980-06-13 0:00	
5751	Active	SUNSHINE COAST CHAMPIONSHIP GROUP LTD. doing business as DRIFTWOOD CAMPGROUND AND RV PARK	Permit	Effluent	Primary: 531300 Administration - Private Secondary: 562220 Sewage Treatment	2238630: TITLE 9012: - DISCHARGE FROM CLARIFIER Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Contaminated And Recreational Vehicle Park	PHILLIPS RESORTS PV-5751 SANITARY EFFLUENT	Total Suspended Solids Residue Non-Filterable		60.00 mg/L	1987-01-06 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	Wilson Creek, near Sechelt	-89.6422	123.7385	1980-06-13 0:00	
4769	Active	SUNSHINE COAST REGIONAL DISTRICT	Permit	Effluent	Primary: 913300 Administration - Local, Municipal, Regional Secondary: 562220 Sewage Treatment	2222770: OUTFALL - NO MARKING OF COMBINED EFFLUENT, SAMPLES	Low	Schedule 1	Municipal Sewage Management	Domestic And Commercial Sources +Two Secondary Sewage Treatment Plants, Each With Outfalls That Lead Into The Strait Of Georgia. +An Outfall Approximately 900 Metres Long, Extending Outside Secret Cove At A Depth Of Approximately 25 Metres Below The Low Water Mark,	secondary treated effluent to Malaspina Strait from two sewage treatment plants, 25 residences, a store, washrooms, showers and a restaurant and the Jolly Roger Inn plant serves 30	Suspended Solids Residue Non-Filterable		60.00 mg/L	1996-01-11 0:00	1999-12-31 0:00	Secondary Treatment And Discharge Via Outfall	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SECRET COVE, SUNSHINE COAST	-89.5165	123.9639	1979-06-08 0:00	
4769	Active	SUNSHINE COAST REGIONAL DISTRICT	Permit	Effluent	Primary: 913300 Administration - Local, Municipal, Regional Secondary: 562220 Sewage Treatment	2222770: OUTFALL - NO MARKING OF COMBINED EFFLUENT, SAMPLES	Low	Schedule 1	Municipal Sewage Management	Domestic And Commercial Sources +Two Secondary Sewage Treatment Plants, Each With Outfalls That Lead Into The Strait Of Georgia. +An Outfall Approximately 900 Metres Long, Extending Outside Secret Cove At A Depth Of Approximately 25 Metres Below The Low Water Mark,	secondary treated effluent to Malaspina Strait from two sewage treatment plants, 25 residences, a store, washrooms, showers and a restaurant and the Jolly Roger Inn plant serves 30	Biochemical Oxygen Demand,		45.00 mg/L	1996-01-11 0:00	1999-12-31 0:00	Secondary Treatment And Discharge Via Outfall	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SECRET COVE, SUNSHINE COAST	-89.5165	123.9639	1979-06-08 0:00	
4186	Active	THE OWNERS STRATA PLAN VR 272	Permit	Effluent	Primary: 531300 Administration - Private Secondary: 562220 Sewage Treatment	0108830: OUTFALL - SAMPLE FINAL EFFLUENT AT CLARIFIER AFTER SETTLING Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Sewage Treatment Plant Serving A Residential Complex Under Strata Plan .A Secondary Sewage Treatment Plant, Outfall With A 1.22 Metre Diffuser Extending Approximately 90 Metres From Shore At A Minimum Depth Of 15 Metres At Mean Low Water.	treated wwater from a residential strata complex	Biochemical Oxygen Demand,		45.00 mg/L	1984-11-21 0:00	1999-12-31 0:00	Secondary Sewage Treatment Plant	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SAGEMORA PARK, 2.5 KM SOUTH	-89.5966	126.0203	1976-04-27 0:00	
4186	Active	THE OWNERS STRATA PLAN VR 272	Permit	Effluent	Primary: 531300 Administration - Private Secondary: 562220 Sewage Treatment	0108830: OUTFALL - SAMPLE FINAL EFFLUENT AT CLARIFIER AFTER SETTLING Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Sewage Treatment Plant Serving A Residential Complex Under Strata Plan .A Secondary Sewage Treatment Plant, Outfall With A 1.22 Metre Diffuser Extending Approximately 90 Metres From Shore At A Minimum Depth Of 15 Metres At Mean Low Water.	treated wwater from a residential strata complex	Suspended Solids Residue Non-Filterable		60.00 mg/L	1984-11-21 0:00	1999-12-31 0:00	Secondary Sewage Treatment Plant	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SAGEMORA PARK, 2.5 KM SOUTH	-89.5966	126.0203	1976-04-27 0:00	
3365	Active	SAVANORO'S READY-MIX LTD.	Permit	Air	Primary: 327300 Manufacturing - General & Concrete	0103198: STACK - Permitted Discharge	Low	Schedule 2	Concrete and Concrete Products Industry\Code of Practice for the Concrete and Concrete Products Industry	Ready-Mix Concrete Plant	R4-4880 CRUSHER DUST COLLECTOR SYSTEM #1	Total Particulate Matter		40.00 mg/m3	1994-10-06 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	5417 Burnett Road, Sechelt	-89.6995	123.741805	1976-06-01 0:00	
2434	Active	SAVANORO'S READY-MIX LTD.	Permit	Effluent	Primary: 327300 Manufacturing - General & Concrete	0108671: WASHOUT POND - DISCHARGE TO THE SETTLING PONDS Permitted Discharge	Low	Schedule 2	Concrete and Concrete Products Industry\Code of Practice for the Concrete and Concrete Products Industry	Ready-Mix Concrete Plant	R4-4880 CRUSHER DUST COLLECTOR SYSTEM #1	Total Suspended Solids		700.000 mg/L	1999-05-26 0:00	1999-12-31 0:00	Waste Site Proposal	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	SCHOOL RD - WILSON CREEK	-89.6995	123.741250	1976-06-01 0:00	
375	Active	SUNSHINE COAST REGIONAL DISTRICT	Permit	Effluent	Primary: 913300 Administration - Local, Municipal, Regional Secondary: 562220 Sewage Treatment	0108528: OUTFALL - TANIN FROM FINAL EFFLUENT SUMP JUST PRIOR TO DISCHARGE TO HALFMOON BAY Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Residential Subdivision: Sewage Treatment Plant(S), Outfall With A Diffuser Terminating A Minimum Of 210 Metres From Shore At A Minimum Depth Of 55 Metres At Low Water.	wwater salmn servina a residential subdivision	Biochemical Oxygen Demand,		45.00 mg/L	1984-11-30 0:00	1999-12-31 0:00	Sewage Treatment Plant And Outfall	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	5320 Isaac Way, Halfmoon Bay BC V0N 1Y2	-89.51070	123.91967	1970-12-16 0:00	
375	Active	SUNSHINE COAST REGIONAL DISTRICT	Permit	Effluent	Primary: 913300 Administration - Local, Municipal, Regional Secondary: 562220 Sewage Treatment	0108528: OUTFALL - TANIN FROM FINAL EFFLUENT SUMP JUST PRIOR TO DISCHARGE TO HALFMOON BAY Permitted Discharge	Low	Schedule 1	Municipal Sewage Management	Residential Subdivision: Sewage Treatment Plant(S), Outfall With A Diffuser Terminating A Minimum Of 210 Metres From Shore At A Minimum Depth Of 55 Metres At Low Water.	wwater salmn servina a residential subdivision	Suspended Solids Residue Non-Filterable		45.00 mg/L	1984-11-30 0:00	1999-12-31 0:00	Sewage Treatment Plant And Outfall	Authorizations - South	Authorizations - South	Sunshine Coast	Seaforth	5320 Isaac Way, Halfmoon Bay BC V0N 1Y2	-89.51070	123.91967	1970-12-16 0:00	

PROVINCE OF
BRITISH COLUMBIA

Environmental Protection
15326 - 103A Avenue
Surrey, British Columbia
V3R 7A2
Telephone: (604) 582-5200

MINISTRY OF ENVIRONMENT,
LANDS AND PARKS

PERMIT
PE-04088

Under the Provisions of the Waste Management Act

THE CORPORATION OF THE DISTRICT OF SECHELT
P.O. Box 129
5545 Inlet Avenue
Sechelt, British Columbia
V0N 3A0

is authorized to discharge effluent to the water from a municipal sewage treatment plant located in Sechelt, British Columbia, and is subject to the conditions listed below. Contravention of any of these conditions is a violation of the Waste Management Act and may result in prosecution.

1. AUTHORIZED DISCHARGE

1.1 This subsection applies to the discharge of effluent from one or two municipal sewage treatment plants, serving the District of Sechelt and the Sechelt Indian Government District, as shown on the attached Site Plans A, B, and C. The reference number for this discharge is E100781.

1.1.1 The maximum rate of discharge is 3400 cubic metres per day. The authorized discharge period is continuous.

1.1.2 The characteristics of the discharge shall be:

5-day biochemical oxygen demand,	30. mg/L, maximum;
Total suspended solids (nonfilterable residue),	40. mg/L, maximum;
Toxicity LT50,	96. hours, minimum.

H.Y. Wong
Regional Waste Manager

Date Issued: April 2, 1976
Date Amended: AUG 0 5 1994
(most recent)

PROVINCE OF
BRITISH COLUMBIA

Environmental Protection

1.1.3 Authorized works are **existing** sewage treatment plant consisting of primary sedimentation tanks, trickling filter, reaeration tank, secondary clarifier, and aerobic digester; chlorination facilities; outfall with diffuser extending a minimum 455 metres from shore to a minimum depth of 27.5 metres at low water; and related appurtenances, approximately located as shown on attached Site Plans A and B.

Authorized works are **proposed** sewage treatment plant consisting of 6000 cubic metre capacity aerated basin, secondary sedimentation tank, chlorine contact tank, and dechlorination facility; and a sludge management facility consisting of an aerated digester and one or two lined sludge drying basins; approximately located as shown on Site Plan C. These proposed works are to be complete and in operation by **August 31, 1994.**

The aerobic digester at the existing sewage treatment plant is to be converted to a chlorine contact chamber and dechlorination facility by **December 31, 1994.**

1.1.4 The legal description for the location of the facilities from which the discharge originates is Lot C, Block R, D.L. 304, NWD. Plan 22755, and Part of Block A, D.L. 7613.

1.1.5 The legal description for the location of the point of discharge is Trail Bay fronting D.L. 303, Gp. 1, NWD. Reference Plan 14765.

2. GENERAL REQUIREMENTS

2.1 Maintenance of Works

The permittee shall inspect the authorized works regularly and maintain them in good working order. Notify the Regional Waste Manager of any malfunction of these works.

2.2 Emergency Procedures

In the event of an emergency which prevents compliance with a requirement of this permit, that requirement will be suspended for such time as the emergency exists or until otherwise directed by the Regional Waste Manager provided that:

a. Due diligence was exercised in relation to the process, operation or event which caused the emergency and that the emergency occurred notwithstanding this exercise of due diligence;

b. The Regional Waste Manager is immediately notified of the emergency; and

c. The emergency condition is being corrected with due diligence.

Notwithstanding a, b, and c above, the Regional Waste Manager may require the operation to be suspended to protect the environment while the situation is corrected.

H.Y. Wong
Regional Waste Manager

PERMIT PE-04088

Date Issued: April 2, 1976
Date Amended:
(most recent) AUG 05 1994

PROVINCE OF
BRITISH COLUMBIA

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2.3 Process Modifications

The permittee shall notify the Regional Waste Manager prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge.

2.4 Bypasses

The discharge of effluent which has bypassed either of the designated sewage treatment plants and the other authorized works is prohibited unless the approval of the Regional Waste Manager is obtained and confirmed in writing.

2.5 Operator Certification

Classification of the wastewater treatment facility authorized in Subsection 1.1 (the facility) shall be maintained with the "British Columbia Water and Wastewater Operators Certification Program Society" (the Program).

If the facility is classified by the Program at Level II or higher, the permittee shall ensure that all operators of the facility are certified by the Program at a minimum Class I level by **December 1, 1994.**

Operators in training:

All operators in training (OIT) working at the facility classified by the Program at Level II or higher are required to successfully pass an OIT examination within 3 months of commencement of employment at the facility. The OIT certificate shall be valid for 15 months from the date of issue. Prior to the expiry date of the OIT certificate, the OIT must successfully complete a Class I certification examination in order to continue to operate at the facility.

Chief Operator: Level II or higher:

If the facility is classified by the Program at Level II or higher, the permittee shall designate at least one operator to be the Chief Operator of the facility by **December 1, 1996.** The Chief Operator shall be certified at a minimum Class II level.

After **December 1, 1996,** no person shall have Direct Responsible Charge, as defined by the Program, of a municipal wastewater treatment facility classified at Level II or higher unless he or she possesses a valid operator's certificate not more than one level below the classification level of the facility.

Chief Operator: Level III and IV:

If the facility is classified by the Program at Level III, the permittee shall designate a Chief Operator, certified at a Class III level by **December 1, 1998.**

If the facility is classified by the Program at Level IV, the permittee shall designate a Chief Operator, certified at a Class IV level by **December 1, 1998.**

H.Y. Wong
Regional Waste Manager

Date Issued: April 2, 1976
Date Amended: AUG 0 5 1994
(most recent)

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BRITISH COLUMBIA

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2.6 Posting of Outfall

A sign shall be erected along the alignment of the outfall above high water mark. The sign shall identify the nature of the works. The wording and size of the sign shall be approved by the Regional Waste Manager.

2.7 Outfall Inspections

done Sep 96.

The permittee shall have the outfall inspected once each two years by independent qualified personnel to ensure it is in good condition. An inspection report shall be submitted to the Regional Waste Manager within 30 days after the inspection date. The next report shall be submitted by **December 31, 1995.**

2.8 Chlorination

Maintain a chlorine residual prior to dechlorination between 0.1 and 1.0 mg/L at all times, and provide not less than one hour's contact time at average flow rates.

2.9 Dechlorination

All effluent from the proposed sewage treatment plant shall be dechlorinated, and effluent from the existing sewage treatment plant shall be dechlorinated after **December 31, 1994.** Dechlorination shall reduce the chlorine residual below detectable limits.

2.10 Sludge Wasting and Disposal

Sludge wasted from the treatment plants and the sludge management facility shall be disposed of to a site and in a manner approved by the Regional Waste Manager.

3. MONITORING AND REPORTING REQUIREMENTS

3.1 Discharge Monitoring

3.1.1 Composite Sampling

A suitable sampling facility shall be installed and a composite sample of the effluent authorized by Subsection 1.1 shall be obtained **once each month.** The sample is to consist of four grab samples taken over a two-hour period at maximum flow and mixed to form a single sample (or approved flow proportional continuous sampler may be used) for subsequent analysis. Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.1.2 Analyses

Obtain analyses of the composite sample for the following:

5-day biochemical oxygen demand, mg/L;
Total suspended solids, mg/L;
→ Fecal coliform, MPN/100 mL.

H.Y. Wong
Regional Waste Manager

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3.1.3 Grab Sampling

A suitable sampling facility shall be installed and a grab sample of the effluent authorized by Subsection 1.1 shall be obtained **once each 3 months.** Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.1.4 Analyses

Obtain analysis of the grab sample for Toxicity LT50, hours.

3.1.5 Flow Measurement

Provide and maintain a suitable flow measuring device and record **once per day** the effluent volume discharged over a 24-hour period.

3.2 Receiving Environment Monitoring

3.2.1 Grab Sampling

A grab sample of marine water shall be obtained **once each 3 months,** at the four sites listed below, as shown on attached Site Plan A. Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

Reference No. E219508 - Foot of Inlet Avenue;
Reference No. E219509 - Foot of Selma Park Road;
Reference No. E219510 - Foot of Shorn Cliff Road; and
Reference No. E219511 - Near Mission Point.

3.2.2 Analyses

Obtain analyses of the samples for fecal coliform, MPN/100 mL.

3.3 Monitoring Procedures

3.3.1 Sampling and Flow Measurement

Sampling and flow measurement shall be carried out in accordance with the procedures described in "Field Criteria for Sampling Effluents and Receiving Waters", April 1989, 17 pp., or by suitable alternative procedures as authorized by the Regional Waste Manager.

Copies of the above manual are available from the Environmental Protection Division, Ministry of Environment, Lands and Parks, 777 Broughton Street, Victoria, British Columbia, V8V 1X5, and are also available for inspection at all Environmental Protection Offices.

H.Y. Wong
Regional Waste Manager

PERMIT PE-04088

3.3.2 Chemical Analyses

Analyses are to be carried out in accordance with procedures described in the "BRITISH COLUMBIA ENVIRONMENTAL LABORATORY MANUAL for the Analysis of Water, Wastewater, Sediment and Biological Materials", or by suitable alternative procedures as authorized by the Regional Waste Manager.

A copy of the above manual may be purchased from the Queens Printer Publications Centre, 563 Superior Street, Victoria, British Columbia, V8V 4R5 (phone 1-800-663-6105 or 387-4161). The manual is also available for review at all Environmental Protection Program Offices.

3.4 Reporting

Maintain data of analyses and flow measurements for inspection and submit the data, suitably tabulated, to the Regional Waste Manager for the **previous three months**. The next report is to be submitted by **September 30, 1994**. All reports shall be submitted within 31 days of the end of the quarter.

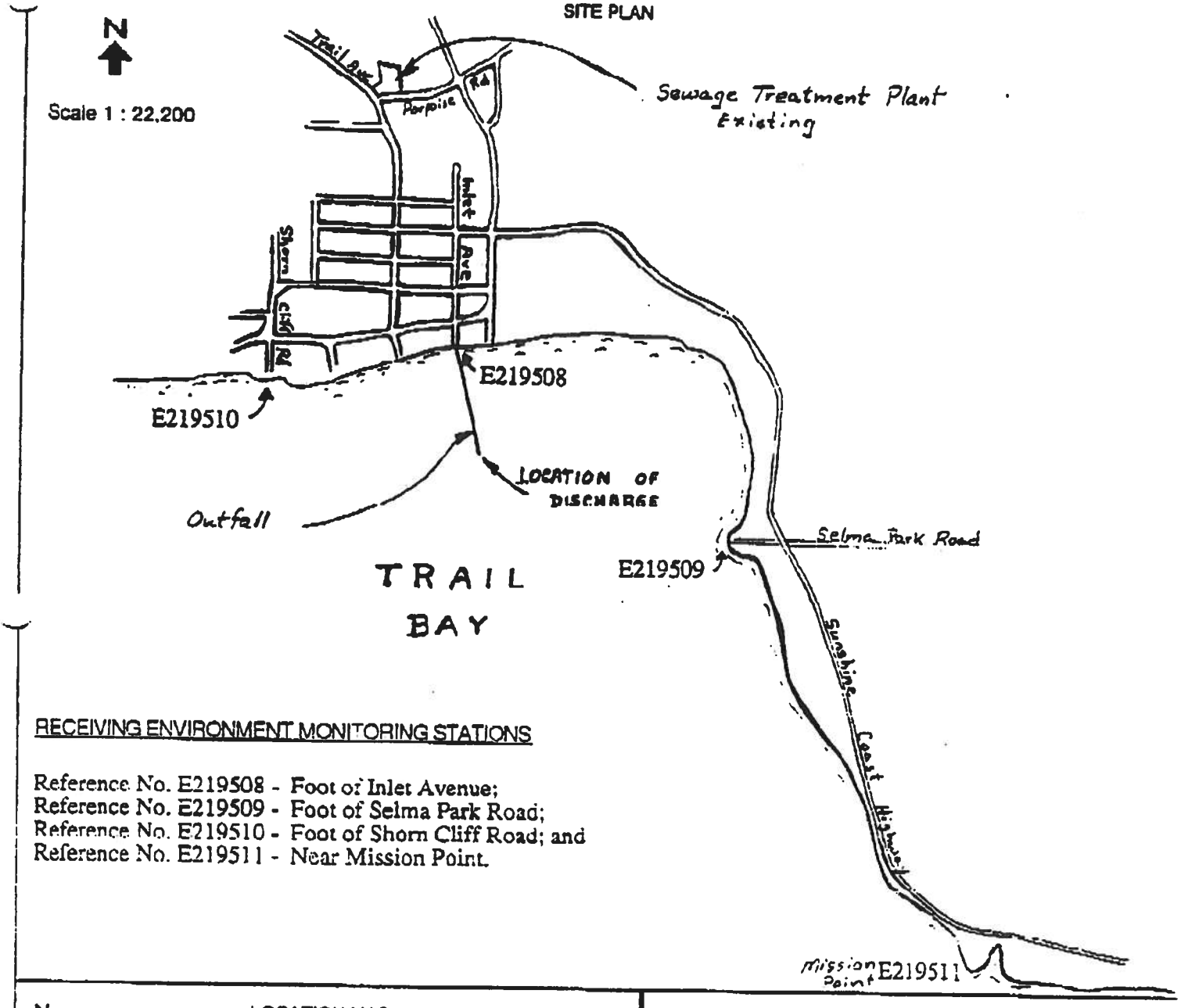
H.Y. Wong
Regional Waste Manager

PERMIT PE-04088

PROVINCE OF
BRITISH COLUMBIA

Environmental Protecti

SITE PLAN

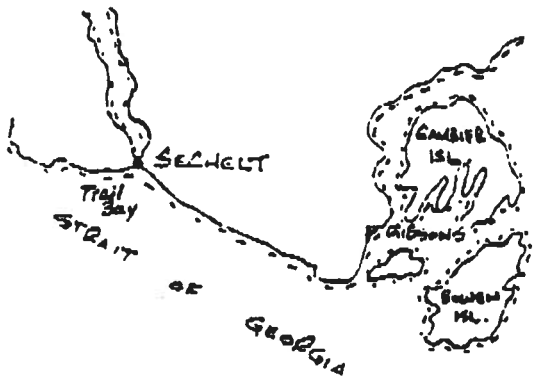


RECEIVING ENVIRONMENT MONITORING STATIONS

Reference No. E219508 - Foot of Inlet Avenue;
Reference No. E219509 - Foot of Selma Park Road;
Reference No. E219510 - Foot of Shorn Cliff Road; and
Reference No. E219511 - Near Mission Point.

N

LOCATION MAP



For Office Use Only

Site Plan A

Permit Approval PE-04088

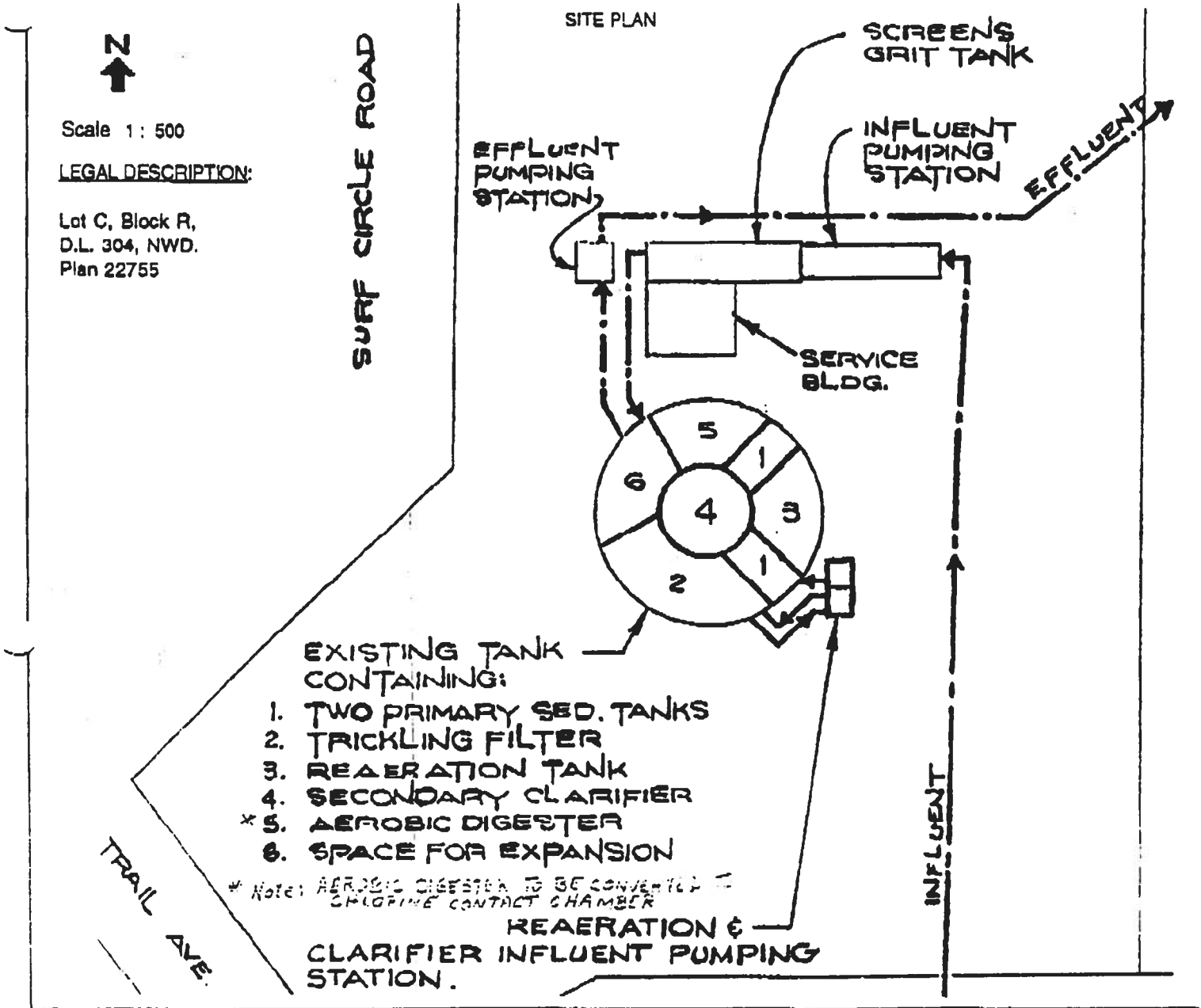
AUG 05 1994
Date

Regional Waste Manager

PROVINCE OF
BRITISH COLUMBIA

Environmental Protecti

SITE PLAN



N

LOCATION MAP

For Office Use Only

Site Plan B

Permit/Approval PE-04088

AUG 0 5 1994

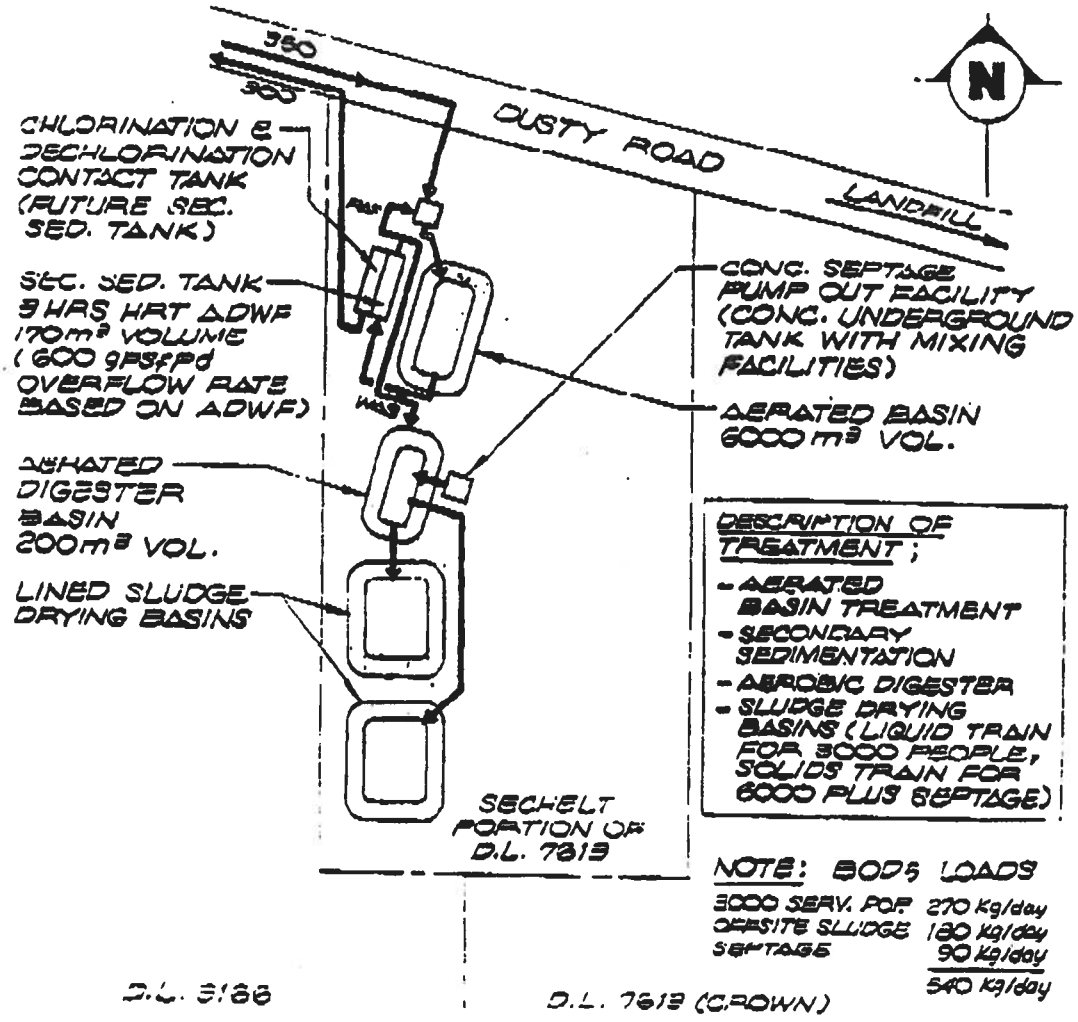
Date

Regional Waste Manager

PROVINCE OF
BRITISH COLUMBIA

Environmental Protection

SITE PLAN
Scale 1 : 2700



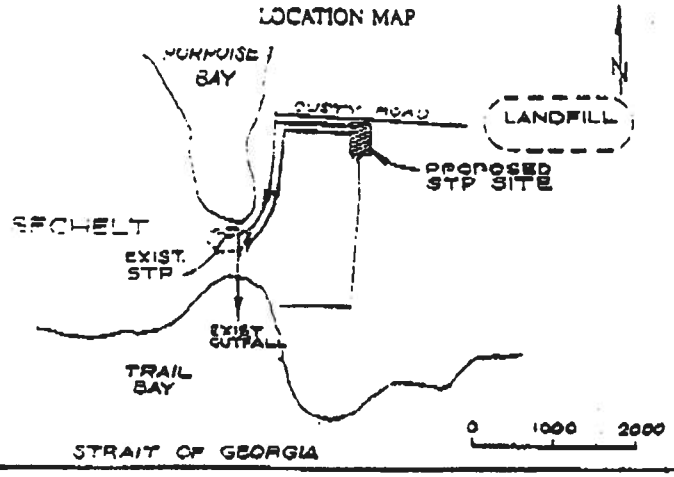
DESCRIPTION OF TREATMENT;
- AERATED BASIN TREATMENT
- SECONDARY SEDIMENTATION
- AEROBIC DIGESTER
- SLUDGE DRYING BASINS (LIQUID TRAIN FOR 3000 PEOPLE, SOLIDS TRAIN FOR 6000 PLUS SEPTAGE)

NOTE: BOD5 LOADS

3000 SERV. POP.	270 kg/day
OFFSITE SLUDGE	180 kg/day
SEPTAGE	90 kg/day
	540 kg/day

LEGAL DESCRIPTION: Part of Block A, D.L.7613

LOCATION MAP



For Office Use Only

Site Plan C

Permit/Approval PE-04088

AUG 05 1994

Date

Regional Waste Manager

Province of British Columbia

Ministry of Environment, Lands and Parks

Legal Description Schedule

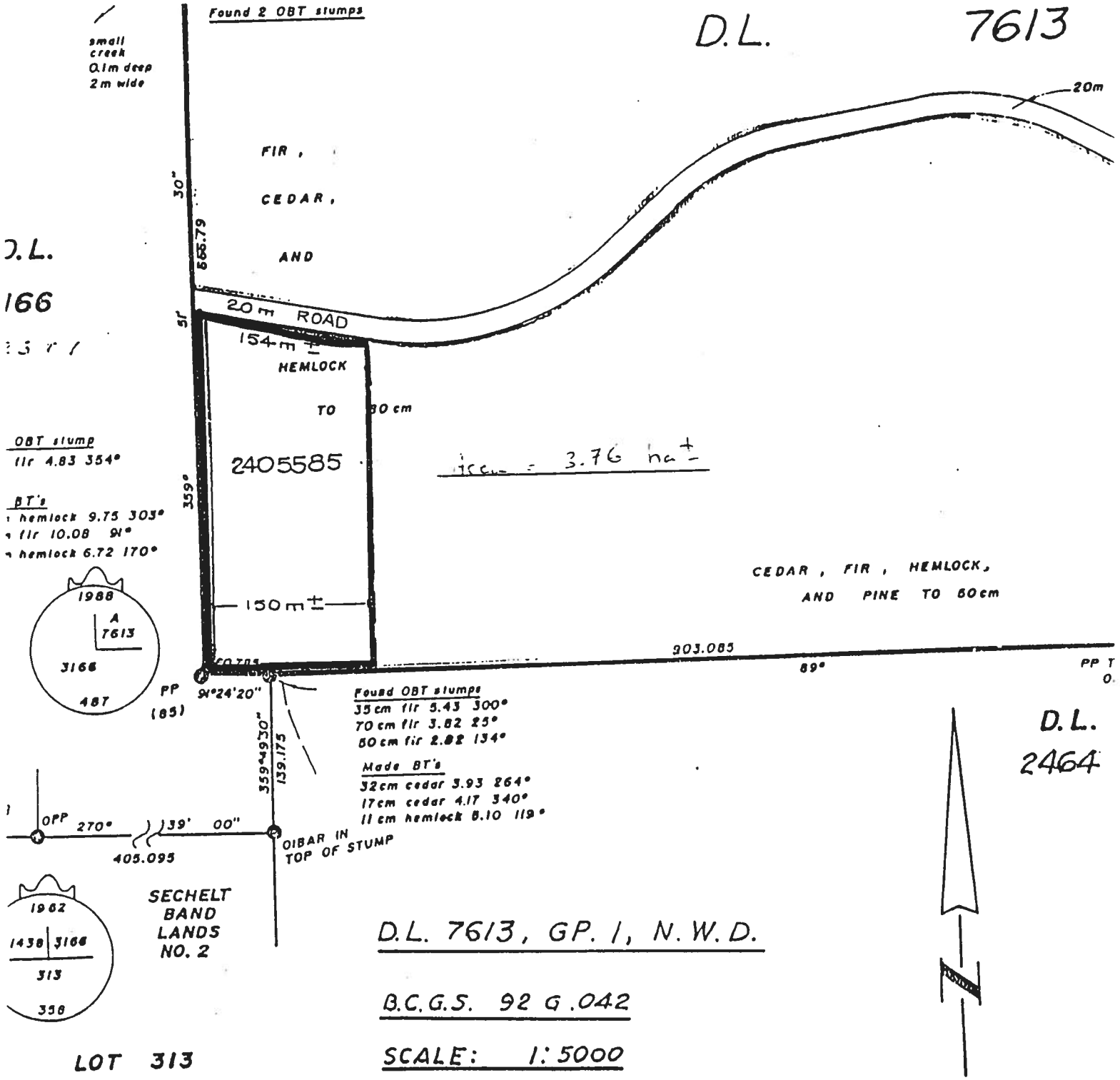
License No.

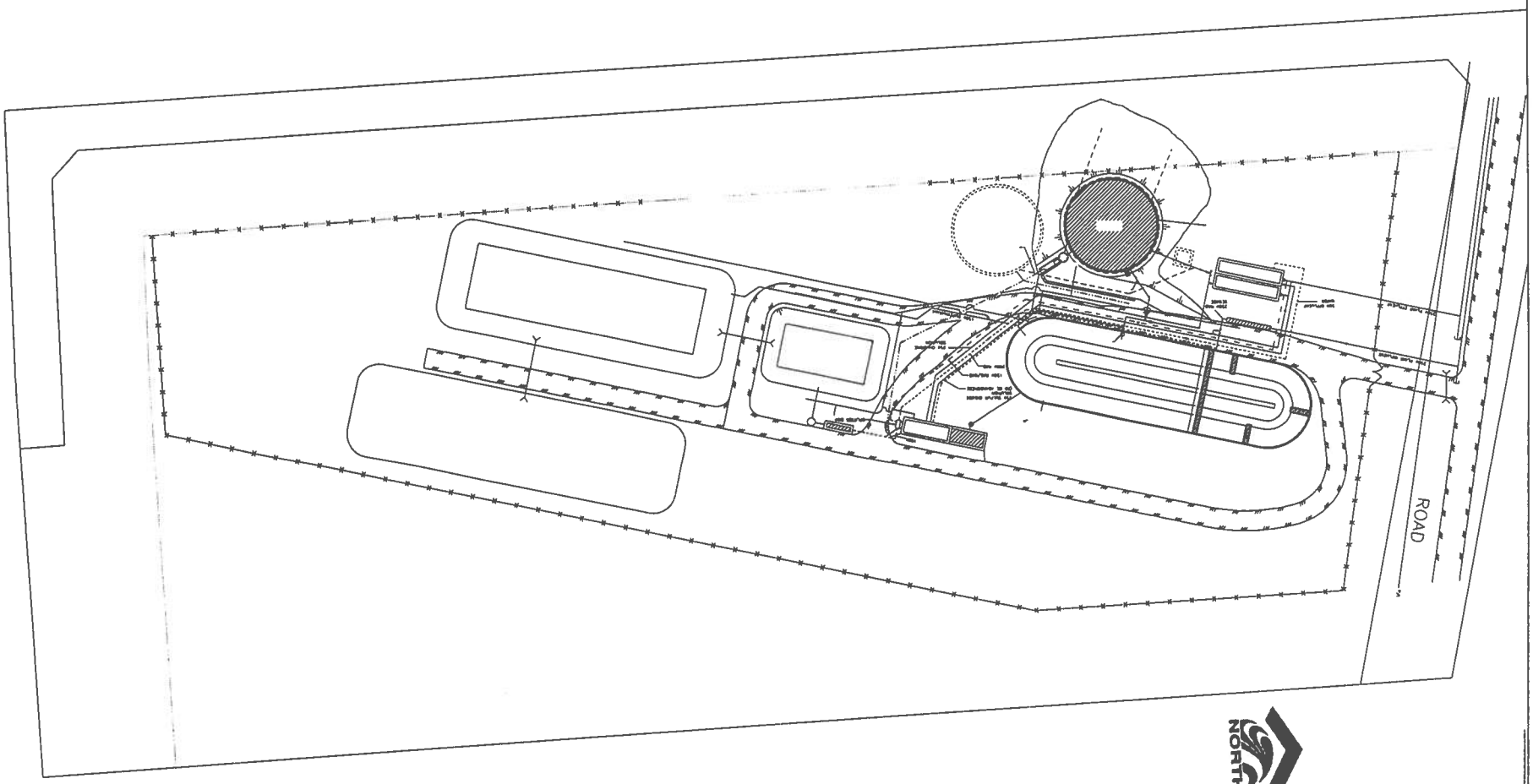
File No. 2405585

1. Legal Description

That part of Block A of District Lot 7613, Group 1, New Westminster District, shown outlined on sketch below, containing 3.76 hectares, more or less.

2. Sketch Plan





SITE PLAN

DISTRICT OF SECHELT

DUSTY ROAD WASTE WATER TREATMENT PLANT

DL 7316, Gp. 1, N.W.D.

EAST PORPOISE BAY

SCALE 1:750	August 9, 2000	REV. 0

October 2, 2008

Tracking Number: 5681
Authorization Number: 4088

REGISTERED MAIL

CORPORATION OF THE DISTRICT OF SECHELT
Box 129
2nd Floor 5797 Cowrie Street
Sechelt, British Columbia V0N 3A0

Dear Permittee:

Enclosed is Amended Permit 4088 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the permit. An annual fee will be determined according to the Permit Fees Regulation.

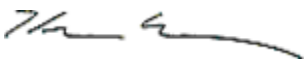
This permit does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the permittee. This permit is issued pursuant to the provisions of the *Environmental Management Act* to ensure compliance with Section 120(3) of that statute, which makes it an offence to discharge waste, from a prescribed industry or activity, without proper authorization. It is also the responsibility of the permittee to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Ministry of Environment
Environmental Protection Division
2nd Floor, 10470 - 152 Street
Surrey, BC V3R 0Y3
Lower Mainland Region
Telephone: (604) 582-5200
Facsimile: (604) 584-9751

Administration of this permit will be carried out by staff from the Lower Mainland Region. Plans, data and reports pertinent to the permit are to be submitted to the Regional Manager, Environmental Protection, at Ministry of Environment, Regional Operations, Lower Mainland Region, 2nd Floor, 10470 - 152 Street, Surrey, BC V3R 0Y3.

Yours truly,



Kevin Larsen
for Director, *Environmental Management Act*
Lower Mainland Region

Enclosure

cc: Environment Canada

Peter Gigliotti, P.Eng., Urban Systems Ltd.,
#500 – 1708 Dolphin Ave., Kelowna BC V1Y 9S4

MINISTRY OF ENVIRONMENT

PERMIT

4088

Under the Provisions of the Environmental Management Act

CORPORATION OF THE DISTRICT OF SECHELT
Box 129
2nd Floor 5797 Cowrie Street
Sechelt, British Columbia V0N 3A0

is authorized to discharge effluent to marine water from two municipal waste water treatment plants located in Sechelt, British Columbia, subject to the terms and conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may lead to prosecution.

This permit supersedes and amends all previous versions of Permit 4088 issued under Part 2, Section 14 of the *Environmental Management Act.*

1. AUTHORIZED DISCHARGE

1.1 Authorized Source

This section applies to the discharge of secondary effluent from two waste water treatment plants serving the District of Sechelt. The site reference number for this discharge is E100781.

1.1.1 The maximum authorized rate of discharge is 3740 cubic metres/day.

1.1.2 The characteristics of the discharge shall be equivalent to or better than:

5-day carbonaceous biochemical oxygen demand (CBOD5), 30 mg/L, maximum;

Total suspended solids (nonfilterable residue), 40 mg/L, maximum;

Fish bioassay (rainbow trout) 96 hour LC50, 100%.

Date issued: April 2, 1976
Date amended: October 2, 2008
(most recent)

Kevin Larsen
for Director, *Environmental Management Act*
Lower Mainland Region
Permit Number: 4088

1.1.3 The authorized works are two separate waste water treatments plants and a common submerged outfall with diffuser extending a minimum of 455 metres offshore discharging to a minimum depth of 27.5 metres below mean low water. The Ebbtide plant is a tricking filter type secondary plant with disinfection facilities, approximately located as shown on Site Plan A, dated June 3, 2008. The Dusty Road plant is an aeration basin type secondary plant with disinfection facilities and sludge digestion, drying and handling facilities, approximately located as shown on Site Plan B, dated June 3, 2008.

1.1.4 The location of the facilities from which the discharge originates is Lot C, Block R, D.L. 304, NWD, Plan 22755 for the Ebbtide plant and Part of Block A, D.L. 7613 for the Dusty Road plant.

The location of the point of discharge is Trail Bay fronting D.L. 303, Group 1, NWD, Reference Plan 14765.

2. GENERAL REQUIREMENTS

2.1 Maintenance of Works and Emergency Procedures

The permittee shall inspect the authorized works regularly and maintain them in good working order. In the event of an emergency or condition beyond the control of the permittee which prevents effective operation of the authorized works or leads to unauthorized discharge, the Permittee shall comply with all applicable statutory requirements, immediately notify the Regional Manager, Environmental Protection, and take appropriate remedial action for the prevention or mitigation of pollution. The Director may reduce or suspend operations to protect the environment until the authorized works have been restored and/or corrective steps have been taken to prevent unauthorized discharges.

During and/or after the emergency event or condition, the permittee shall conduct sampling and analysis of discharges which might be non-compliant with this permit and/or applicable statutory requirements, and as they become available, provide the results to the Regional Manager, Environmental Protection, or designated Officer.

Within 30 days of the emergency event or condition, provide a report including results of sampling and analysis, non-compliance with this permit and/or applicable statutory requirements, corrections to the operational

system, root cause of the emergency event or condition, and decisions for corrective and preventive action.

2.2 Bypasses

The discharge of contaminants which have bypassed the authorized treatment works is prohibited unless the prior approval of the Director is obtained and confirmed in writing.

2.3 Process Modifications

The Regional Manager, Environmental Protection, shall be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge.

2.4 Posting of Outfall

A sign shall be erected along the alignment of the outfall above high water mark. The sign shall identify the nature of the works. The wording, size and colours of the sign shall be acceptable to the Director.

2.5 Outfall Inspection

The permittee shall have the outfall inspected once each two years by independent qualified personnel to ensure it is in good working condition. An inspection report shall be submitted to the Regional Manager, Environmental Protection, within 30 days after the inspection date. The next report shall be submitted by December 31, 2009.

2.6 Chlorination

Maintain a chlorine residual (at the point of discharge or prior to dechlorination) between 0.1 and 1.0 mg/L at all times and provide not less than one hour's contact time at average flow rates.

2.7 Dechlorination

The effluent shall be dechlorinated prior to discharge to reduce the chlorine residual below detectable limits.

2.8 Sludge Wasting and Disposal

Sludge wasted from the treatment plants shall be disposed of to a site and in a manner approved by the Director, or as authorized by regulation under the *Environmental Management Act*.

2.9 Facility Classification and Operator Certification

The permittee shall have the works authorized by this permit classified (and the classification shall be maintained) by the Environmental Operators Certification Program Society (Society). The works shall be operated and maintained by persons certified within and according to the program provided by the Society. Certification must be completed to the satisfaction of the Director. In addition, the Regional Manager, Environmental Protection, shall be notified of the classification level of the facility and certification levels of the operators, and changes of operators and/or operator certification levels within 30 days of any change.

Alternatively, the works authorized by this permit shall be operated and maintained by persons who the permittee can demonstrate to the satisfaction of the Director, are qualified in the safe and proper operation of the facility for the protection of the environment.

3. DISCHARGE MONITORING REQUIREMENTS

3.1 Composite Sampling

A suitable sampling facility shall be installed and a composite sample of the effluent authorized by Section 1.1 shall be obtained once each month. The sample is to consist of four grab samples taken over a two hour period at maximum flow and mixed to form a single sample (or an approved flow proportional continuous sampler may be used) for subsequent analysis. Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.2 Analysis

Obtain analyses of the composite sample for the following:

5-day carbonaceous biochemical oxygen demand (CBOD5), mg/L;

Total suspended solids (nonfilterable residue), mg/L;

Fecal coliform, MPN/100 mL.

3.3 Grab Sampling

A suitable sampling facility shall be installed and a grab sample of the effluent authorized by Section 1.1 shall be obtained once each three months. Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.4 Analysis

Obtain analyses of the grab sample for the following:

Fish bioassay (rainbow trout) 96 hour LC50, %;

Ammonia nitrogen, mg/L.

3.5 Flow Measurement

The permittee shall install and maintain a suitable flow measuring device and record once per day the effluent volume discharged over a 24 hour period.

4. RECEIVING ENVIRONMENT MONITORING REQUIREMENTS

4.1 Grab Sampling

A grab sample of the marine water shall be obtained once each three months, at the four sites listed below, approximately as shown on attached Site Plan C, dated June 3, 2008. Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

Reference No. E219508 - Foot of Inlet Avenue;
Reference No. E219509 - Foot of Selma Park Road;
Reference No. E219510 - Foot of Shorn Cliff Road; and
Reference No. E219511 - Near Mission Point.

4.2 Analyses

Obtain analyses for each of the four grab samples for the following:

Fecal coliform, MPN/100 mL.

5. MONITORING PROCEDURES

5.1 Sampling Procedures

Sampling is to be carried out in accordance with the procedures described in the most recent edition of the "British Columbia Field Sampling Manual for Continuous Monitoring Plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409). A copy of the manual is also available for inspection at all Environmental Protection offices.

5.2 Analytical Procedures

Analyses are to be carried out in accordance with procedures described in the most recent edition of the "British Columbia Laboratory Methods Manual for the Analysis of Water, Wastewater, Sediment, Biological Materials and Discrete Ambient Air Samples", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publication Centre, P. O. Box 9452, Stn. Prov. Govt. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409). The manual is also available for review at all Environmental Protection offices.

5.3 Quality Assurance

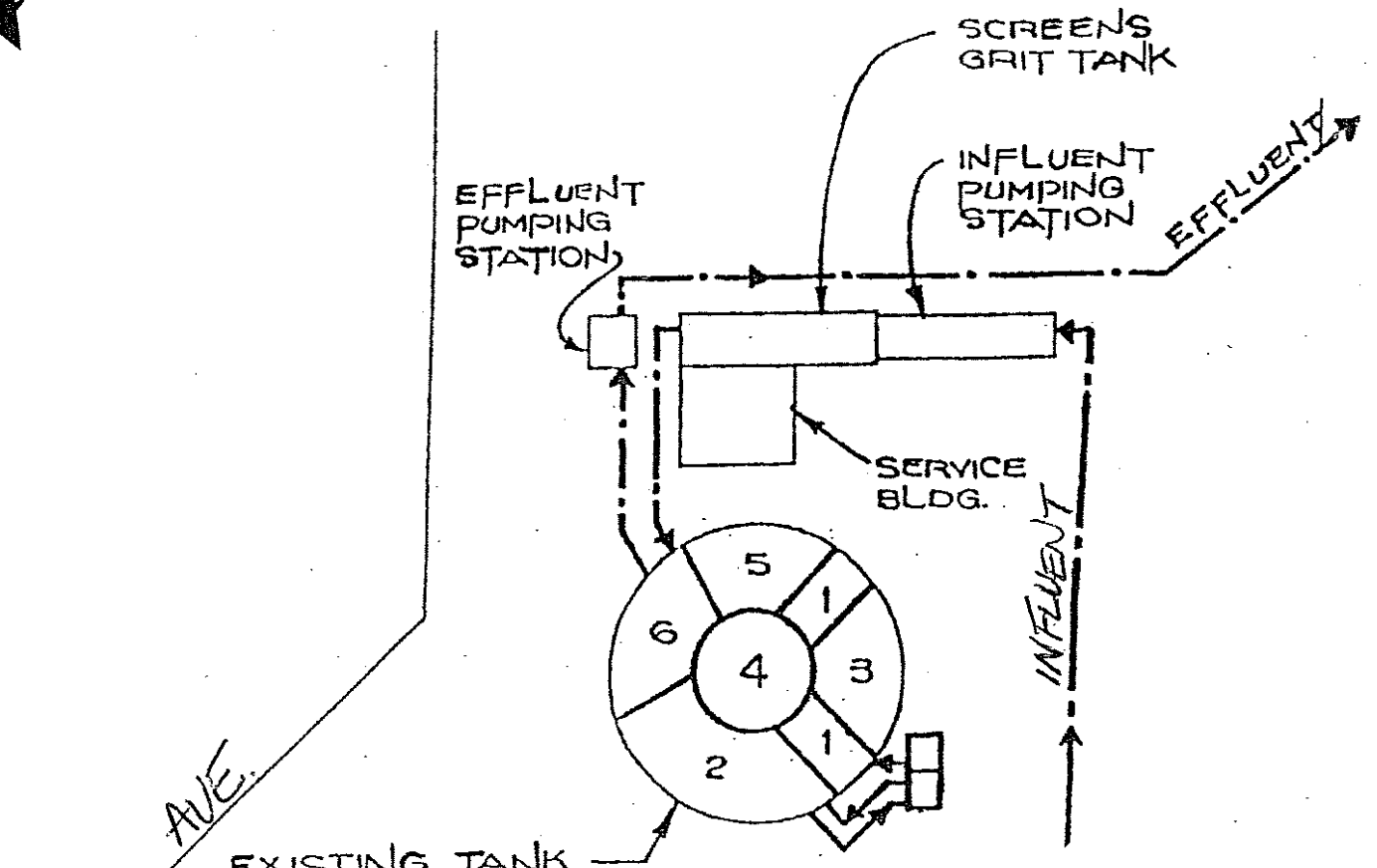
All analyses of samples shall be conducted by a laboratory acceptable to the Director. At the request of the Director, the permittee shall provide the laboratory quality assurance data, associated field blanks and duplicate analysis results along with the submission of data required under Sections 3 and 4 of this permit.

6. **REPORTING**

The permittee shall maintain data of analyses for Sections 3 and 4 and flow measurement data for Section 3 in a form suitable for inspection by the Director and submit the data, suitably tabulated, to the Regional Manager, Environmental Protection, for the previous six months. The reporting periods end March 31 and September 30 each year. All reports shall be submitted within 31 days of the end of the reporting period.

Each data submission shall include a statement outlining the reported values that were outside the permit limits. Clearly identify the dates of these occurrences in the data submission, include an explanation as to the cause of each occurrence and provide a description of the measures taken to rectify the situation. Should all submitted values be within the permit limits, a statement to this effect shall be included.

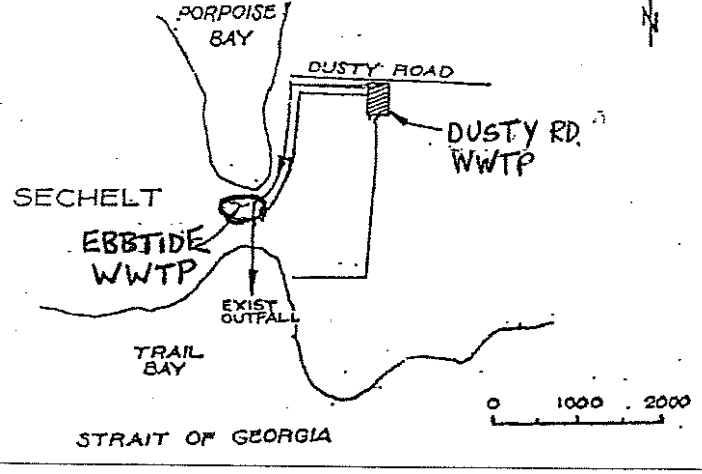
SITE PLAN A



EXISTING TANK CONTAINING:

1. TWO PRIMARY SED. TANKS
2. TRICKLING FILTER
3. REAERATION TANK
4. SECONDARY CLARIFIER
5. CHLORINATION AND DECHLORINATION
6. SPACE FOR EXPANSION

Location Map

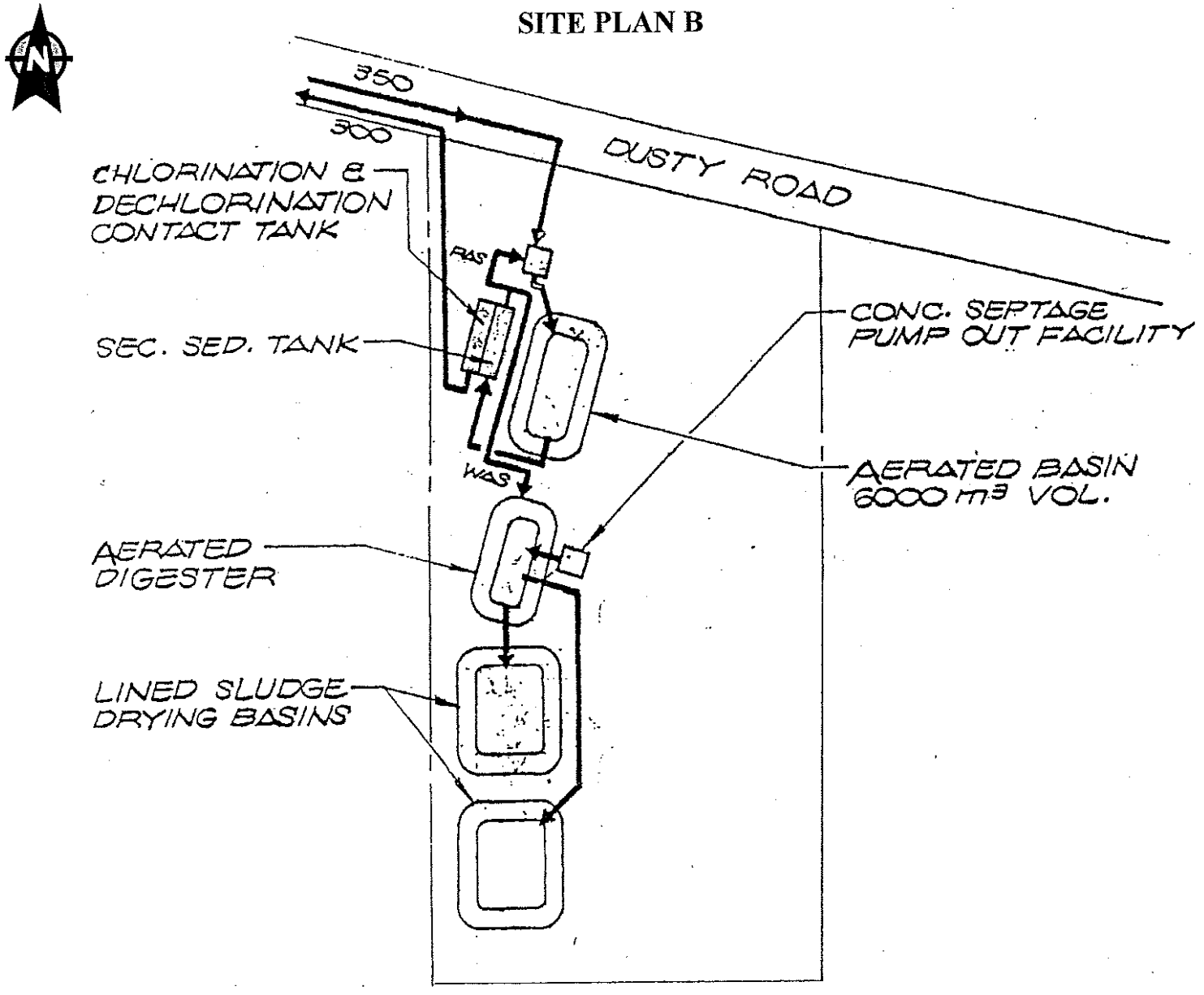


Scale 1:500

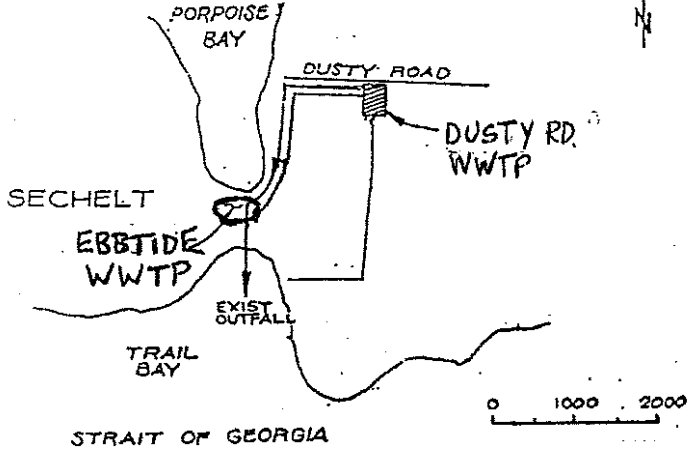
Permit 4088

Date: June 3, 2008

SITE PLAN B



Location Map

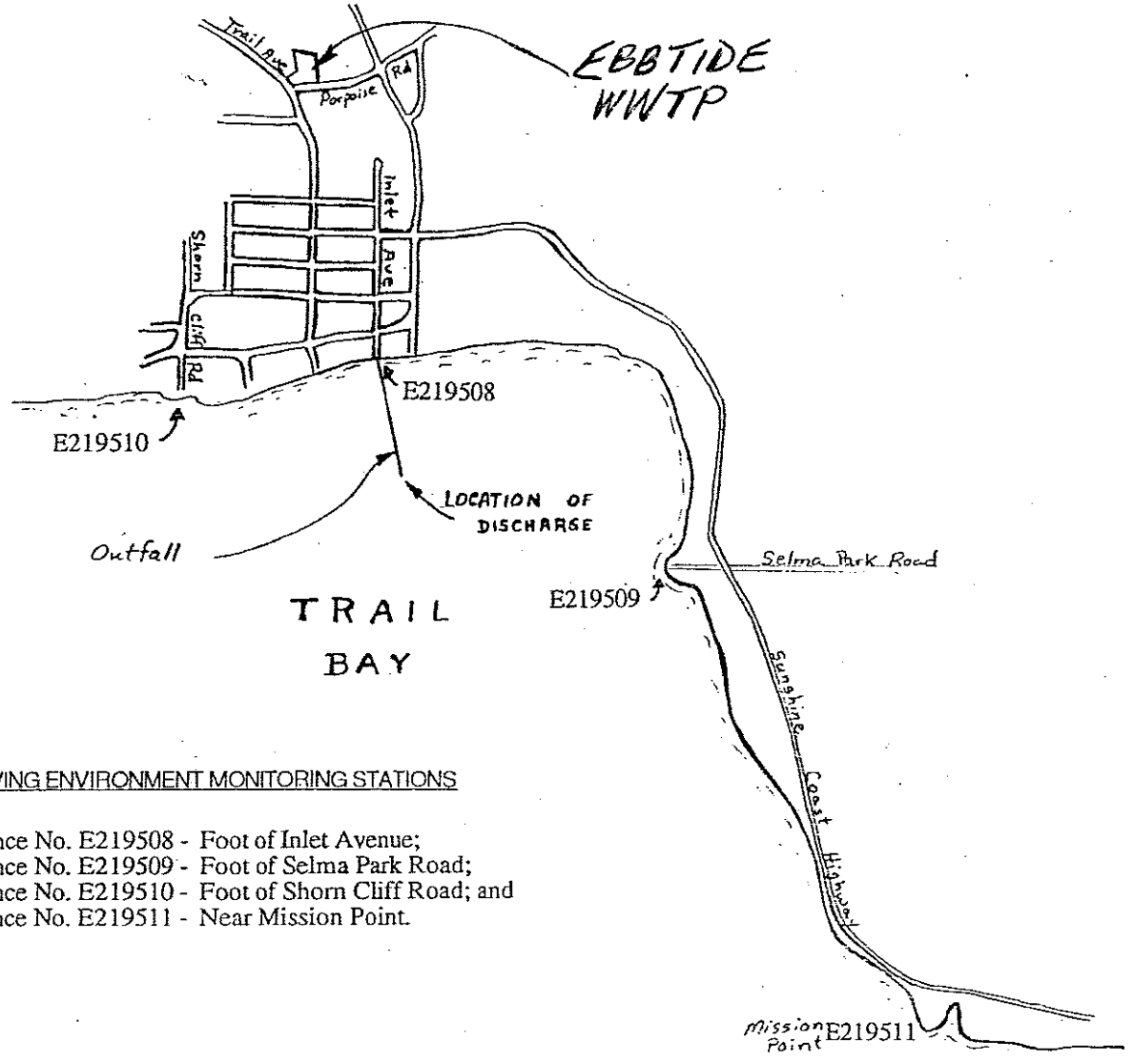


Scale 1:3500

Permit 4088

Date: June 3, 2008

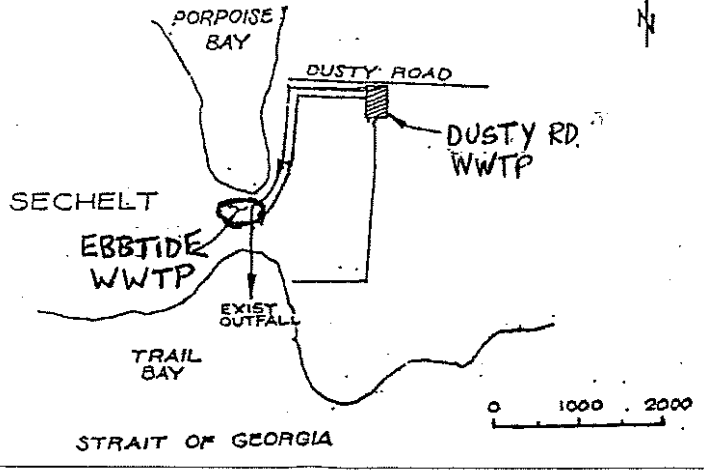
SITE PLAN C



RECEIVING ENVIRONMENT MONITORING STATIONS

Reference No. E219508 - Foot of Inlet Avenue;
Reference No. E219509 - Foot of Selma Park Road;
Reference No. E219510 - Foot of Shorn Cliff Road; and
Reference No. E219511 - Near Mission Point.

Location Map



Scale 1:26100

Permit 4088

Date: June 3, 2008

February 28, 2018

Tracking Number: 364622
Authorization Number: 4088

Corporation of the District Of Sechelt
PO Box 129
2nd Floor - 5797 Cowrie Street
Sechelt BC V0N 3A0

Dear Corporation of the District Of Sechelt

Re: Cancellation of a Permit under the *Environmental Management Act*.

As requested in your letter dated September 11, 2017 waste discharge permit 4088, issued on April 2, 1976 located at Trail Bay fronting District Lot 303, Group 1 New Westminster District, Reference Plan 14675 is hereby cancelled pursuant to Section 18 of the *Environmental Management Act*. The effective date of cancellation is February 21, 2018.

Upon cancellation of your permit, and pursuant to Section 10 of the Permit Fees Regulation, Corporation of the District of Sechelt may be entitled to a prorated refund of your most recent annual permit fee. Corporate Services Division will evaluate this file to determine the status of the account and notify you accordingly.

The permit is being cancelled on your request and because there is no longer active discharges at the site. It is Corporation of the District of Sechelt's responsibility to maintain necessary works and/or appurtenances are maintained to ensure that pollution does not occur. If works are not required to prevent pollution and are not being used; they can be dissembled, capped and/or removed. If Corporation of the District of Sechelt resumes operation of the facility and it is, or continues to be, defined as a "prescribed industry" a new authorization under the *Act* must be obtained.

Be advised that any requirements imposed by other acts, regulations, bylaws, etc. issued by federal, provincial or local governments may still apply (e.g. municipal sewage bylaws, the federal *Fisheries Act*). The onus is upon the company doing business to ensure that all authorizations are maintained as required.

…/2

Environmental Protection Division Ministry of Environment and Climate Change Strategy
Business Services Branch
PO Box 9377, Stn Prov Govt
Victoria, BC V8W 9M1
Victoria Authorizations Team
Telephone: (250) 387-9502
Facsimile: (250) 356-0299

Please note Corporation of the District of Sechelt is still subject to such regulations such as the Hazardous Waste Regulation, the Spill Reporting Regulation and the Contaminated Site Regulation under the *Act*, which apply to your business, operation or trade even without an active discharge at the site. Should the activities constitute decommissioning under the Contaminated Sites Regulation, a duty to submit a Site Profile may apply under Part 4 of the *Act*.

If you have any questions contact the undersigned.

Yours truly,

Benjamin Vander Steen
for Director, Environmental Management Act
Business Services Branch

ENCL: None

September 23, 2013

Tracking Number: 286973
Authorization Number: 106667

District of Sechelt
Box 129
2nd Floor, 5797 Cowrie Street
Sechelt, British Columbia
V0N 3A0

Dear Registrant:

Re: Registration under the Municipal Wastewater Regulation of the discharge to marine waters of Trail Bay from a new sewage facility (Ebbtide site) Parcel A (being a consolidation of Lots B and C) Block R, District Lot 304, Group 1, NWD, Plan 22755 and existing sewage facility (Dusty Road site) Part of Block A, District Lot 7613, NWD, both located in Sechelt, BC

Receipt of your completed registration under the Municipal Wastewater Regulation is acknowledged. The effective date of registration is September 23, 2013. On and following the effective date of registration you are exempt from section 6(2) and 6(3) of the *Environmental Management Act* and may discharge waste to the environment from these facilities provided all conditions and requirements of the Municipal Wastewater Regulation are met.

Please indicate the Ministry authorization number shown above on all future correspondence with the Ministry regarding this facility.

The registration is for a discharge of 4750 cubic metres per day of advanced treated ultra violet disinfected effluent, having a maximum biochemical oxygen demand of 10 mg/L and total suspended solids of 10 mg/L, to the marine waters of Trail Bay from two municipal wastewater treatment plants (respectively identified as Ebbtide and Dusty Road) located in Sechelt, BC.

The existing Dusty Road plant will be used to pre-treat all trucked wastes which will then be piped to the new Ebbtide plant for further treatment along with the District's sewage. The final effluent will be discharged to the marine waters of Trail Bay via an existing submerged outfall. The thickened solids from the Dusty Road plant will be trucked to the new plant and dewatered with the waste activated solids and subsequently all dewatered solids will be trucked offsite for manufacturing into Class A compost.

Ministry of Environment
Environmental Protection Division 2nd Floor, 10470 - 152 Street
Surrey, BC V3R 0Y3
South Coast Region
Telephone: (604) 582-5200
Facsimile: (604) 584-9751

Your attention is respectfully directed to the terms and conditions specified in the Municipal Wastewater Regulation. Contravention of any of the conditions is a violation of the *Environmental Management Act* and may result in prosecution. If the Municipal Wastewater Regulation does not cover all waste streams at the site, additional authorizations may be required under the *Environmental Management Act*.

An annual registration fee will be determined according to the Permit Fees Regulation and you will be receiving an annual invoice from the Ministry for payment of this fee. Payment of all fees due is necessary to comply with the Municipal Wastewater Regulation.

Registration under the Municipal Wastewater Regulation should not be construed as a representation that the works are adequately designed or will satisfy the Regulation. It is the responsibility of the discharger to ensure that the works are adequately designed, constructed and operated and that the discharge quality complies with the Regulation. Registration under the Municipal Wastewater Regulation is without prejudice to any additional works that may be required or any additional requirements that may be specified by the Director. The Director may also issue Orders under the *Environmental Management Act.*

Registration under the Municipal Wastewater Regulation does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the operator. It is also the responsibility of the operator to ensure that all activities conducted under the Municipal Wastewater Regulation are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force. The operator must also obtain any necessary approvals from other agencies.

Administration of this Regulation will be carried out by staff from the Ministry regional office. Plans, data and reports pertinent to the Municipal Wastewater Regulation are to be submitted to the Regional Director, Environmental Protection, at the regional office indicated above. Each data submission shall include a statement outlining the number of reported values outside the Regulation limits. Clearly identify the dates of these occurrences in the data submission, include an explanation as to the cause of each occurrence and provide a description of the measures taken to rectify the situation. Should all values be within the Regulation limits, a statement to that effect shall be included. The Ministry uses a reference number to track monitoring data associated with discharges. The site reference number for this discharge is E100781.

Following sewer connection and commission of the new sewage facility at the Ebbtide site, the District of Sechelt is requested to cancel Waste Management Permit PE-4088.

Yours truly,

Avtar S. Sundher
for Director, *Environmental Management Act*

CC: Environment Canada

Chris Town, P.Eng. MASc, Senior Environmental Engineer,
Urban Systems, 200 – 286 St. Paul Street, Kamloops, BC V2C 6G4

ENCL: none

BRITISH COLUMBIA

November 7, 2012

Registration Number: 106325
(Tracking #259578)

STOCKWELL ENTERPRISES LTD.
5422 Boxwood Road
Sechelt BC V0N 3A3

Attention: Bill Stockwell

Dear Registrant:

Re: Registration of Waste Discharges pursuant to the *Code of Practice for the Concrete and Concrete Products Industry* under the *Environmental Management Act*

This letter acknowledges receipt, on August 1, 2012, of registration information submitted for the facility listed below.

Pursuant to Section 4(4)(a) of the *Waste Discharge Regulation*, the registration of waste discharges from the facility listed below as they pertain to the *Code of Practice for the Concrete and Concrete Products Industry* (www.env.gov.bc.ca/epd/industrial/regs/codes/concrete/index.htm) became effective September 15, 2012. From the time of registration, you are entitled to exemption from Sections 6(2) and 6(3) of the *Environmental Management Act* and, therefore, are authorized to discharge waste to the environment from this facility provided all conditions and requirements of the *Waste Discharge Regulation* (www.env.gov.bc.ca/epd/main/ema.htm) and applicable code(s) are met.

The following registration number has been assigned as listed below. Please refer to it in all future correspondence.

Facility Name: STOCKWELL ENTERPRISES LTD. concrete plant
Facility Location: 5378 Allen Rd., Sechelt BC
Registration Number: 106325

Your attention is respectfully directed to the terms and conditions specified in the *Waste Discharge Regulation* and the *Code of Practice for the Concrete and Concrete Products Industry*. Contravention of any of the conditions may be a violation of the *Environmental Management Act* and may result in prosecution.

...2/

Ministry of Environment
Environmental Protection Division
Regional Operations Branch
South Coast
Mailing Address:
#200, 10470 - 152 Street
Surrey BC V3R 0Y3
Telephone: 604 582-5200
Facsimile: 604 584-9751
Website: www.gov.bc.ca/env

This acknowledgement of your registration should not be construed as a representation that the works are adequately designed or will satisfy the regulatory requirements. It is the responsibility of the discharger to ensure that the facility is adequately designed, constructed and operated to ensure compliance.

Registration under the *Waste Discharge Regulation* and the *Code of Practice for the Concrete and Concrete Products Industry* is without prejudice to any additional requirements that may be specified by the Director. This may include orders issued by the Director under the *Environmental Management Act*.

Registration under the *Waste Discharge Regulation* and the *Code of Practice for the Concrete and Concrete Products Industry* does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works. The responsibility for obtaining such authority shall rest with the discharger. It is also the responsibility of the discharger to ensure that all activities conducted under this regulation and code of practice are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force. The discharger must also obtain any necessary authorizations from other agencies.

Fees

Thank you for the first annual fee payment. An additional annual fee is due on each anniversary of the registration date. Your registration ceases to be effective if the annual fee is not paid. After all waste discharges have ceased, you may submit a deregistration form to stop the annual fee invoices.

Registration Updates

Under Section 4(5)(b) of the *Waste Discharge Regulation*, the registration holder must provide a director with written notice within 30 days of a change in information provided in the person's registration. Registration, update and deregistration forms are available from regional offices or electronically on the Ministry of Environment's website at www.env.gov.bc.ca/epd/industrial/regs/codes/concrete/index.htm.

If you have any questions regarding the registration process under the *Waste Discharge Regulation* and/or the relevant code of practice, please contact me at 604 582-5271.

Yours truly,

Alan Chor
Senior Environmental Protection Officer
BC Ministry of Environment (South Coast)

cc: Environment Canada

Appendix E

Site Registry Search

Date Printed: 2023-03-31

Area Search Report

SELECTION CRITERIA

Destination Type: Cache

Destination Name:

Latitude Degrees: 49

Latitude Minutes: 29

Latitude Seconds: 20.47

Longitude Degrees: 123

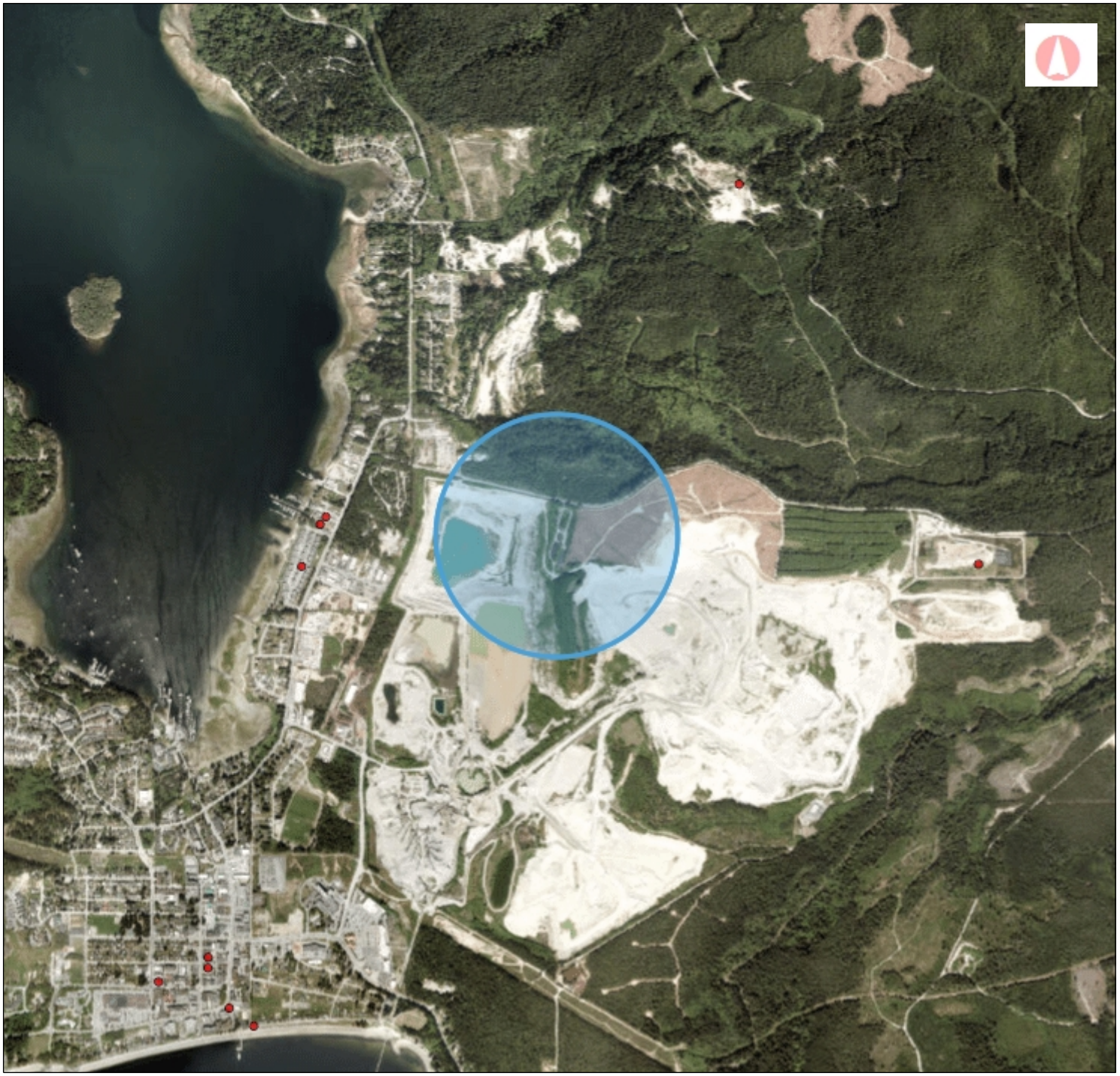
Longitude Minutes: 44

Longitude Seconds: 8.19

Radius: .5

report version: 5.2.0

Total Sites Retrieved: 0



BRITISH COLUMBIA

iMapBC Mapping

Legend

- Environmental Remediation

0 0.73 1.47 km

1: 36,112

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Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia

Appendix F

Previous Environmental Reports

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9040234
PROJECT	WRC	**REPORTED**	2019-04-09 16:58

Analyte	Result	RL	Units	Analyzed	Qualifier
Solids Lagoon (9040234-01) | Matrix: Soil | Sampled: 2019-03-26					
General Parameters					
pH (1:2 H2O Solution)	**7.39**	0.10	pH units	2019-04-05	
Solids, Total	**9.1**	0.1	% wet	2019-04-09	
Strong Acid Leachable Metals					
Aluminum	**5300**	40	mg/kg dry	2019-04-04	
Antimony	**2.03**	0.10	mg/kg dry	2019-04-04	
Arsenic	**4.01**	0.30	mg/kg dry	2019-04-04	
Barium	**202**	1.0	mg/kg dry	2019-04-04	
Beryllium	< 0.10	0.10	mg/kg dry	2019-04-04	
Bismuth	**25.3**	0.10	mg/kg dry	2019-04-04	
Boron	**15.6**	2.0	mg/kg dry	2019-04-04	
Cadmium	**2.35**	0.040	mg/kg dry	2019-04-04	
Calcium	**8620**	100	mg/kg dry	2019-04-04	
Chromium	**19.1**	1.0	mg/kg dry	2019-04-04	
Cobalt	**1.60**	0.10	mg/kg dry	2019-04-04	
Copper	**466**	0.40	mg/kg dry	2019-04-04	
Iron	**4300**	20	mg/kg dry	2019-04-04	
Lead	**23.7**	0.20	mg/kg dry	2019-04-04	
Lithium	**1.79**	0.10	mg/kg dry	2019-04-04	
Magnesium	**1510**	10	mg/kg dry	2019-04-04	
Manganese	**96.7**	0.40	mg/kg dry	2019-04-04	
Mercury	**1.20**	0.040	mg/kg dry	2019-04-04	
Molybdenum	**6.42**	0.10	mg/kg dry	2019-04-04	
Nickel	**11.6**	0.60	mg/kg dry	2019-04-04	
Phosphorus	**6130**	10	mg/kg dry	2019-04-04	
Potassium	**1090**	40	mg/kg dry	2019-04-04	
Selenium	**3.61**	0.20	mg/kg dry	2019-04-04	
Silver	**3.30**	0.10	mg/kg dry	2019-04-04	
Sodium	**1850**	50	mg/kg dry	2019-04-04	
Strontium	**38.4**	0.20	mg/kg dry	2019-04-04	
Sulfur	**5640**	1000	mg/kg dry	2019-04-04	
Tellurium	< 0.10	0.10	mg/kg dry	2019-04-04	
Thallium	< 0.10	0.10	mg/kg dry	2019-04-04	
Thorium	< 0.50	0.50	mg/kg dry	2019-04-04	
Tin	**25.6**	0.20	mg/kg dry	2019-04-04	
Titanium	**73.8**	1.0	mg/kg dry	2019-04-04	
Tungsten	**0.71**	0.20	mg/kg dry	2019-04-04	
Uranium	**0.893**	0.050	mg/kg dry	2019-04-04	
Vanadium	**9.7**	1.0	mg/kg dry	2019-04-04	
Zinc	**824**	2.0	mg/kg dry	2019-04-04	
Zirconium	**4.1**	2.0	mg/kg dry	2019-04-04	

CERTIFICATE OF ANALYSIS

REPORTED TO	Sechelt, District of PO Box 129, 2nd Floor, 5797 Cowrie Street Sechelt, BC V0N 3A0		
ATTENTION	Christine Miller	**WORK ORDER**	9100603
PO NUMBER		**RECEIVED / TEMP**	2019-10-04 14:00 / 3°C
PROJECT	WRC	**REPORTED**	2019-10-17 13:07
PROJECT INFO		**COC NUMBER**	B84412

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at bshaw@caro.ca

Authorized By:

Bryan Shaw, Ph.D., P.Chem.
Client Service Coordinator

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

Analyte	Result	RL	Units	Analyzed	Qualifier
GO Solid #1 (9100603-01) | Matrix: Solid | Sampled: 2019-10-03 11:30					
Strong Acid Leachable Metals					
Aluminum	**7410**	40	mg/kg dry	2019-10-16	
Antimony	**3.13**	0.10	mg/kg dry	2019-10-16	
Arsenic	**6.07**	0.30	mg/kg dry	2019-10-16	
Barium	**230**	1.0	mg/kg dry	2019-10-16	
Beryllium	**0.13**	0.10	mg/kg dry	2019-10-16	
Bismuth	**46.0**	0.10	mg/kg dry	2019-10-16	
Boron	**23.1**	2.0	mg/kg dry	2019-10-16	
Cadmium	**3.84**	0.040	mg/kg dry	2019-10-16	
Calcium	**12400**	100	mg/kg dry	2019-10-16	
Chromium	**27.7**	1.0	mg/kg dry	2019-10-16	
Cobalt	**2.14**	0.10	mg/kg dry	2019-10-16	
Copper	**573**	0.40	mg/kg dry	2019-10-16	
Iron	**6240**	20	mg/kg dry	2019-10-16	
Lead	**39.0**	0.20	mg/kg dry	2019-10-16	
Lithium	**2.88**	0.10	mg/kg dry	2019-10-16	
Magnesium	**2130**	10	mg/kg dry	2019-10-16	
Manganese	**152**	0.40	mg/kg dry	2019-10-16	
Mercury	**1.53**	0.040	mg/kg dry	2019-10-16	
Molybdenum	**9.88**	0.10	mg/kg dry	2019-10-16	
Nickel	**23.5**	0.60	mg/kg dry	2019-10-16	
Phosphorus	**8530**	10	mg/kg dry	2019-10-16	
Potassium	**1090**	40	mg/kg dry	2019-10-16	
Selenium	**5.77**	0.20	mg/kg dry	2019-10-16	
Silver	**4.96**	0.10	mg/kg dry	2019-10-16	
Sodium	**1110**	50	mg/kg dry	2019-10-16	
Strontium	**59.6**	0.20	mg/kg dry	2019-10-16	
Sulfur	**10900**	1000	mg/kg dry	2019-10-16	
Tellurium	< 0.10	0.10	mg/kg dry	2019-10-16	
Thallium	< 0.10	0.10	mg/kg dry	2019-10-16	
Thorium	< 0.50	0.50	mg/kg dry	2019-10-16	
Tin	**38.4**	0.20	mg/kg dry	2019-10-16	
Titanium	**86.8**	1.0	mg/kg dry	2019-10-16	
Tungsten	**1.06**	0.20	mg/kg dry	2019-10-16	
Uranium	**1.55**	0.050	mg/kg dry	2019-10-16	
Vanadium	**14.1**	1.0	mg/kg dry	2019-10-16	
Zinc	**1220**	2.0	mg/kg dry	2019-10-16	
Zirconium	**4.3**	2.0	mg/kg dry	2019-10-16	
GO Solid #2 (9100603-02) | Matrix: Solid | Sampled: 2019-10-03 11:30					
Strong Acid Leachable Metals					
Aluminum	**7150**	40	mg/kg dry	2019-10-16	

TEST RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

Analyte	Result	RL	Units	Analyzed	Qualifier
GO Solid #2 (9100603-02) | Matrix: Solid | Sampled: 2019-10-03 11:30, Continued					
Strong Acid Leachable Metals, Continued					
Antimony	**3.15**	0.10	mg/kg dry	2019-10-16	
Arsenic	**5.30**	0.30	mg/kg dry	2019-10-16	
Barium	**246**	1.0	mg/kg dry	2019-10-16	
Beryllium	**0.11**	0.10	mg/kg dry	2019-10-16	
Bismuth	**43.9**	0.10	mg/kg dry	2019-10-16	
Boron	**18.8**	2.0	mg/kg dry	2019-10-16	
Cadmium	**4.47**	0.040	mg/kg dry	2019-10-16	
Calcium	**11000**	100	mg/kg dry	2019-10-16	
Chromium	**26.1**	1.0	mg/kg dry	2019-10-16	
Cobalt	**2.06**	0.10	mg/kg dry	2019-10-16	
Copper	**553**	0.40	mg/kg dry	2019-10-16	
Iron	**6140**	20	mg/kg dry	2019-10-16	
Lead	**38.2**	0.20	mg/kg dry	2019-10-16	
Lithium	**2.75**	0.10	mg/kg dry	2019-10-16	
Magnesium	**1840**	10	mg/kg dry	2019-10-16	
Manganese	**157**	0.40	mg/kg dry	2019-10-16	
Mercury	**3.42**	0.040	mg/kg dry	2019-10-16	
Molybdenum	**9.07**	0.10	mg/kg dry	2019-10-16	
Nickel	**18.3**	0.60	mg/kg dry	2019-10-16	
Phosphorus	**8240**	10	mg/kg dry	2019-10-16	
Potassium	**856**	40	mg/kg dry	2019-10-16	
Selenium	**5.86**	0.20	mg/kg dry	2019-10-16	
Silver	**6.26**	0.10	mg/kg dry	2019-10-16	
Sodium	**721**	50	mg/kg dry	2019-10-16	
Strontium	**57.5**	0.20	mg/kg dry	2019-10-16	
Sulfur	**8300**	1000	mg/kg dry	2019-10-16	
Tellurium	< 0.10	0.10	mg/kg dry	2019-10-16	
Thallium	< 0.10	0.10	mg/kg dry	2019-10-16	
Thorium	< 0.50	0.50	mg/kg dry	2019-10-16	
Tin	**38.2**	0.20	mg/kg dry	2019-10-16	
Titanium	**68.3**	1.0	mg/kg dry	2019-10-16	
Tungsten	**0.97**	0.20	mg/kg dry	2019-10-16	
Uranium	**1.50**	0.050	mg/kg dry	2019-10-16	
Vanadium	**13.5**	1.0	mg/kg dry	2019-10-16	
Zinc	**1200**	2.0	mg/kg dry	2019-10-16	
Zirconium	**4.3**	2.0	mg/kg dry	2019-10-16	
GO Solid #3 (9100603-03) | Matrix: Solid | Sampled: 2019-10-03 11:30					
Strong Acid Leachable Metals					
Aluminum	**7110**	40	mg/kg dry	2019-10-16	
Antimony	**3.15**	0.10	mg/kg dry	2019-10-16	

TEST RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

Analyte	Result	RL	Units	Analyzed	Qualifier
GO Solid #3 (9100603-03) | Matrix: Solid | Sampled: 2019-10-03 11:30, Continued					
Strong Acid Leachable Metals, Continued					
Arsenic	**6.02**	0.30	mg/kg dry	2019-10-16	
Barium	**234**	1.0	mg/kg dry	2019-10-16	
Beryllium	**0.12**	0.10	mg/kg dry	2019-10-16	
Bismuth	**43.1**	0.10	mg/kg dry	2019-10-16	
Boron	**17.7**	2.0	mg/kg dry	2019-10-16	
Cadmium	**3.68**	0.040	mg/kg dry	2019-10-16	
Calcium	**10400**	100	mg/kg dry	2019-10-16	
Chromium	**25.2**	1.0	mg/kg dry	2019-10-16	
Cobalt	**2.05**	0.10	mg/kg dry	2019-10-16	
Copper	**550**	0.40	mg/kg dry	2019-10-16	
Iron	**5950**	20	mg/kg dry	2019-10-16	
Lead	**37.4**	0.20	mg/kg dry	2019-10-16	
Lithium	**2.63**	0.10	mg/kg dry	2019-10-16	
Magnesium	**1760**	10	mg/kg dry	2019-10-16	
Manganese	**146**	0.40	mg/kg dry	2019-10-16	
Mercury	**2.05**	0.040	mg/kg dry	2019-10-16	
Molybdenum	**9.76**	0.10	mg/kg dry	2019-10-16	
Nickel	**18.4**	0.60	mg/kg dry	2019-10-16	
Phosphorus	**8010**	10	mg/kg dry	2019-10-16	
Potassium	**867**	40	mg/kg dry	2019-10-16	
Selenium	**5.55**	0.20	mg/kg dry	2019-10-16	
Silver	**5.66**	0.10	mg/kg dry	2019-10-16	
Sodium	**677**	50	mg/kg dry	2019-10-16	
Strontium	**53.7**	0.20	mg/kg dry	2019-10-16	
Sulfur	**9670**	1000	mg/kg dry	2019-10-16	
Tellurium	< 0.10	0.10	mg/kg dry	2019-10-16	
Thallium	< 0.10	0.10	mg/kg dry	2019-10-16	
Thorium	< 0.50	0.50	mg/kg dry	2019-10-16	
Tin	**37.7**	0.20	mg/kg dry	2019-10-16	
Titanium	**66.2**	1.0	mg/kg dry	2019-10-16	
Tungsten	**1.19**	0.20	mg/kg dry	2019-10-16	
Uranium	**1.51**	0.050	mg/kg dry	2019-10-16	
Vanadium	**13.6**	1.0	mg/kg dry	2019-10-16	
Zinc	**1240**	2.0	mg/kg dry	2019-10-16	
Zirconium	**4.2**	2.0	mg/kg dry	2019-10-16	
GO Solid #4 (9100603-04) | Matrix: Solid | Sampled: 2019-10-03 11:30					
Strong Acid Leachable Metals					
Aluminum	**7440**	40	mg/kg dry	2019-10-16	
Antimony	**3.34**	0.10	mg/kg dry	2019-10-16	
Arsenic	**5.25**	0.30	mg/kg dry	2019-10-16	

TEST RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

Analyte	Result	RL	Units	Analyzed	Qualifier
GO Solid #4 (9100603-04) | Matrix: Solid | Sampled: 2019-10-03 11:30, Continued					
Strong Acid Leachable Metals, Continued					
Barium	**219**	1.0	mg/kg dry	2019-10-16	
Beryllium	**0.12**	0.10	mg/kg dry	2019-10-16	
Bismuth	**46.2**	0.10	mg/kg dry	2019-10-16	
Boron	**17.8**	2.0	mg/kg dry	2019-10-16	
Cadmium	**3.94**	0.040	mg/kg dry	2019-10-16	
Calcium	**9890**	100	mg/kg dry	2019-10-16	
Chromium	**28.6**	1.0	mg/kg dry	2019-10-16	
Cobalt	**2.27**	0.10	mg/kg dry	2019-10-16	
Copper	**590**	0.40	mg/kg dry	2019-10-16	
Iron	**6650**	20	mg/kg dry	2019-10-16	
Lead	**45.5**	0.20	mg/kg dry	2019-10-16	
Lithium	**2.98**	0.10	mg/kg dry	2019-10-16	
Magnesium	**1820**	10	mg/kg dry	2019-10-16	
Manganese	**142**	0.40	mg/kg dry	2019-10-16	
Mercury	**1.38**	0.040	mg/kg dry	2019-10-16	
Molybdenum	**10.1**	0.10	mg/kg dry	2019-10-16	
Nickel	**18.9**	0.60	mg/kg dry	2019-10-16	
Phosphorus	**8280**	10	mg/kg dry	2019-10-16	
Potassium	**824**	40	mg/kg dry	2019-10-16	
Selenium	**5.84**	0.20	mg/kg dry	2019-10-16	
Silver	**5.01**	0.10	mg/kg dry	2019-10-16	
Sodium	**692**	50	mg/kg dry	2019-10-16	
Strontium	**52.7**	0.20	mg/kg dry	2019-10-16	
Sulfur	**8080**	1000	mg/kg dry	2019-10-16	
Tellurium	< 0.10	0.10	mg/kg dry	2019-10-16	
Thallium	< 0.10	0.10	mg/kg dry	2019-10-16	
Thorium	< 0.50	0.50	mg/kg dry	2019-10-16	
Tin	**41.9**	0.20	mg/kg dry	2019-10-16	
Titanium	**84.8**	1.0	mg/kg dry	2019-10-16	
Tungsten	**1.16**	0.20	mg/kg dry	2019-10-16	
Uranium	**1.62**	0.050	mg/kg dry	2019-10-16	
Vanadium	**15.6**	1.0	mg/kg dry	2019-10-16	
Zinc	**1140**	2.0	mg/kg dry	2019-10-16	
Zirconium	**4.5**	2.0	mg/kg dry	2019-10-16	

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

Analysis Description	Method Ref.	Technique	Location
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
EPA	United States Environmental Protection Agency Test Methods

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bshaw@caro.ca

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B9J0903										
Blank (B9J0903-BLK1)				Prepared: 2019-10-09, Analyzed: 2019-10-16						
Aluminum	< 40	40	mg/kg dry							
Antimony	< 0.10	0.10	mg/kg dry							
Arsenic	< 0.30	0.30	mg/kg dry							
Barium	< 1.0	1.0	mg/kg dry							
Beryllium	< 0.10	0.10	mg/kg dry							
Bismuth	< 0.10	0.10	mg/kg dry							
Boron	< 2.0	2.0	mg/kg dry							
Cadmium	< 0.040	0.040	mg/kg dry							
Calcium	< 100	100	mg/kg dry							
Chromium	< 1.0	1.0	mg/kg dry							
Cobalt	< 0.10	0.10	mg/kg dry							
Copper	< 0.40	0.40	mg/kg dry							
Iron	< 20	20	mg/kg dry							
Lead	< 0.20	0.20	mg/kg dry							
Lithium	< 0.10	0.10	mg/kg dry							
Magnesium	< 10	10	mg/kg dry							
Manganese	< 0.40	0.40	mg/kg dry							
Mercury	< 0.040	0.040	mg/kg dry							
Molybdenum	< 0.10	0.10	mg/kg dry							
Nickel	< 0.60	0.60	mg/kg dry							
Phosphorus	< 10	10	mg/kg dry							
Potassium	< 40	40	mg/kg dry							
Selenium	< 0.20	0.20	mg/kg dry							
Silver	< 0.10	0.10	mg/kg dry							
Sodium	< 50	50	mg/kg dry							
Strontium	< 0.20	0.20	mg/kg dry							
Sulfur	< 1000	1000	mg/kg dry							
Tellurium	< 0.10	0.10	mg/kg dry							
Thallium	< 0.10	0.10	mg/kg dry							
Thorium	< 0.50	0.50	mg/kg dry							
Tin	< 0.20	0.20	mg/kg dry							
Titanium	< 1.0	1.0	mg/kg dry							
Tungsten	< 0.20	0.20	mg/kg dry							
Uranium	< 0.050	0.050	mg/kg dry							
Vanadium	< 1.0	1.0	mg/kg dry							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B9J0903, Continued										
Blank (B9J0903-BLK1), Continued				Prepared: 2019-10-09, Analyzed: 2019-10-16						
Zinc	< 2.0	2.0	mg/kg dry							
Zirconium	< 2.0	2.0	mg/kg dry							
Blank (B9J0903-BLK2)				Prepared: 2019-10-09, Analyzed: 2019-10-16						
Aluminum	< 40	40	mg/kg dry							
Antimony	< 0.10	0.10	mg/kg dry							
Arsenic	< 0.30	0.30	mg/kg dry							
Barium	< 1.0	1.0	mg/kg dry							
Beryllium	< 0.10	0.10	mg/kg dry							
Bismuth	< 0.10	0.10	mg/kg dry							
Boron	< 2.0	2.0	mg/kg dry							
Cadmium	< 0.040	0.040	mg/kg dry							
Calcium	< 100	100	mg/kg dry							
Chromium	< 1.0	1.0	mg/kg dry							
Cobalt	< 0.10	0.10	mg/kg dry							
Copper	< 0.40	0.40	mg/kg dry							
Iron	< 20	20	mg/kg dry							
Lead	< 0.20	0.20	mg/kg dry							
Lithium	< 0.10	0.10	mg/kg dry							
Magnesium	< 10	10	mg/kg dry							
Manganese	< 0.40	0.40	mg/kg dry							
Mercury	< 0.040	0.040	mg/kg dry							
Molybdenum	< 0.10	0.10	mg/kg dry							
Nickel	< 0.60	0.60	mg/kg dry							
Phosphorus	< 10	10	mg/kg dry							
Potassium	< 40	40	mg/kg dry							
Selenium	< 0.20	0.20	mg/kg dry							
Silver	< 0.10	0.10	mg/kg dry							
Sodium	< 50	50	mg/kg dry							
Strontium	< 0.20	0.20	mg/kg dry							
Sulfur	< 1000	1000	mg/kg dry							
Tellurium	< 0.10	0.10	mg/kg dry							
Thallium	< 0.10	0.10	mg/kg dry							
Thorium	< 0.50	0.50	mg/kg dry							
Tin	< 0.20	0.20	mg/kg dry							
Titanium	< 1.0	1.0	mg/kg dry							
Tungsten	< 0.20	0.20	mg/kg dry							
Uranium	< 0.050	0.050	mg/kg dry							
Vanadium	< 1.0	1.0	mg/kg dry							
Zinc	< 2.0	2.0	mg/kg dry							
Zirconium	< 2.0	2.0	mg/kg dry							
LCS (B9J0903-BS1)				Prepared: 2019-10-09, Analyzed: 2019-10-16						
Antimony	2.04	0.10	mg/kg dry	2.00		102	80-120			
Arsenic	2.05	0.30	mg/kg dry	2.00		102	80-120			
Barium	2.1	1.0	mg/kg dry	1.98		106	80-120			
Beryllium	2.08	0.10	mg/kg dry	1.98		105	80-120			
Bismuth	2.15	0.10	mg/kg dry	2.00		108	80-120			
Boron	2.1	2.0	mg/kg dry	2.00		105	80-120			
Cadmium	2.08	0.040	mg/kg dry	1.99		104	80-120			
Calcium	191	100	mg/kg dry	202		94	80-120			
Chromium	2.1	1.0	mg/kg dry	1.98		106	80-120			
Cobalt	2.15	0.10	mg/kg dry	1.99		108	80-120			
Copper	2.30	0.40	mg/kg dry	2.00		115	80-120			
Iron	201	20	mg/kg dry	202		99	80-120			
Lead	2.09	0.20	mg/kg dry	1.99		105	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B9J0903, Continued										
LCS (B9J0903-BS1), Continued				Prepared: 2019-10-09, Analyzed: 2019-10-16						
Lithium	2.17	0.10	mg/kg dry	2.00		108	80-120			
Magnesium	217	10	mg/kg dry	202		107	80-120			
Manganese	2.12	0.40	mg/kg dry	1.99		106	80-120			
Mercury	0.089	0.040	mg/kg dry	0.100		89	80-120			
Molybdenum	2.03	0.10	mg/kg dry	2.00		101	80-120			
Nickel	2.18	0.60	mg/kg dry	2.00		109	80-120			
Phosphorus	212	10	mg/kg dry	200		106	80-120			
Potassium	207	40	mg/kg dry	202		102	80-120			
Selenium	2.08	0.20	mg/kg dry	2.00		104	80-120			
Silver	2.14	0.10	mg/kg dry	2.00		107	80-120			
Sodium	208	50	mg/kg dry	202		103	80-120			
Strontium	2.08	0.20	mg/kg dry	2.00		104	80-120			
Sulfur	< 1000	1000	mg/kg dry	500		107	80-120			
Tellurium	2.12	0.10	mg/kg dry	2.00		106	80-120			
Thallium	2.12	0.10	mg/kg dry	1.99		106	80-120			
Thorium	1.94	0.50	mg/kg dry	2.00		97	80-120			
Tin	2.07	0.20	mg/kg dry	2.00		104	80-120			
Titanium	2.2	1.0	mg/kg dry	2.00		108	80-120			
Tungsten	2.06	0.20	mg/kg dry	2.00		103	80-120			
Uranium	2.02	0.050	mg/kg dry	2.00		101	80-120			
Vanadium	2.4	1.0	mg/kg dry	2.00		119	80-120			
Zinc	2.2	2.0	mg/kg dry	2.00		108	80-120			
Zirconium	2.1	2.0	mg/kg dry	2.00		103	80-120			
Duplicate (B9J0903-DUP1)		**Source: 9100603-03**		Prepared: 2019-10-09, Analyzed: 2019-10-16						
Aluminum	7600	40	mg/kg dry		7110			7	21	
Antimony	3.26	0.10	mg/kg dry		3.15			3	30	
Arsenic	6.17	0.30	mg/kg dry		6.02			2	30	
Barium	209	1.0	mg/kg dry		234			12	35	
Beryllium	0.13	0.10	mg/kg dry		0.12				28	
Bismuth	47.1	0.10	mg/kg dry		43.1			9	30	
Boron	18.7	2.0	mg/kg dry		17.7			6	30	
Cadmium	4.02	0.040	mg/kg dry		3.68			9	30	
Calcium	10700	100	mg/kg dry		10400			3	29	
Chromium	29.5	1.0	mg/kg dry		25.2			16	30	
Cobalt	2.26	0.10	mg/kg dry		2.05			10	30	
Copper	601	0.40	mg/kg dry		550			9	30	
Iron	6400	20	mg/kg dry		5950			7	21	
Lead	43.3	0.20	mg/kg dry		37.4			15	40	
Lithium	2.96	0.10	mg/kg dry		2.63			12	22	
Magnesium	1890	10	mg/kg dry		1760			7	20	
Manganese	158	0.40	mg/kg dry		146			8	27	
Mercury	1.37	0.040	mg/kg dry		2.05			40	40	
Molybdenum	10.3	0.10	mg/kg dry		9.76			5	40	
Nickel	20.0	0.60	mg/kg dry		18.4			9	30	
Phosphorus	8570	10	mg/kg dry		8010			7	25	
Potassium	916	40	mg/kg dry		867			5	24	
Selenium	5.67	0.20	mg/kg dry		5.55			2	27	
Silver	5.21	0.10	mg/kg dry		5.66			8	40	
Sodium	724	50	mg/kg dry		677			7	27	
Strontium	55.0	0.20	mg/kg dry		53.7			2	30	
Sulfur	9260	1000	mg/kg dry		9670			4	28	
Tellurium	< 0.10	0.10	mg/kg dry		< 0.10				40	
Thallium	< 0.10	0.10	mg/kg dry		< 0.10				30	
Thorium	< 0.50	0.50	mg/kg dry		< 0.50				30	
Tin	40.3	0.20	mg/kg dry		37.7			7	40	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Sechelt, District of	**WORK ORDER**	9100603
PROJECT	WRC	**REPORTED**	2019-10-17 13:07

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B9J0903, Continued										
Duplicate (B9J0903-DUP1), Continued	**Source: 9100603-03**			Prepared: 2019-10-09, Analyzed: 2019-10-16						
Titanium	80.7	1.0	mg/kg dry		66.2			20	40	
Tungsten	1.36	0.20	mg/kg dry		1.19			13	40	
Uranium	1.60	0.050	mg/kg dry		1.51			6	30	
Vanadium	14.4	1.0	mg/kg dry		13.6			6	20	
Zinc	1350	2.0	mg/kg dry		1240			8	30	
Zirconium	4.8	2.0	mg/kg dry		4.2				40	
Reference (B9J0903-SRM1)				Prepared: 2019-10-09, Analyzed: 2019-10-16						
Aluminum	11600	40	mg/kg dry	11500		101	70-130			
Antimony	0.79	0.10	mg/kg dry	0.724		109	70-130			
Arsenic	84.7	0.30	mg/kg dry	82.1		103	70-130			
Barium	42.9	1.0	mg/kg dry	40.0		107	70-130			
Beryllium	0.37	0.10	mg/kg dry	0.369		101	70-130			
Calcium	4930	100	mg/kg dry	5170		95	70-130			
Chromium	66.4	1.0	mg/kg dry	63.1		105	70-130			
Cobalt	10.8	0.10	mg/kg dry	10.4		104	70-130			
Copper	21.1	0.40	mg/kg dry	19.8		106	70-130			
Iron	19300	20	mg/kg dry	20200		96	70-130			
Lead	17.9	0.20	mg/kg dry	17.3		103	70-130			
Magnesium	6270	10	mg/kg dry	6090		103	70-130			
Manganese	320	0.40	mg/kg dry	315		101	70-130			
Mercury	0.124	0.040	mg/kg dry	0.110		113	70-130			
Molybdenum	0.66	0.10	mg/kg dry	0.619		107	70-130			
Nickel	33.2	0.60	mg/kg dry	31.7		105	70-130			
Phosphorus	438	10	mg/kg dry	420		104	70-130			
Potassium	1190	40	mg/kg dry	965		124	70-130			
Silver	1.50	0.10	mg/kg dry	1.75		86	70-130			
Sodium	315	50	mg/kg dry	270		117	70-130			
Strontium	22.5	0.20	mg/kg dry	20.3		111	70-130			
Titanium	757	1.0	mg/kg dry	645		117	70-130			
Uranium	1.16	0.050	mg/kg dry	1.18		98	70-130			
Vanadium	35.2	1.0	mg/kg dry	33.5		105	70-130			
Zinc	45.4	2.0	mg/kg dry	40.2		113	70-130			

Appendix G

Site Photographs

Photo 1: Aerial view of Site and surrounding area
(Sperling Hansen Associates Inc. [SHA], April 4, 2023)

Photo 2: Aerial view of Site and surrounding area, looking north (SHA; April 4, 2023)

Photo 3: View of septage receiving station (APEC 1), looking south (April 4, 2023)

Photo 4: Aerial view of septage receiving station (APEC 1) and aerated lagoon (APEC 2) (SHA; April 4, 2023)

Photo 5: View of storage lagoon (APEC 3), looking south (April 4, 2023)

Photo 6: View of sludge drying pad and geotubes containing biosolids (APEC 4) (April 4, 2023)

Photo 7: Aerial view of sludge drying pad, geotubes and storage lagoon (SHA; April 4, 2023)

Photo 8: View of racetrack (APEC 6), looking north (April 4, 2023)

Photo 9: View of clarifier (APEC 7), looking west (April 4, 2023)

Photo 10: View of chlorine contact chamber (APEC 8), looking north (April 4, 2023)

Photo 11: Aerial view of racetrack, clarifier, and chlorine contact chamber (SHA; April 4, 2023)

Photo 12: View of suspected biosolids on embankment south of storage lagoon (APEC 9), looking north (April 4, 2023)

Photo 13: View of abandoned tank in south portion of the Site, looking south (April 4, 2023)

Photo 14: View of remnants of Spinpro polymer/water mixture spill north of the storage lagoon (April 4, 2023)

Photo 15: View of control building, looking west (April 4, 2023)

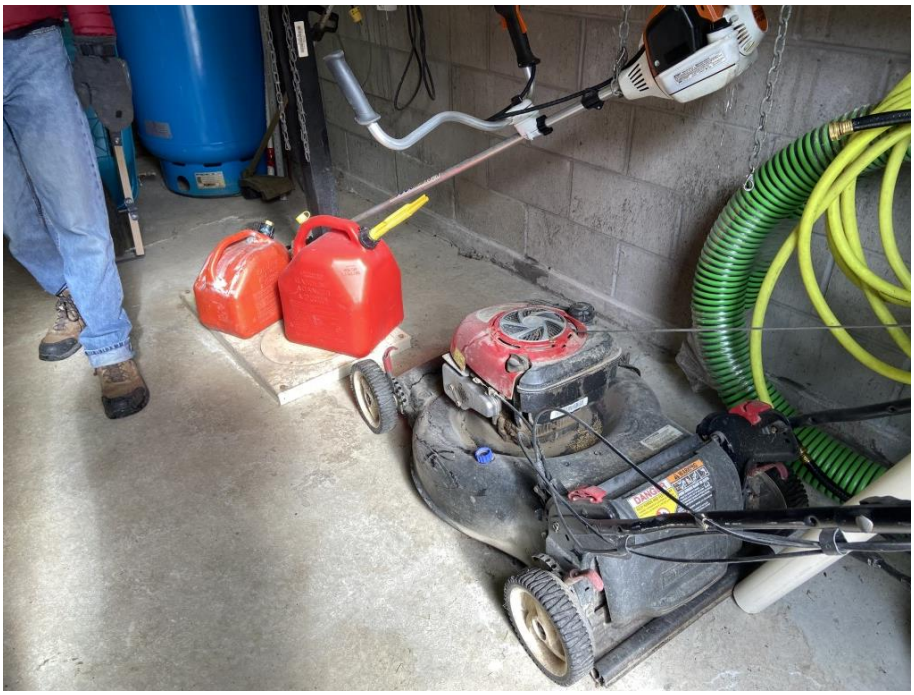


Photo 16: View of limited gasoline storage in maintenance room (April 4, 2023)

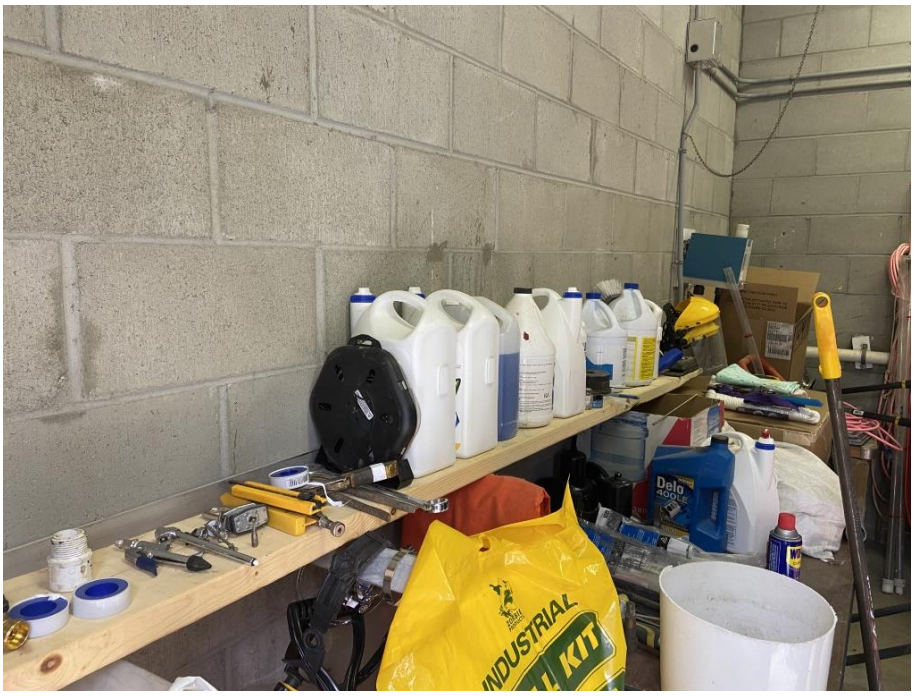
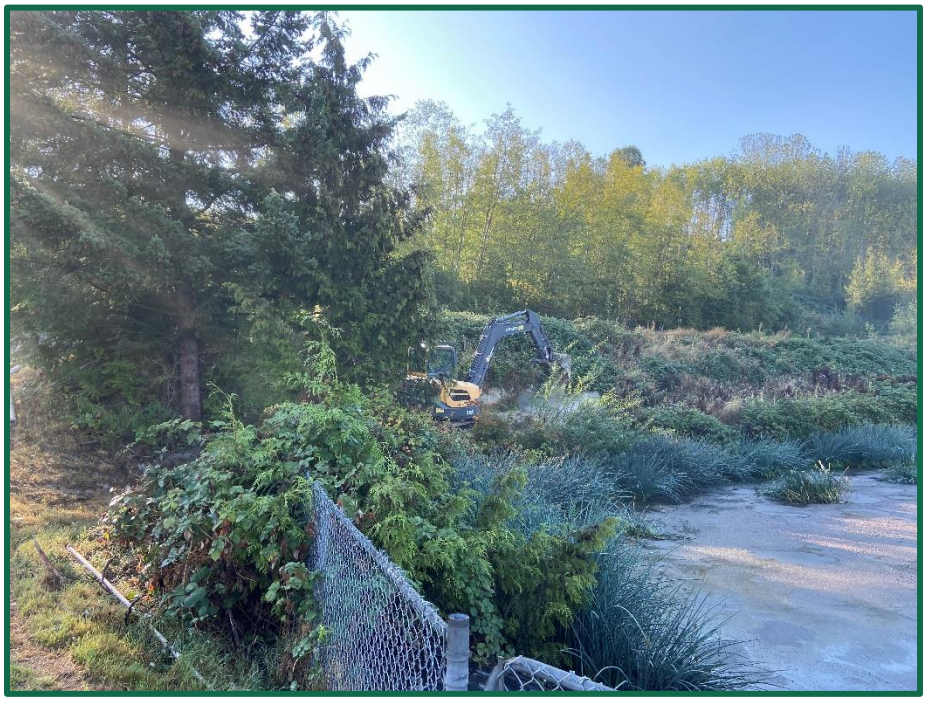


Photo 17: View of chemical storage area inside maintenance room (April 4, 2023)

Photo 18: View of electrical room (April 4, 2023)

Phase 2 Environmental Site Assessment
5297 Dusty Road
Sechelt, British Columbia



Prepared for:
District of Sechelt c/o Sperling Hansen Associates Inc.
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Sechelt, BC V0N 3A0

Project No. 154-002-02
December 2023

trillium

Trillium Environmental Ltd.
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Duncan, BC

EXECUTIVE SUMMARY

Trillium Environmental Ltd. (Trillium) was engaged by Sperling Hansen Associates Inc. on behalf of the District of Sechelt to complete a Phase 2 Environmental Site Assessment (ESA) for the Dusty Road Septage Receiving Facility located at 5297 Dusty Road, Sechelt, British Columbia (BC) (the "Site"). It is understood that the assessment was requested for environmental due diligence purposes to document the current environmental conditions at the Site in consideration of facility decommissioning.

The objective of the Phase 2 ESA was to advance test pits to determine whether potential contaminants of concern (PCOCs) are present in soil at concentrations above the applicable BC Contaminated Sites Regulation (CSR) standards within the areas of potential concern (APECs) identified during a 2023 Phase 1 ESA. The decision to focus this investigation on soil was made to screen potential environmental liabilities at the Site, which if present, were anticipated to remain shallow. Groundwater at the Site and surrounding area is deep, with drilling and well installation costly. The findings of this assessment of soil shall be utilized to refine and target future investigation of groundwater and soil vapour.

The Phase 2 ESA was completed on August 30, 2023 and consisted of advancing eight (8) test pits to depths ranging from 1.2 to 4 metres below ground surface (mbgs) to assess soil conditions in the area of the APECs. A total of 21 soil samples were analyzed for PCOCs including petroleum hydrocarbons, polycyclic aromatic hydrocarbons, volatile organic compounds, metals, anions and salinity. One (1) sample containing a thin layer of suspected post-treatment septage solids was analyzed for non-routine parameters that may be associated with non-point source septage: ethanolamines, phthalates, butylated hydroxytoluene, bisphenol A and nonylphenol and nonylphenol ethoxylates.

The analytical results indicated that all PCOCs analyzed were below the applicable CSR Industrial Land Use (IL) standards except for chloride which was elevated in samples collected from TP23-04 at 0.1–0.3 m (510 µg/g) and 1.0–1.2 m (342 µg/g). Based on results from other parts of the Site, we suspect the impacts are localized in the vicinity of the septage receiving station. A summary of outstanding COCs is provided in **Table E-1** below.

Table E-1: Summary of Outstanding AECs and COCs

AEC	Medium	COC	Maximum Concentration	Depth range	Exceeding CSR Standard
AEC 1 – Septage receiving station	Soil	Chloride	510 µg/g	0.1 to >1.2 m	DW (100 µg/g)

AEC – Area of environmental concern
COC – Contaminant of concern
CSR – BC Contaminated Sites Regulation
DW – CSR standard protective of drinking water

The Phase 2 ESA test pitting program confirmed the presence of highly permeable materials (i.e., sands, gravels, cobbles) with no evidence of shallow groundwater beneath the Site, which is consistent with regional geology and well records. Records for this area suggest that groundwater is deep and may be encountered at depths of 70 m or more. The Site stratigraphy is such that any seepage from the concrete basins, lagoons, or biosolids storage area would be expected to migrate directly downward with minimal to no lateral migration. For this reason, further investigation of the soil directly beneath APECs 2, 3, 4, 6 and 8 is warranted to confirm or refute the presence of soil PCOCs.

The objectives of the Phase 2 ESA were met. Additional work is warranted in the future should a municipal approval (e.g., zoning, subdivision, and development or building permits) be needed or if operations are ceased/decommissioned. At that time, the BC Ministry of Environment and Climate Change Strategy's site investigation process will be triggered, and a Stage 2 Preliminary Site Investigation, Detailed Site Investigation and Remediation Plan will be required to support an application for a certification document (e.g., Certificate of Compliance) in accordance with the CSR.

Trillium recommends the following tasks should a certification document be pursued in the future:

- Advance additional test pits or boreholes in the vicinity of the septage receiving station (AEC 1) to delineate the chloride exceedances in soil.
- If facilities are decommissioned, advance additional boreholes beneath the lagoons, concrete basins and sludge drying and storage area (APECs 2, 3, 4, 6, 7, and 8) to assess soil and vapour quality relative to these APECs.
- Assess groundwater PCOCs at the Site.

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1.0 INTRODUCTION

Trillium Environmental Ltd. (Trillium) was engaged by Sperling Hansen Associates Inc. on behalf of the District of Sechelt to complete a Phase 2 Environmental Site Assessment (ESA) for the Dusty Road Septage Receiving Facility (DRSRF) located at 5297 Dusty Road, Sechelt, British Columbia (BC) (the "Site"). It is understood that the assessment was requested for environmental due diligence purposes to document the current environmental conditions at the Site in consideration of facility decommissioning.

1.1 Objective

The objective of the Phase 2 ESA was to determine whether potential contaminants of concern (PCOCs) are present in soil at concentrations above the applicable BC Contaminated Sites Regulation (CSR) standards within the areas of potential concern (APECs) identified during a recent Phase 1 ESA completed by Trillium in August 2023 (Trillium, 2023).

The decision to focus this investigation on soil was made to screen potential environmental liabilities at the Site, which if present, were anticipated to remain shallow. Groundwater at the Site and surrounding area is deep, with drilling and well installation costly. The findings of this assessment of soil shall be utilized to refine and target future investigation of groundwater and soil vapour.

1.2 Scope of Work

The Phase 2 ESA consisted of the following activities:

- Review Phase 1 ESA information to confirm the work plan;
- Conduct BC One call to identify if any subsurface utilities are present at the Site (completed by District of Sechelt staff)
- Retain a qualified contractor to perform utility locates in the proposed work areas (completed by District of Sechelt staff)
- Using an excavator supplied and operated by the District of Sechelt, advance eight (8) test pits to facilitate soil sampling proximate to the APECs.
- Collect soil samples at regular intervals for field screening and submit select samples to an accredited laboratory for analysis of benzene, toluene, ethylbenzene, xylenes (BTEX), volatile petroleum hydrocarbons (VPH), light/heavy extractable petroleum hydrocarbons

(LEPH/HEPH), polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOC), metals, anions (nitrate, nitrite, fluoride) and salinity (sodium and chloride). Based on field observations, submit one (1) soil sample for analysis of non-routine parameters: ethanolamines, phthalates, butylated hydroxytoluene (BHT), nonylphenol and nonylphenol ethoxylates.

- Prepare a report documenting the findings of the Phase 2 ESA.

2.0 SITE INFORMATION

2.1 Site Identification

The Site consists of one legally titled parcel as described in **Table 2-1**.

Table 2-1: Site Identification

Descriptor	Details
Civic Address	5297 Dusty Road, Sechelt, BC
Current Registered Owner(s)	The Crown in right of British Columbia represented by the Minister of the Environment, Lands and Parks
Legal Description	Lot D, District Lot 7613, Group 1 New Westminster District Plan LMP22726
PID	025-062-921
Site ID	N/A
Current Zoning and Land Use	Not zoned / Industrial (IL) land use
Property Area (approximate)	43,038 m^2 (~4.3 ha)
Latitude / Longitude	49°29'20.47"N, 123°44'8.19"W (approximate Site centroid)

2.2 Site Description

The Site is comprised of a single, roughly rectangular lot located in the Sunshine Coast Regional District, adjacent to the eastern boundary of the District of Sechelt. The Site is located on the south side of Dusty Road, approximately 850 m east of the intersection with Sechelt Inlet Road. The Site area encompasses the DRSRF and lands surrounding the facility. The DRSRF is located within a fenced area in the central portion of the Site. On-site facilities include a receiving station, control building, three concrete basins (racetrack, clarifier, and chlorine contact chamber), two lined

lagoons (aerated lagoon and storage lagoon), and a sludge drying pad. The surrounding lands are undeveloped and/or forested except for a gravel haul road associated with the adjacent gravel pit operation that intersects the east, south, and west portions of the Site. A Site plan showing the current configuration is provided on **Figure 1.**

3.0 REGULATORY FRAMEWORK

The legislation which dictates site investigation and remediation of site contamination in British Columbia is mandated by the BC Ministry of Environment and Climate Change Strategy (ENV) under the *Environmental Management Act*. Specific environmental standards, protocols and guidance are provided in the CSR. The CSR provides concentration-based standards for soil, water, sediment, and soil vapour that, when warranted, are used to determine whether a site is contaminated. Schedule 2 of the CSR specifies specific commercial and industrial activities that have the potential to cause contamination. The 2023 Phase 1 ESA identified the following Schedule 2 activities at the Site:

- H-16 Septic tank pumpage, storage or disposal;
- H-17 Sewage lagoons or impoundments; and
- H-19 Sludge drying or composting.

Based on the current and anticipated future use of the Site for industrial use, the CSR standards for Industrial (IL) land use were applied to the soil results evaluated during the investigation. The following soil standards were applicable at the Site:

- CSR Schedule 3.1 – Part 1, Matrix Numerical Soil Standards
    - Intake of contaminated soil (Intake) – applicable at all sites
    - Groundwater used for drinking water (DW) – based on potential current and future use of groundwater for drinking water and presence of potential drinking water wells within 500 m of the Site
    - Toxicity to soil invertebrates and plants (TOX); applicable at all sites
    - Groundwater flow to surface water used for freshwater aquatic life (AW_F) – based on the presence of several surface waterbodies within 500 m of the Site
- CSR Schedule 3.1 – Part 2, Generic Numerical Soil Standards for Protection of Human Health (HH)

- CSR Schedule 3.2 – Part 3, Generic Numerical Soil Standards for protection of Ecological Health (EH)

4.0 INVESTIGATIVE PROGRAM

Trillium's standard field methodologies are presented in **Appendix B**. The Phase 2 ESA program was carried out as follows:

- Utility locates were performed by the District of Sechelt prior to August 30, 2023.
- Test pit advancement and soil sampling were undertaken on August 30, 2023 using a track-mounted excavator supplied and operated by the District of Sechelt.
- Eight test pits were advanced to a maximum depth of 4 metres below ground surface to facilitate soil sampling.
- Surface soil samples were collected from three (3) locations.
- Soil samples were screened for headspace vapours in the field using a MiniRae 2000 photoionization detector (PID) calibrated to an isobutylene standard.
- A total of 21 soil samples (including four surface samples and two duplicate samples) were submitted to Bureau Veritas (BV Labs; Burnaby, BC) and one subsample was submitted to ALS Environmental (ALS; Burnaby, BC) for analysis of PCOCs.

Based on the Phase 1 ESA findings, nine (9) APECs were assessed for PCOCs during the Phase 2 ESA. The investigation locations are depicted on **Figure 1** and are summarized along with the associated APECs and soil PCOCs in **Table 4-1** below.

Table 4-1: Summary of Investigation Locations

APEC	Description	Soil PCOCs	Assessment Locations
APEC 1	Septage receiving station	BTEX, VPH, LEPH/HEPH, PAH, VOC, metals, nitrate, nitrite, sodium, chloride, fluoride, ethanolamines*, phthalates*, BHT*, BPA*, nonylphenol and nonylphenol ethoxylates*	TP23-4
APEC 2	Aerated lagoon	Same as APEC 1	TP23-5, TP23-6
APEC 3	Septage storage lagoon	LEPH/HEPH, PAH, metals, nitrate, nitrite, sodium and chloride, nonylphenol and nonylphenol ethoxylates, ethanolamines, BHT, phthalates, fluoride, BPA	TP23-3, TP23-6, TP23-7

APEC 4	Sludge drying and storage	Same as APEC 3	TP23-7, TP23-8, SS23-2, SS23-3
APEC 5	Fill of unknown origin and quality	LEPH/HEPH, PAH, metals	TP23-1, TP23-2, TP23-3, TP23-4, TP23-6, TP23-7, SS23-1, SS23-2, SS23-3
APEC 6	Racetrack	Same as APEC 3	TP23-1, TP23-2, TP23-5
APEC 7	Clarifier	Same as APEC 3	TP23-2
APEC 8	Chlorine contact chamber	Same as APEC 3 and haloacetic acids	TP23-1
APEC 9	Biosolids spill	Same as APEC 3	SS23-1

*Non-routine parameters analyzed in one (1) sample
BTEX – Benzene, Toluene, Ethylbenzene, Xylenes, Styrene
VPH – Volatile Petroleum Hydrocarbons
LEPH/HEPH – Light/Heavy Extractable Petroleum Hydrocarbons
PAH – Polycyclic Aromatic Hydrocarbons
PFAS – Per- and polyfluoroalkyl substances
VOC – Volatile Organic Compounds
BPA – Bisphenol A
BHT – Butylated Hydroxytoluene
TP – Test pit
SS – Surface sample

For APECs 2, 3, 6 ,7 and 8 (the concrete basins and lined lagoons), test pits were generally targeted adjacent to and/or downgradient of the APEC as to capture potential vertical/lateral migration or seepage of PCOCs as best as possible while avoiding damage to infrastructure (i.e., digging through the liners or concrete). During test pit advancement, ground elevations of the test pits and associated APECs were measured via high accuracy GPS (see **Appendix B**) by District of Sechelt staff, and the data was used in concert with building plan drawings to aid in comparing the depths of each test pit relative to the APEC/facility. In some locations, test pits were terminated before the target depth due to sloughing of the coarse substrate (sands, gravels, and cobbles) encountered at depth, limiting the depth of investigation. **Table 4-2** below summarizes the test pit and APEC/facility depths/elevations.

Table 4-2: Test Pit and APEC/Facility Elevations

APEC / Facility	Top of Facility Elevation (masl)	Facility Depth (m)[a]	Bottom of Facility Elevation (masl)	Locations	Test Pit Surface Elevation (masl)	Test Pit Depth (m)	Bottom of Test Pit Elevation (masl)	Elevation Difference Relative to Bottom of Facility (m)
APEC 2 - Aerated lagoon	105.8	3.5	102.3	TP23-5	102	2.8	99.2	-3.1
				TP23-6	103.9	4	99.9	-2.4
APEC 3- Septage storage lagoon	105.3	3.5	101.8	TP23-3	104.8	1.8	103	+1.2
				TP23-6	103.9	4	99.9	-1.9
				TP23-7	106.2	1.8	104.4	+2.6
APEC 6 - Racetrack	102.7	3	99.7	TP23-1	98.3	1.8	96.5	-3.2
				TP23-2	98.1	3	95.1	-4.6

				TP23-5	102	2.8	99.2	-0.5
APEC 7 - Clarifier	101.8	5	96.8	TP23-2	98.1	3	95.1	-1.7
APEC 8 - Chlorine contact chamber	100	4	96	TP23-1	98.3	1.8	96.5	+0.5

[a] From historical building plan drawings for the Site (see Trillium, 2023)

5.0 RESULTS

5.1 Soil Stratigraphy and Field Observations

Descriptions of the soils encountered along with headspace readings and general observations made during the test pit investigation are included on the test pit logs in **Appendix C**. The soil stratigraphy encountered during the test pit investigation is described below:

- Surficial material (0-0.1 mbgs): sand and gravel (road crush) or silty topsoil
- Unit 1 – Fill or suspected disturbed/reworked native soil (0.1-2.3 mbgs): light brown silt and fine sand with trace coarse sand and gravel, dry, loose
- Unit 2 – Silt/fine sand (suspected native soil) (0.8-2.8 mbgs or absent): light brown silt and fine sand with blotched or laminated iron mottling, damp to moist, blocky, hard
- Unit 3 – Sand/gravel/cobbles (suspected Capilano Sediments) (0.7-4 mbgs): beige well graded sand and gravel, with small cobbles increasing with depth, damp, loose

The surficial soils across a majority of the Site resembled fill and/or disturbed or reworked native materials, particularly in the vicinity of APECs 3, 4, 8 and 7. A buried layer of asphalt (suspected road or pad) was discovered at TP23-8 at 0.3 mbgs and a thin layer of suspected biosolids was observed at TP23-3 at 0.4 m. No other evidence of potential soil impacts such as staining, sheens or odours were noted in any of the samples. Headspace readings measured with a PID ranged from 0.8 to 12.7 parts per million ppm, with the highest reading observed at TP23-1 (0.2-0.5 mbgs). The headspace readings are interpreted to be representative of background soil conditions. Groundwater or bedrock were not encountered during the subsurface investigation.

5.2 Soil Analytical Results

Soil results were compared to the CSR Schedule 3.1 standards for IL use. Soil analytical results are summarized with the applicable standards in **Tables 1 to 5** and are shown on **Figure 2**. A summary

of soil exceedances is provided in **Table 5-1** at the end of this section. Laboratory certificates of analysis are attached in **Appendix D.** Soil results are summarized as follows:

- 12 samples (including one (1) duplicate) were analyzed for LEPH/HEPH and PAH (**Table 1**). All results were below the reported detection limit (RDL) and/or IL standards. Concentrations of fluoranthene, phenanthrene and pyrene at SS23-03 (0.1-0.3 m) were measured slightly above the RDL but were well below the IL standards.
- Four (4) samples (including one [1] duplicate) were analyzed for BTEX, VPH and VOC (**Tables 1 and 2**). All results were below the RDL and IL standards.
- 14 samples (including one [1] duplicate) were analyzed for total metals. All results were below the IL standards.
- 12 samples (including one [1] duplicate) were analyzed for various anion and salinity parameters including nitrate, nitrite, sodium, chloride and fluoride (**Table 4**). All results were below the IL standards except for chloride at TP23-4 (510 µg/g at 0.1-0.3 m) which was above the CSR standard protective of drinking water (100 µg/g). Based on this result, Trillium requested the laboratory analyze a deeper sample from TP23-4 (1.0-1.2 m) to obtain vertical delineation. The results of the additional analysis showed that the chloride concentration (342 µg/g) decreased with depth but remained elevated above the IL standards.
- One (1) sample containing suspect biosolids (TP23-3 at 0.4-0.7 m) was analyzed for non-routine parameters: ethanolamines, phthalates, BHT, BPA, and nonylphenol and nonylphenol ethoxylates (**Table 5**). Of the samples collected, this sample was deemed most likely to be impacted for the above parameters based on the presence of suspect biosolids, its proximity to APEC 3, and the known history of biosolids sloughing in the vicinity (see Trillium, 2023). Regardless of these factors, the analytical results indicated that all non-routine parameters analyzed were below the applicable IL standards.

Table 5-1: Summary of Exceedances in Soil

AEC	Medium	COC	Maximum Concentration	Depth Range	Exceeding CSR Standard
AEC 1 – Septage receiving station	Soil	Chloride	510 µg/g	Surface to >1.2 m	DW (100 µg/g)

AEC – Area of environmental concern
COC – Contaminant of concern
CSR – BC Contaminated Sites Regulation
DW – CSR standard protective of drinking water

5.3 Site Rehabilitation

Following excavation and soil sampling, test pits were backfilled and compacted, and the ground surface was contoured to pre-existing grade using a loader supplied and operated by the District of Sechelt.

5.4 Quality Assurance and Quality Control

Quality assurance/quality control (QA/QC) measures implemented for the soil analytical program included measures by both the laboratory and by field personnel collecting the samples. Routine analysis of laboratory replicates and standard reference materials were conducted by the laboratory to define precision and accuracy, and to demonstrate contamination control for the type of samples and parameters under investigation.

Measures were taken by Trillium during sampling to prevent cross-contamination during collection of soil samples, as described in the detailed field methodologies in **Appendix B**. Additional QA/QC measures taken by Trillium included collection of sample-duplicate pairs for concurrent analysis by the laboratory. The sample-duplicate pairs were used to estimate a measure of sampling reproducibility or precision by calculating the relative percent difference (RPD) for each parameter of the sample-duplicate pairings, as follows:

$$RPD = \frac{(C_1 - C_2)}{(C_1 + C_2)/2} \times 100\%$$

where:

RPD = relative percent difference;
C_1 = the larger of the two observed values; and
C_2 = the smaller of the two observed values.

Generally, RPDs less than 35% are considered desirable, and values up to 65% are considered acceptable when based on results measured greater than 5 times the RDL. QA/QC results are presented in **Tables 6 to 8** and are summarized as follows:

- Concentrations of all petroleum hydrocarbon parameters analyzed in duplicate soil sample pairs were below the RDL, therefore, RPDs could not be calculated (**Table 6**).
- The RPD for nitrite (as N) of 90.9% exceeded the data quality objective of 35%. The variability in measured concentrations may be a result of sample heterogeneity (e.g.,

variable amounts of organic material inputs from the overlying topsoil). Regardless of the discrepancy in sample concentrations, nitrite in both samples was magnitudes below the standard and was considered reflective of Site conditions in soil.

- RPDs for all other parameters analyzed in duplicate soil sample pairs were below 35% and therefore met the data quality objective.

Based on the evaluation of QA/QC results for the investigations of the Site, the soil analytical data is interpreted to be reliable for the purposes of confirming or refuting the presence of soil PCOCs at the Site.

6.0 PHASE 2 ESA SUMMARY AND DISCUSSION

A Phase 2 ESA was completed at the Site on August 30, 2023 which consisted of advancing eight (8) test pits to depths ranging from 1.2 to 4 mbgs to assess soil conditions in the areas of the APECs. A total of 21 soil samples were analyzed for PCOCs including BTEX, VPH, LEPH/HEPH, PAH, VOC, metals, nitrate, nitrite, sodium, chloride and fluoride, and one (1) sample containing suspect biosolids was analyzed for non-routine parameters: ethanolamines, phthalates, BHT, BPA and nonylphenol and nonylphenol ethoxylates.

The soil stratigraphy encountered included topsoil or gravel underlain by a surficial layer of fill or disturbed/reworked native soil from 0.1 to 2.3 mbgs, underlain by discontinuous silt and fine sand from 0.8-2.8 mbgs, underlain by coarse sand, gravel, and cobbles from 0.7-4 mbgs, the maximum depth investigated. Aside from suspect biosolids observed at TP23-3, no evidence of suspected impacts was noted in the soils investigated.

The Phase 2 ESA results are further discussed by APEC in the following sections.

6.1 APEC 1 – Septage Receiving Station

Test pit TP23-4 was advanced adjacent to the receiving station to investigate soil quality relative to APEC 1. One surficial soil sample from 0.1-0.3 m was analyzed for PCOCs as described in **Table 4-1** (except for the non-routine parameters). The results indicated that all PCOCs analyzed were below the IL standards except for chloride (510 µg/g), which exceeded the IL standard protective of drinking water (100 µg/g). Subsequent analysis of a deeper soil sample collected from 1.0-1.2 m indicated that chloride concentrations were slightly lower (342 µg/g) but still above the standard.

Based on results from other APECs, it is suspected that the elevated chloride is localized in the vicinity of the receiving station. Based on these findings, APEC 1 is carried forward for further investigation as AEC 1.

6.2 APEC 2 – Aerated Lagoon

Test pits TP23-5 and TP23-6 were advanced downgradient of the aerated lagoon to assess soil quality relative to APEC 2. According to the elevation data (**Table 4-2**), the test pits reached depths ranging from 2.4 to 3.1 m below the bottom of the lagoon. Three samples were analyzed for PCOCs as described in **Table 4-1** (except for the non-routine parameters). The results indicated that all PCOCs analyzed were below the applicable IL standards. APEC 2 is further discussed in **Section 7.0**.

6.3 APEC 3 – Septage Storage Lagoon

Test pits TP23-3, TP23-6 and TP23-7 were advanced proximate to the septage storage lagoon to assess soil quality relative to APEC 3. According to the elevation data (**Table 4-2**), the test pits reached depths ranging from 1.9 m below to 2.6 m above the bottom of the lagoon. Five samples were analyzed for PCOCs as described in **Table 4-1.** A sample collected from TP23-3 at 0.4-0.7 m was analyzed for the suite of non-routine parameters based on the presence of suspected biosolids at the depth interval sampled, proximity to the lagoon, and known history of biosolids sloughing in the vicinity. The results indicated that all PCOCs analyzed were below the applicable IL standards. APEC 3 is further discussed in **Section 7.0**.

6.4 APEC 4 – Sludge Drying and Storage

Two test pits (TP23-7 and TP23-8) were advanced in the vicinity of the sludge drying and storage area to assess soil quality relative to APEC 4. Three (3) soil samples were obtained from the test pits and two additional surface samples (SS23-2 and SS23-3) were collected by hand and analyzed for PCOCs as described in **Table 4-1** (except for the non-routine parameters). The results indicated that all PCOCs analyzed were below the applicable IL standards. APEC 4 is further discussed in **Section 7.0**.

6.5 APEC 5 – Fill of Unknown Origin and Quality

Surficial soil samples were collected from test pits TP23-1 to TP23-4, TP23-6 and TP23-7, as well as surface sample locations SS23-1 to SS23-3 to characterize the fill materials across the Site. Nine

(9) samples were analyzed for PCOCs as described in **Table 4-1**. The results indicated that all PCOCs analyzed were below the applicable IL standards except for chloride at TP23-4. The chloride exceedance was discussed previously in **Section 6.1**.

Based on the findings, further investigation of APEC 5 is not warranted.

6.6 APEC 6 – Racetrack

Test pits TP23-1, TP23-2 and TP23-5 were advanced downgradient of the racetrack to assess soil quality relative to APEC 6. According to the elevation data (**Table 4-2**), the test pits reached depths ranging from 0.5 to 4.6 m below the bottom of the facility. Five (5) samples (including one [1] duplicate) were analyzed for PCOCs as described in **Table 4-1 (**except for the non-routine parameters)**.** The results indicated that all PCOCs analyzed were below the applicable IL standards. APEC 6 is further discussed in **Section 7.0**.

6.7 APEC 7 – Clarifier

Test pit TP23-2 was advanced adjacent to the downgradient side of the clarifier facility to assess for soil PCOCs relative to APEC 7. According to the elevation data (**Table 4-2**), the test pit reached a depth of 1.7 m below the bottom of the facility. Two samples were analyzed for PCOCs as described in **Table 4-1** (except for the non-routine parameters). The results indicated that all PCOCs analyzed were below the applicable IL standards.

6.8 APEC 8 – Chlorine Contact Chamber

Test pit TP23-1 was advanced downgradient of the chlorine contact chamber to assess for soil PCOCs relative to APEC 8. According to the elevation data (**Table 4-2**), the test pit reached a depth of 0.5 m above the bottom of the facility. Two samples were analyzed for PCOCs as described in **Table 4-1** (except for the non-routine parameters)**.** The results indicated that all PCOCs analyzed were below the applicable IL standards. APEC 8 is further discussed in **Section 7.0**.

6.9 APEC 9 – Biosolids Spill

Sample SS23-01 was obtained from surficial soil to characterize the soil quality in the vicinity of the biosolids spill identified during the Phase 1 ESA. The sample was analysed for PCOCs as described in **Table 4-1** (except for the non-routine parameters). The results indicated that all PCOCs analyzed were below the applicable IL standards.

Based on the findings, further investigation of soil relative to APEC 9 is not warranted.

7.0 CONCEPTUAL SITE MODEL

The Phase 2 ESA test pitting program confirmed the presence of highly permeable materials (i.e., sands, gravels, cobbles) with no evidence of shallow groundwater beneath the Site, which is consistent with regional geology and well records. Records for this area suggest that groundwater is deep and may be encountered at depths of 70 m or more. The Site stratigraphy is such that any seepage from the concrete basins, lagoons, or biosolids storage area would be expected to migrate directly downward with minimal to no lateral migration. For this reason, further investigation of the soil directly beneath APECs 2, 3, 4, 6 and 8 is warranted to confirm or refute the presence of soil PCOCs.

8.0 CONCLUSIONS AND RECOMMENDATIONS

A Phase 2 ESA was conducted for the Site on August 30, 2023 to assess soil quality relative to nine (9) APECs identified during a Phase 1 ESA (Trillium, 2023). Based on the results of the Phase 2 ESA, it was concluded that a contaminant of concern (COC) is present in Site soil at concentrations above the CSR IL standards. A summary of outstanding COCs is provided in **Table 8-1** below.

Table 8-1: Summary of Outstanding AEC and COC

AEC	Medium	COC	Maximum Concentration	Depth range	Exceeding CSR Standard
AEC 1 – Septage receiving station	Soil	Chloride	510 µg/g	0.1 to >1.2 m	DW (100 µg/g)

AEC – Area of environmental concern
COC – Contaminant of concern
CSR – BC Contaminated Sites Regulation
DW – CSR standard protective of drinking water

The objectives of the Phase 2 ESA were met. Additional work is warranted in the future should a municipal approval (e.g., zoning, subdivision, and development or building permits) be needed or if operations are ceased/decommissioned. At that time, BC ENV's site investigation process will be triggered, and a Stage 2 Preliminary Site Investigation, Detailed Site Investigation and Remediation Plan will be required to support an application for a certification document (e.g., Certificate of Compliance) in accordance with the CSR.

Trillium recommends the following tasks should a certification document be pursued in the future:

- Advance additional test pits or boreholes in the vicinity of the septage receiving station (AEC 1) to delineate the chloride exceedances in soil.
- If facilities are decommissioned, advance additional boreholes beneath the lagoons, concrete basins and sludge drying and storage area (APECs 2, 3, 4, 6, 7, and 8) to assess soil and vapour quality relative to these APECs.
- Assess groundwater PCOCs at the Site.

9.0 STUDY LIMITATIONS

Findings presented in this report are based upon the results of field investigations including boreholes, monitoring wells, soil, groundwater, and/or soil vapour analyses. Geologic observations and analytical results reflect conditions encountered at specific test locations. Site conditions (geologic, hydrogeologic and chemical characterization) may vary from that extrapolated from the data collected during this investigation. Consequently, while findings and conclusions documented in this report have been prepared in a manner consistent with that level of care and skill normally exercised by other members of the environmental science and engineering profession practicing under similar circumstances in the area at the time of the performance of the work, this report is not intended nor is it able to provide a totally comprehensive review of past or present Site environmental conditions. This report is intended to provide information to reduce, but not necessarily eliminate, uncertainty regarding the potential for contamination of a property.

This report has been prepared solely for the internal use of the District of Sechelt c/o Sperling Hansen Associates Inc. pursuant to the agreement between Trillium Environmental Ltd. and the District of Sechelt c/o Sperling Hansen Associates Inc. By using the report, the abovementioned parties agree that they will review and use the report in its entirety. Any use which other parties make of this report, or any reliance on or decisions made based on it, are the responsibility of such parties. Trillium Environmental Ltd. accepts no responsibility for damages, if any, suffered by other parties as a result of decisions made or actions based on this report.

10.0 CLOSURE

We trust that this report meets your needs. Please do not hesitate to contact Trillium if you have any questions.

Yours truly,

TRILLIUM ENVIRONMENTAL LTD.

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11.0 REFERENCES

Trillium Environmental Ltd. (Trillium). 20232. Phase 1 Environmental Site Assessment, 5297 Dusty Road, Sechelt, BC. Prepared for: District of Sechelt c/o Sperling Hansen Associates Inc. August 2023. Ref: 154-002-02

Tables

Table 1
Soil Analytical Results
Petroleum Hydrocarbons
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample ID	TP23-1-1	TP23A Dup of TP23-1-1	TP23-2-1	TP23-3-2	TP23-4-1	TP23-B Dup of TP23-4-1	TP23-5-2	TP23-6-1	CSR Soil Standards
Lab Sample ID	BYC025	BYC026	BYC027	BYC030	BYC031	BYC032	BYC035	BYC036	
Sample Depth (mbgs)	0.2 - 0.5	0.2 - 0.5	0.6 - 0.9	0.4 - 0.7	0.1 - 0.3	0.1 - 0.3	2.3 - 2.6	0.1 - 0.3	
Date Sampled	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	Industrial (IL)
Field Screening									
Photoionization detector (ppm, 10.6 eV)	12.8	12.8	10.6	8.4	6.3	6.3	9.9	3.9	ns
General Parameters									
Moisture (% wet)	3.6	3.7	8.4	6.2	9.3	9.0	5.7	2.7	ns
Calculated Petroleum Hydrocarbons									
VPHs	-	-	-	-	<10	<10	<10	-	200
LEPHs	<100	<100	<100	<100	<100	-	<100	<100	2000
HEPHs	<100	<100	<100	<100	<100	-	<100	<100	5000
Aggregated Petroleum Hydrocarbons									
VH (C6-C10)	-	-	-	-	<10	<10	<10	-	ns
EPH (C10-C19)	<100	<100	<100	<100	<100	-	<100	<100	2000*
EPH (C19-C32)	<100	<100	<100	<100	<100	-	<100	<100	5000*
Polycyclic Aromatic Hydrocarbons (PAH)									
Acenaphthene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	15000
Acenaphthylene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	ns
Anthracene	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	-	<0.0040	<0.0040	30
Benz(a)anthracene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	10
Benzo(a)pyrene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	50
Benzo(b)fluoranthene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	ns
Benzo(b+j)fluoranthene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	10
Benzo(g,h,i)perylene	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	ns
Benzo(k)fluoranthene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	10
Chrysene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	4500
Dibenz(a,h)anthracene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	10
Fluoranthene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	200
Fluorene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	9500
Indeno(1,2,3-cd)pyrene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	10
1-Methylnaphthalene	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	1000
2-Methylnaphthalene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	950
Naphthalene	<0.010	<0.010	<0.010	<0.010	<0.010	-	<0.010	<0.010	20
Phenanthrene	<0.010	<0.010	<0.010	<0.010	<0.010	-	<0.010	<0.010	50
Pyrene	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	100
Quinoline	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	10
Low Molecular Weight PAHs	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	ns
High Molecular Weight PAHs	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	ns
Total PAH	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	ns
Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	-	-	-	-	<0.0050	<0.0050	<0.0050	-	0.035
Ethylbenzene	-	-	-	-	<0.010	<0.010	<0.010	-	15
Methyl tert-butyl ether	-	-	-	-	<0.10	<0.10	<0.10	-	20000
Styrene	-	-	-	-	<0.030	<0.030	<0.030	-	50
Toluene	-	-	-	-	<0.050	<0.050	<0.050	-	0.5
Xylenes (total)	-	-	-	-	<0.040	<0.040	<0.040	-	6.5

NOTES:

Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to March 1, 2023
HWR	Hazardous Waste Regulation, effective April 1, 1988, including amendments up to March 30, 2022
VPH	Volatile Petroleum Hydrocarbons, carbon range C6 to C10, corrected for benzene, ethylbenzene, toluene and xylenes
LEPH	Light Extractable Petroleum Hydrocarbons, carbon range C10 to C19 corrected for PAHs
HEPH	Heavy Extractable Petroleum Hydrocarbons, carbon range C19 to C32 corrected for PAHs
VH (C6-C10)	Volatile Petroleum Hydrocarbons, carbon range C6 to C10, aggregated
EPH (C10-C19)	Extractable Petroleum Hydrocarbons, carbon range C10 to C19, aggregated
EPH (C19-C32)	Extractable Petroleum Hydrocarbons, carbon range C19 to C32, aggregated
CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to July 7, 2021
-	Not analyzed for this parameter
ns	No standard for this constituent
*	CSR LEPH/HEPH standards often used for comparison, although not legally binding
1	Most stringent value for CSR Schedule 3.1, Parts 1-3, Matrix Numerical Soil Standards and Generic Numerical Soil Standards for the Protection of Human / Ecological Health

Table 1
Soil Analytical Results
Petroleum Hydrocarbons
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample ID	TP23-6-2	TP23-7-1	TP23-8-2	SS23-1	SS23-3	CSR Soil Standards
Lab Sample ID	BYC037	BYC038	BYC041	BYC042	BYC045	
Sample Depth (mbgs)	2.5 - 2.8	0.3 - 0.6	0.4 - 0.6	0.1 - 0.3	0.1 - 0.3	
Date Sampled	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	Industrial (IL)
Field Screening						
Photoionization detector (ppm, 10.6 eV)	5.8	6.5	2.1	4.1	2.7	ns
General Parameters						
Moisture (% wet)	1.2	15	7.4	2.9	3.4	ns
Calculated Petroleum Hydrocarbons						
VPHs	<10	-	-	-	-	200
LEPHs	<100	<100	<100	<100	<100	2000
HEPHs	<100	<100	<100	<100	<100	5000
Aggregated Petroleum Hydrocarbons						
VH (C6-C10)	<10	-	-	-	-	ns
EPH (C10-C19)	<100	<100	<100	<100	<100	2000*
EPH (C19-C32)	<100	<100	<100	<100	<100	5000*
Polycyclic Aromatic Hydrocarbons (PAH)						
Acenaphthene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	15000
Acenaphthylene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	ns
Anthracene	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	30
Benz(a)anthracene	<0.020	<0.020	<0.020	<0.020	<0.020	10
Benzo(a)pyrene	<0.020	<0.020	<0.020	<0.020	<0.020	50
Benzo(b)fluoranthene	<0.020	<0.020	<0.020	<0.020	<0.020	ns
Benzo(b+j)fluoranthene	<0.020	<0.020	<0.020	<0.020	<0.020	10
Benzo(g,h,i)perylene	<0.050	<0.050	<0.050	<0.050	<0.050	ns
Benzo(k)fluoranthene	<0.020	<0.020	<0.020	<0.020	<0.020	10
Chrysene	<0.020	<0.020	<0.020	<0.020	<0.020	4500
Dibenz(a,h)anthracene	<0.020	<0.020	<0.020	<0.020	<0.020	10
Fluoranthene	<0.020	<0.020	<0.020	<0.020	0.024	200
Fluorene	<0.020	<0.020	<0.020	<0.020	<0.020	9500
Indeno(1,2,3-cd)pyrene	<0.020	<0.020	<0.020	<0.020	<0.020	10
1-Methylnaphthalene	<0.050	<0.050	<0.050	<0.050	<0.050	1000
2-Methylnaphthalene	<0.020	<0.020	<0.020	<0.020	<0.020	950
Naphthalene	<0.010	<0.010	<0.010	<0.010	<0.010	20
Phenanthrene	<0.010	<0.010	<0.010	<0.010	0.011	50
Pyrene	<0.020	<0.020	<0.020	<0.020	0.02	100
Quinoline	<0.050	<0.050	<0.050	<0.050	<0.050	10
Low Molecular Weight PAHs	<0.050	<0.050	<0.050	<0.050	<0.050	ns
High Molecular Weight PAHs	<0.050	<0.050	<0.050	<0.050	<0.050	ns
Total PAH	<0.050	<0.050	<0.050	<0.050	0.056	ns
Monocyclic Aromatic Hydrocarbons (MAH)						
Benzene	<0.0050	-	-	-	-	0.035
Ethylbenzene	<0.010	-	-	-	-	15
Methyl tert-butyl ether	<0.10	-	-	-	-	20000
Styrene	<0.030	-	-	-	-	50
Toluene	<0.050	-	-	-	-	0.5
Xylenes (total)	<0.040	-	-	-	-	6.5

NOTES:
Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to March 1, 2023
HWR	Hazardous Waste Regulation, effective April 1, 1988, including amendments up to March 30, 2022
VPH	Volatile Petroleum Hydrocarbons, carbon range C6 to C10, corrected for benzene, ethylbenzene, toluene and xylenes
LEPH	Light Extractable Petroleum Hydrocarbons, carbon range C10 to C19 corrected for PAHs
HEPH	Heavy Extractable Petroleum Hydrocarbons, carbon range C19 to C32 corrected for PAHs
VH (C6-C10)	Volatile Petroleum Hydrocarbons, carbon range C6 to C10, aggregated
EPH (C10-C19)	Extractable Petroleum Hydrocarbons, carbon range C10 to C19, aggregated
EPH (C19-C32)	Extractable Petroleum Hydrocarbons, carbon range C19 to C32, aggregated
CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to July 7, 2021
-	Not analyzed for this parameter
ns	No standard for this constituent
*	CSR LEPH/HEPH standards often used for comparison, although not legally binding
1	Most stringent value for CSR Schedule 3.1, Parts 1-3, Matrix Numerical Soil Standards and Generic Numerical Soil Standards for the Protection of Human / Ecological Health

Table 2
Soil Analytical Results
Volatile Organic Compounds
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample ID	**TP23-4-1**	**TP23-B** Dup of TP23-4-1	**TP23-5-2**	**TP23-6-2**	**CSR Soil Standards**
Lab Sample ID	BYC031	BYC032	BYC035	BYC037	
Sample Depth (mbgs)	0.1 - 0.3	0.1 - 0.3	2.3 - 2.6	2.5 - 2.8	**Industrial (IL)[1,2]**
Date Sampled	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	1,500 / ns
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	>1000 mg/g / 50
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	150 / ns
1,1,2-Trichloro-1,2,2-Trifluoroethane	<0.20	<0.20	<0.20	<0.20	>1000 mg/g / ns
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	30,000 / 50
1,1,2-Trichloropropane	<15	<15	<15	<15	1000 / ns
1,1-Dichloroethane	<0.025	<0.025	<0.025	<0.025	>1000 mg/g / 50
1,1-Dichloroethylene	<0.025	<0.025	<0.025	<0.025	350,000 / 50
1,1-Dichloropropene	<15	<15	<15	<15	ns
1,2,3-Trichlorobenzene	<0.030	<0.030	<0.030	<0.030	10,000 / 10
1,2,3-Trichloropropane	<0.030	<0.030	<0.030	<0.030	1 / ns
1,2,3-Trichloropropene	<2.0	<2.0	<2.0	<2.0	700 / ns
1,2,3-Trimethylbenzene	<15	<15	<15	<15	ns
1,2,4-Trichlorobenzene	<0.030	<0.030	<0.030	<0.030	70,000 / 10
1,2,4-Trimethylbenzene	<0.20	<0.20	<0.20	<0.20	ns
1,2-Dibromo-3-chloropropane	<1.0	<1.0	<1.0	<1.0	40 / ns
1,2-Dibromoethane	<0.020	<0.020	<0.020	<0.020	15 / ns
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	650,000 / 10
1,2-Dichloroethane	<0.020	<0.020	<0.020	<0.020	350 / 50
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	10,000 / 50
1,3,5-Trichlorobenzene	<0.030	<0.030	<0.030	<0.030	55,000 / 10
1,3,5-Trimethylbenzene	<0.20	<0.20	<0.20	<0.20	2,500 / ns
1,3-Butadiene	<0.080	<0.080	<0.080	<0.080	9.5 / ns
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	200,000 / 10
1,3-Dichloropropane	<15	<15	<15	<15	4,500 / ns
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	800,000 / 10
2-Chlorotoluene	<15	<15	<15	<15	4,500 / ns
2-Butanone (MEK)	<15	<15	<15	<15	150,000 / ns
4-Chlorotoluene	<15	<15	<15	<15	4,500 / ns
4-Methyl-2-pentanone (MIBK)	<0.50	<0.50	<0.50	<0.50	ns
Acetone	<5.0	<5.0	<5.0	<5.0	200,000 / ns
Bromobenzene	<0.20	<0.20	<0.20	<0.20	2,000 / ns
Bromodichloromethane	<0.050	<0.050	<0.050	<0.050	550 / ns
Bromoform	<0.050	<0.050	<0.050	<0.050	4,000 / ns
Bromomethane	<0.30	<0.30	<0.30	<0.30	300 / ns
Carbon tetrachloride	<0.020	<0.020	<0.020	<0.020	5,000 / 50
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	150,000 / 10
Chloroethane	<0.10	<0.10	<0.10	<0.10	ns
Chloroform	<0.020	<0.020	<0.020	<0.020	70,000 / 50
Chloromethane	<0.050	<0.050	<0.050	<0.050	ns
cis-1,2-Dichloroethylene	<0.030	<0.030	<0.030	<0.030	15,000 / 50
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	200,000 / 50
Dibromochloromethane	<0.050	<0.050	<0.050	<0.050	400 / ns
Dibromomethane	<0.20	<0.20	<0.20	<0.20	ns
Dichlorodifluoromethane	<0.20	<0.20	<0.20	<0.20	45,000 / ns
Dichloromethane	<0.080	<0.080	0.19	0.089	40,000 / 50
Hexachlorobutadiene	<0.20	<0.20	<0.20	<0.20	250 / ns
Hexane	<0.50	<0.50	0.69	<0.50	ns
Isopropylbenzene (Cumene)	<0.20	<0.20	<0.20	<0.20	25,000 / ns
Methylcyclohexane	<0.20	<0.20	<0.20	<0.20	ns
n-Butylbenzene	<15	<15	<15	<15	10,000 / ns
n-Decane	<2.0	<2.0	<2.0	<2.0	ns
n-Propylbenzene	<15	<15	<15	<15	ns
Pentachloroethane	<10	<10	<10	<10	350 / ns
p-Isopropyltoluene	<15	<15	<15	<15	ns
sec-Butylbenzene	<15	<15	<15	<15	25,000 / ns
Tetrachloroethylene	<0.010	<0.010	<0.010	<0.010	2.5 – 40,000
tert-Butylbenzene	<15	<15	<15	<15	25,000 / ns
trans-1,2-Dichloroethylene	<0.030	<0.030	<0.030	<0.030	150,000 / 50
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	ns
Trichloroethylene	<0.0090	<0.0090	<0.0090	<0.0090	0.3 – 3,500
Trichlorofluoromethane	<0.20	<0.20	<0.20	<0.20	70,000 / ns
Vinyl chloride	<0.040	<0.040	<0.040	<0.040	45 / ns

NOTES:
Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to July 7, 2021
-	Not analyzed for this parameter
ns	No standard for this constituent
1	Standards for the protection of Human Health / Standards for the protection of Ecological Health
2	Range shown of CSR

Table 3
Soil Analytical Results
Metals
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample ID	TP23-1-1	TP23A Dup of TP23-1-1	TP23-2-1	TP23-3-1	TP23-3-2	TP23-4-1	TP23-5-2	CSR Soil Standards - Industrial (IL)				
Lab Sample ID	BYC025	BYC026	BYC027	BYC029	BYC030	BYC031	BYC035	Protection of Human Soil Intake (Intake)	Protection of Groundwater used for Drinking Water (DW)	Protection of Soil Invertebrates and Plants (TOX)	Protection of Aquatic Life, Freshwater (AW_F)	Generic Numerical Standards (HH / EH)
Sample Depth (mbgs)	0.2 - 0.5	0.2 - 0.5	0.6 - 0.9	0.1 - 0.4	0.4 - 0.7	0.1 - 0.3	2.3 - 2.6					
Soil Type												
Date Sampled	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23					
pH (lab measured)												
pH	5.81	5.65	5.55	5.78	5.40	5.79	5.90	ns	ns	ns	ns	ns
Metals in Soil												
Aluminum	8360	10100	12500	12200	9670	12400	13300	ns	ns	ns	ns	250,000 / ns
Antimony	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	ns	ns	ns	ns	40,000 / 40
Arsenic	0.71	0.83	1.35	1.26	1.08	1.56	1.43	400	10	40	10	ns
Barium	38.2	38.5	50.9	39.2	22.1	62.3	53.6	>1000 mg/g	350	1,500	3,500	ns
Beryllium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	15,000	1 @ pH <5.5 1.5 @ pH 5.5 - < 6.0 4 @ pH 6.0 - < 6.5 20 @ pH 6.5 - < 7.0 150 @ pH 7.0 - < 7.5 1,000 @ pH 7.5 - < 8.0 2,500 @ pH ≥ 8.0	350	1 @ pH <6.5 4 @ pH 6.5 - < 7.0 30 @ pH 7.0 - < 7.5 250 @ pH 7.5 - < 8.0 500 @ pH ≥ 8.0	ns
Bismuth	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	ns	ns	ns	ns	ns
Boron	2.6	2.1	1.6	1.4	1.1	2.1	2.5	ns	ns	ns	ns	>1000 mg/g / ns
Cadmium	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.057	3,500	1 @ pH < 7.0 4.5 @ pH 7.0 - < 7.5 30 @ pH 7.5 - < 8.0 70 @ pH ≥ 8.0	75	1 @ pH < 7.0 3 @ pH 7.0 - < 7.5 20 @ pH 7.5 - < 8.0 50 @ pH ≥ 8.0	ns
Calcium	1340	1310	1600	1810	1340	2360 (1)	2220	ns	ns	ns	ns	ns
Chromium	6.44	7.94	9.50	8.60	5.88	11.3	10.9	20,000	60[a], >1000 mg/g[b]	250	60[a], 300,000[b]	ns
Cobalt	2.78	3.03	3.77	3.46	2.44	3.96	3.99	2,000	25	200	25	ns
Copper	5.95	7.52	9.01	10.2	4.43	10.2	10.3	700,000	250 @ pH <5.0 500 @ pH 5.0 - 5.5 2,000 @ pH 5.5 - < 6.0 10,000 @ pH 6.0 - < 6.5 50,000 @ pH 6.5 - < 7.0 100,000 @ pH ≥7.0	300	75 @ pH < 5.5 100 @ pH 5.5 - < 6.0 700 @ pH 6.0 - < 6.5 3,000 @ pH 6.5 - < 7.0 6,500 @ pH 7.0 - < 7.5 7,500 @ pH ≥7.5	ns
Iron	8650	9770	12300	11500	8000	13800	13200	ns	ns	ns	ns	150,000 / ns
Lead	1.83	2.17	3.07	2.45	2.19	2.63	2.78	4,000	120 @ pH <5.5 150 @ pH 5.5 - < 6.0 800 @ pH 6.0 - < 6.5 3,500 @ pH 6.5 - < 7.0 7,500 @ pH 7.0 - < 7.5 8,500 @ pH ≥7.5	1,000	200 @ pH <5.0 350 @ pH 5.0 - 5.5 1,500 @ pH 5.5 - < 6.0 8,500 @ pH 6.0 - < 6.5 35,000 @ pH 6.5 - < 7.0 80,000 @ pH 7.0 - < 7.5 90,000 @ pH ≥7.5	ns
Lithium	7.30	7.13	7.91	7.86	6.04	9.34	8.30	ns	ns	ns	ns	450 / ns
Magnesium	1890	2030	2400	2580	1310	2950	2900	ns	ns	ns	ns	ns
Manganese	135	132	224	183	143	213	187	>1000 mg/g	2,000	2,000	ns	ns
Mercury	<0.050	<0.050	0.090	<0.050	0.061	<0.050	<0.050	2,000	ns	75	ns	ns
Molybdenum	0.11	0.13	0.26	0.23	0.12	0.17	0.12	35,000	15	150	650	ns
Nickel	3.93	4.56	5.01	5.32	3.33	5.39	5.58	80,000	70 @ pH <7.5 250 @ pH 7.5 - < 8.0 500 @ pH ≥ 8.0	250	90 @ pH < 5.0 100 @ pH 5.0 - < 5.5 150 @ pH 5.5 - < 6.0 200 @ pH 6.0 - < 6.5 300 @ pH 6.5 - < 7.0 900 @ pH 7.0 - < 7.5 5,000 @ pH 7.5 - < 8.0 9,500 @ pH ≥ 8.0	ns
Phosphorus	102	73	336	349	697	318	335	ns	ns	ns	ns	ns
Potassium	328	291	446	501	190	674	648	ns	ns	ns	ns	ns
Selenium	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35,000	1	2	1	ns
Silver	<0.050	<0.050	<0.050	0.077	0.084	<0.050	<0.050	ns	ns	ns	ns	35,000 / 40
Strontium	14.9	14.3	23.2	17.7	12.8	35.2	34.9	ns	ns	ns	ns	150,000 / ns
Thallium	<0.050	<0.050	0.052	<0.050	<0.050	0.054	0.071	ns	ns	ns	ns	ns / 25
Tin	0.20	0.19	0.25	0.25	0.16	0.21	0.22	ns	ns	ns	ns	>1000 mg/g / 30
Titanium	520	592	562	553	386	669	666	ns	ns	ns	ns	ns
Tungsten	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	ns	ns	ns	ns	200 / ns
Uranium	0.208	0.249	0.369	0.371	0.133	0.495	0.399	20,000	30	2,000	150	ns
Vanadium	21.5	25.5	31.3	27.2	19.7	34.5	32.8	35,000	100	300	ns	ns
Zinc	16.6	17.3	29.5	24.7	21.9	25.4	25.0	>1000 mg/g	200 @ pH < 5.0 250 @ pH 5.0 - < 5.5 300 @ pH 5.5 - < 6.0 450 @ pH 6.0 - < 6.5 600 @ pH 6.5 - < 7.0 1,000 @ pH 7.0 - < 7.5 3,000 @ pH 7.5 - < 8.0 5,500 @ pH ≥ 8.0	450	150 @ pH < 6.0 250 @ pH 6.0 - < 6.5 350 @ pH 6.5 - < 7.0 600 @ pH 7.0 - < 7.5 1,500 @ pH 7.5 - < 8.0 3,000 @ pH ≥ 8.0	ns
Zirconium	1.05	1.34	0.87	0.60	0.73	1.73	2.01	ns	ns	ns	ns	ns

NOTES:
Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to July 7, 2021
mbgs	Meters below ground surface
ns	No standard for this constituent
HH	CSR Schedule 3.1 - Part 2 Generic numerical soil standards for the protection of human health
EH	CSR Schedule 3.1 - Part 3 Generic numerical soil standards for the protection of ecological health
a	Standard is for hexavalent chromium
b	Standard is for trivalent chromium

Table 3
Soil Analytical Results
Metals
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample ID	TP23-6-1	TP23-6-2	TP23-7-1	TP23-8-1	TP23-8-2	SS23-1	SS23-3	CSR Soil Standards - Industrial (IL)				
Lab Sample ID	BYC036	BYC037	BYC038	BYC040	BYC041	BYC042	BYC045	Protection of Human Soil Intake (Intake)	Protection of Groundwater used for Drinking Water (DW)	Protection of Soil Invertebrates and Plants (TOX)	Protection of Aquatic Life, Freshwater (AW_F)	Generic Numerical Standards (HH / EH)
Sample Depth (mbgs)	0.1 - 0.3	2.5 - 2.8	0.3 - 0.6	0.1 - 0.3	0.4 - 0.6	0.1 - 0.3	0.1 - 0.3					
Soil Type												
Date Sampled	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23					
pH (lab measured)												
pH	5.19	6.03	6.96	6.34	7.08	5.00	6.43	ns	ns	ns	ns	ns
Metals in Soil												
Aluminum	9900	8870	12300	8460	11700	12100	11300	ns	ns	ns	ns	250,000 / ns
Antimony	<0.10	0.10	0.13	<0.10	<0.10	0.10	0.18	ns	ns	ns	ns	40,000 / 40
Arsenic	1.43	2.00	2.39	1.06	1.31	1.20	1.42	400	10	40	10	ns
Barium	39.7	54.1	62.9	30.1	47.8	42.4	46.0	>1000 mg/g	350	1,500	3,500	ns
Beryllium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	15,000	1 @ pH <5.5 1.5 @ pH 5.5 - < 6.0 4 @ pH 6.0 - < 6.5 20 @ pH 6.5 - < 7.0 150 @ pH 7.0 - < 7.5 1,000 @ pH 7.5 - < 8.0 2,500 @ pH ≥ 8.0	350	1 @ pH <6.5 4 @ pH 6.5 - < 7.0 30 @ pH 7.0 - < 7.5 250 @ pH 7.5 - < 8.0 500 @ pH ≥ 8.0	ns
Bismuth	0.22	<0.10	<0.10	<0.10	<0.10	0.53	0.37	ns	ns	ns	ns	ns
Boron	2.0	1.6	1.3	1.3	1.7	<1.0	1.1	ns	ns	ns	ns	>1000 mg/g / ns
Cadmium	0.166	<0.050	0.107	<0.050	<0.050	0.084	0.129	3,500	1 @ pH < 7.0 4.5 @ pH 7.0 - < 7.5 30 @ pH 7.5 - < 8.0 70 @ pH ≥ 8.0	75	1 @ pH < 7.0 3 @ pH 7.0 - < 7.5 20 @ pH 7.5 - < 8.0 50 @ pH ≥ 8.0	ns
Calcium	1580	2350	3750	2120	2040	1350	1810	ns	ns	ns	ns	ns
Chromium	8.27	11.5	12.2	7.39	9.29	8.05	12.0	20,000	60[a], >1000 mg/g[b]	250	60[a], 300,000[b]	ns
Cobalt	3.33	3.80	7.50	2.95	4.00	3.14	3.44	2,000	25	200	25	ns
Copper	13.4	12.7	14.5	10.8	11.0	22.3	27.3	700,000	250 @ pH <5.0 500 @ pH 5.0 - 5.5 2,000 @ pH 5.5 - < 6.0 10,000 @ pH 6.0 - < 6.5 50,000 @ pH 6.5 - < 7.0 100,000 @ pH ≥7.0	300	75 @ pH < 5.5 100 @ pH 5.5 - < 6.0 700 @ pH 6.0 - < 6.5 3,000 @ pH 6.5 - < 7.0 6,500 @ pH 7.0 - < 7.5 7,500 @ pH ≥7.5	ns
Iron	10900	13800	16000	10600	13100	10000	12000	ns	ns	ns	ns	150,000 / ns
Lead	2.23	1.78	4.03	2.12	2.35	3.52	9.17	4,000	120 @ pH <5.5 150 @ pH 5.5 - < 6.0 800 @ pH 6.0 - < 6.5 3,500 @ pH 6.5 - < 7.0 7,500 @ pH 7.0 - < 7.5 8,500 @ pH ≥7.5	1,000	200 @ pH <5.0 350 @ pH 5.0 - 5.5 1,500 @ pH 5.5 - < 6.0 8,500 @ pH 6.0 - < 6.5 35,000 @ pH 6.5 - < 7.0 80,000 @ pH 7.0 - < 7.5 90,000 @ pH ≥7.5	ns
Lithium	7.32	7.86	11.1	6.74	8.46	7.09	7.64	ns	ns	ns	ns	450 / ns
Magnesium	2360	2860	3530	2520	2930	2220	2410	ns	ns	ns	ns	ns
Manganese	206	172	374	212	201	160	225	>1000 mg/g	2,000	2,000	ns	ns
Mercury	0.051	<0.050	<0.050	0.051	0.051	0.098	0.510	2,000	ns	75	ns	ns
Molybdenum	0.22	0.18	0.31	0.21	0.22	0.24	0.49	35,000	15	150	650	ns
Nickel	4.74	5.51	6.91	3.97	5.75	5.26	6.28	80,000	70 @ pH <7.5 250 @ pH 7.5 - < 8.0 500 @ pH ≥ 8.0	250	90 @ pH < 5.0 100 @ pH 5.0 - < 5.5 150 @ pH 5.5 - < 6.0 200 @ pH 6.0 - < 6.5 300 @ pH 6.5 - < 7.0 900 @ pH 7.0 - < 7.5 5,000 @ pH 7.5 - < 8.0 9,500 @ pH ≥ 8.0	ns
Phosphorus	915	356	484	390	297	691	526	ns	ns	ns	ns	ns
Potassium	557	1160	915	636	794	469	485	ns	ns	ns	ns	ns
Selenium	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35,000	1	2	1	ns
Silver	0.227	<0.050	<0.050	0.064	0.053	0.576	0.498	ns	ns	ns	ns	35,000 / 40
Strontium	16.7	23.0	48.6	16.5	21.8	13.5	17.5	ns	ns	ns	ns	150,000 / ns
Thallium	0.051	0.067	0.074	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns / 25
Tin	0.33	0.18	0.24	0.21	0.21	0.87	1.14	ns	ns	ns	ns	1000 mg/g / 30
Titanium	398	538	776	413	595	399	451	ns	ns	ns	ns	ns
Tungsten	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	ns	ns	ns	ns	200 / ns
Uranium	0.336	0.446	0.552	0.267	0.372	0.285	0.317	20,000	30	2,000	150	ns
Vanadium	25.7	37.7	38.4	26.1	31.5	24.3	28.2	35,000	100	300	ns	ns
Zinc	56.5	21.9	37.1	20.5	26.8	33.3	44.1	>1000 mg/g	200 @ pH < 5.0 250 @ pH 5.0 - < 5.5 300 @ pH 5.5 - < 6.0 450 @ pH 6.0 - < 6.5 600 @ pH 6.5 - < 7.0 1,000 @ pH 7.0 - < 7.5 3,000 @ pH 7.5 - < 8.0 5,500 @ pH ≥ 8.0	450	150 @ pH < 6.0 250 @ pH 6.0 - < 6.5 350 @ pH 6.5 - < 7.0 600 @ pH 7.0 - < 7.5 1,500 @ pH 7.5 - < 8.0 3,000 @ pH ≥ 8.0	ns
Zirconium	0.52	1.12	2.01	1.01	1.61	<0.50	0.59	ns	ns	ns	ns	ns

NOTES:
Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to July 7, 2021
mbgs	Meters below ground surface
ns	No standard for this constituent
HH	CSR Schedule 3.1 - Part 2 Generic numerical soil standards for the protection of human health
EH	CSR Schedule 3.1 - Part 3 Generic numerical soil standards for the protection of ecological health
a	Standard is for hexavalent chromium
b	Standard is for trivalent chromium

Table 4
Soil Analytical Results
Anions & Salinity
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample ID	TP23-1-1	TP23A Dup of TP23-1-1	TP23-2-2	TP23-3-2	TP23-4-1	TP23-4-2	TP23-5-2	CSR Soil Standards
Lab Sample ID	BYC025	BYC026	BYC028	BYC030	BYC031	BYC033	BYC035	
Sample Depth (mbgs)	0.2 - 0.5	0.2 - 0.5	2.7 - 3.0	0.4 - 0.7	0.1 - 0.3	1.0 -1.2	2.3 - 2.6	Industrial (IL)[1,2]
Date Sampled	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	
Anions								
Fluoride (F), Extractable	<10	<10	<10	<10	<10	-	<10	
Nitrate (as N), Soluble	0.650	0.800	1.48	1.47	1.36	-	0.100	400,000 / ns
Nitrite (as N), Soluble	0.080	0.030	0.040	<0.021	<0.021	-	0.100	25,000 / ns
Nitrate + nitrite (N), Soluble	0.730	0.830	1.52	1.47	1.36	-	0.200	ns
Salinity								
Saturation %	40.1	39.3	45.1	42.2	42.5	-	44.6	ns
Chloride (Cl), Soluble	<4.0	<3.9	<4.5	<4.2	**510**	**342**	<4.5	100 - >1,000,000
Sodium (Na), Soluble	<2.0	<2.0	2.6	<2.1	177	-	2.6	1,000 - >1,00,0000

Sample ID	TP23-6-2	TP23-7-1	TP23-8-2	SS23-1	SS23-2-1	SS23-3	CSR Soil Standards
Lab Sample ID	BYC037	BYC038	BYC041	BYC042	BYC043	BYC045	
Sample Depth (mbgs)	2.5 - 2.8	0.3 - 0.6	0.4 - 0.6	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	Industrial (IL)[1,2]
Date Sampled	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	30-Aug-23	
Anions							
Fluoride (F), Extractable	<10	<10	<10	<10	<10	<10	
Nitrate (as N), Soluble	0.140	0.670	6.27	2.72	0.100	0.720	400,000 / ns
Nitrite (as N), Soluble	0.030	0.080	0.130	<0.021	0.060	0.080	25,000 / ns
Nitrate + nitrite (N), Soluble	0.170	0.750	6.40	2.72	0.150	0.800	ns
Salinity							
Saturation %	30.5	46.2	43.8	41.3	41.4	35.8	ns
Chloride (Cl), Soluble	<3.0	<4.6	<4.4	<4.1	<4.1	<3.6	100 - >1,000,000
Sodium (Na), Soluble	<1.5	5.4	7.5	2.1	10.3	16.2	1,000 - >1,00,0000

NOTES:
Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to July 7, 2021
-	Not analyzed for this parameter
ns	No standard for this constituent
1	Standards for the protection of Human Health / Standards for the protection of Ecological Health
2	Range shown of CSR Soil Matrix Standards for AW_F-Aquatic Life Freshwater, DW-Groundwater used for Drinking Water, IN-Intake of contaminated soils & TOX-Toxicity to soil invertebrates and plants

Table 5
Soil Analytical Results
Other Parameters
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample ID	TP23-3-2	CSR Soil Standards
Lab Sample ID	BYC030 / VA23C0755-001	
Sample Depth (mbgs)	0.4 - 0.7	Industrial (IL)[1,2]
Date Sampled	30-Aug-23	
Amines		
Diethanolamine (DEA), Extractable (Water)	<1.5	450 / ns
Methyldiethanolamine (MDEA), Extractable (Water)	<1.5	ns
Monoethanolamine (MEA), Extractable (Water)	<1.5	ns
Antioxidants		
Butylated hydroxytoluene (BHT)	<15	9,000 / ns
Phthalates		
Bis(2-ethylhexyl)phthalate (DEHP)	<0.10	30,000 / ns
Diethyl phthalate	<0.10	200,000 / ns
Dimethyl phthalate	<0.10	ns
Di-n-butyl phthalate	0.10	ns
Di-n-octyl phthalate	<0.10	ns
N-butylbenzyl phthalate	<0.10	15,000 / ns
Nonylphenols		
Bisphenol A (BPA)	<0.050	10,000 / ns
Nonylphenol diethoxylates [NP2EO]	<0.062	ns
Nonylphenol ethoxylates, total	<0.50	ns
Nonylphenol monoethoxylates [NP1EO]	<0.50	ns
Nonylphenols [NP]	<0.25	ns
Octylphenol [OP]	<0.25	ns
Octylphenol diethoxylates [OP2EO]	<0.025	ns
Octylphenol ethoxylates, total	<0.50	ns
Octylphenol monoethoxylates [OP1EO]	<0.50	ns
Nonylphenol and Nonylphenol Ethoxylates, total	<2.59	4 - 35,000

NOTES:
Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to July 7, 2021
-	Not analyzed for this parameter
ns	No standard for this constituent
1	Standards for the protection of Human Health / Standards for the protection of Ecological Health
2	Range shown of CSR Soil Matrix Standards for AW_F-Aquatic Life Freshwater, DW-Groundwater used for Drinking Water, IN-Intake of contaminated soils & TOX-Toxicity to soil invertebrates and plants

Table 6
Soil Sample Duplicate Pairing QA/QC
Petroleum Hydrocarbons
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample Pairing		TP23-1-1 / TP23A			TP23-4-1 / TP23-B		
Sample ID	**RDL**	**TP23-1-1**	**TP23A** Dup of TP23-1-1	**RPD**	**TP23-4-1**	**TP23-B** Dup of TP23-4-1	**RPD**
Lab Sample ID		BYC025	BYC026	(%)	BYC031	BYC032	(%)
Sample Depth (mbgs)		0.2 - 0.5	0.2 - 0.5		0.1 - 0.3	0.1 - 0.3	
Date Sampled		30-Aug-23	30-Aug-23		30-Aug-23	30-Aug-23	
General Parameters							
Moisture (% wet)	0.30	3.6	3.7	2.7%	9.3	9	3.3%
Calculated Petroleum Hydrocarbons							
VPHs	10	-	-	-	<10	<10	-
LEPH	100	<100	<100	-	<100	-	-
HEPH	100	<100	<100	-	<100	-	-
Aggregated Petroleum Hydrocarbons							
VHs (C6-C10)	10	-	-	-	<10	<10	-
EPH (C10-C19)	100	<100	<100	-	<100	-	-
EPH (C19-C32)	100	<100	<100	-	<100	-	-
Polycyclic Aromatic Hydrocarbons (PAH)							
Acenaphthene	0.0050	<0.0050	<0.0050	-	<0.0050	-	-
Acenaphthylene	0.0050	<0.0050	<0.0050	-	<0.0050	-	-
Anthracene	0.0040	<0.0040	<0.0040	-	<0.0040	-	-
Benz(a)anthracene	0.020	<0.020	<0.020	-	<0.020	-	-
Benzo(a)pyrene	0.020	<0.020	<0.020	-	<0.020	-	-
Benzo(b)fluoranthene	0.020	<0.020	<0.020	-	<0.020	-	-
Benzo(b+j)fluoranthene	0.020	<0.020	<0.020	-	<0.020	-	-
Benzo(g,h,i)perylene	0.050	<0.050	<0.050	-	<0.050	-	-
Benzo(k)fluoranthene	0.020	<0.020	<0.020	-	<0.020	-	-
Chrysene	0.020	<0.020	<0.020	-	<0.020	-	-
Dibenz(a,h)anthracene	0.020	<0.020	<0.020	-	<0.020	-	-
Fluoranthene	0.020	<0.020	<0.020	-	<0.020	-	-
Fluorene	0.020	<0.020	<0.020	-	<0.020	-	-
Indeno(1,2,3-cd)pyrene	0.020	<0.020	<0.020	-	<0.020	-	-
1-Methylnaphthalene	0.050	<0.050	<0.050	-	<0.050	-	-
2-Methylnaphthalene	0.020	<0.020	<0.020	-	<0.020	-	-
Naphthalene	0.010	<0.010	<0.010	-	<0.010	-	-
Phenanthrene	0.010	<0.010	<0.010	-	<0.010	-	-
Pyrene	0.020	<0.020	<0.020	-	<0.020	-	-
Quinoline	0.050	<0.050	<0.050	-	<0.050	-	-
Low Molecular Weight PAH`s	0.050	<0.050	<0.050	-	<0.050	-	-
High Molecular Weight PAH`s	0.050	<0.050	<0.050	-	<0.050	-	-
Total PAH	0.050	<0.050	<0.050	-	<0.050	-	-
Volatile Organic Compounds							
Benzene	0.0050	-	-	-	<0.0050	<0.0050	-
Ethylbenzene	0.010	-	-	-	<0.010	<0.010	-
Methyl tert-butyl ether	0.10	-	-	-	<0.10	<0.10	-
Styrene	0.030	-	-	-	<0.030	<0.030	-
Toluene	0.050	-	-	-	<0.050	<0.050	-
Xylenes (total)	0.040	-	-	-	<0.040	<0.040	-

NOTES:

Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

RPD	Relative percent difference. Calculated as: (sample value - duplicate value) X 100% / ((sample + duplicate value)/2)
RDL	Reported detection limit
BOLD	RPD exceeds 35% for sample value greater than 5 times the RDL
(value)	One or both analytes less than 5 X RDL; RPD calculated for reference purposes
-	Sample not analyzed for this parameter / RPD calculations not performed if analytical result in one or both samples is less than RDL

Table 7
Soil Sample Duplicate Pairing QA/QC
Metals
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample Pairing		TP23-1-1 / TP23A		
Sample ID	**RDL**	**TP23-1-1**	**TP23A** Dup of TP23-1-1	**RPD**
Lab Sample ID		BYC025	BYC026	
Sample Depth (mbgs)		0.2 - 0.5	0.2 - 0.5	**(%)**
Soil Type				
Date Sampled		30-Aug-23	30-Aug-23	
pH (lab measured)				
pH	N/A	5.81	5.65	2.8%
Metals in Soil				
Aluminum	100	8360	10100	18.9%
Antimony	0.10	<0.10	<0.10	-
Arsenic	0.20	0.71	0.83	(15.6%)
Barium	0.10	38.2	38.5	0.8%
Beryllium	0.20	<0.20	<0.20	-
Bismuth	0.10	<0.10	<0.10	-
Boron	1.0	2.6	2.1	(21.3%)
Cadmium	0.050	<0.050	<0.050	-
Calcium	100	1340	1310	2.3%
Chromium	0.5	6.44	7.94	20.9%
Cobalt	0.10	2.78	3.03	8.6%
Copper	0.50	5.95	7.52	23.3%
Iron	100	8650	9770	12.2%
Lead	0.10	1.83	2.17	17.0%
Lithium	0.50	7.3	7.13	2.4%
Magnesium	100	1890	2030	7.1%
Manganese	0.20	135	132	2.2%
Mercury	0.050	<0.050	<0.050	-
Molybdenum	0.10	0.11	0.13	(16.7%)
Nickel	0.50	3.93	4.56	14.8%
Phosphorus	10	102	73	33.1%
Potassium	100	328	291	(12.0%)
Selenium	0.50	<0.50	<0.50	-
Silver	0.050	<0.050	<0.050	-
Strontium	0.10	14.9	14.3	4.1%
Thallium	0.050	<0.050	<0.050	-
Tin	0.10	0.2	0.19	(5.1%)
Titanium	1.0	520	592	12.9%
Tungsten	0.50	<0.50	<0.50	-
Uranium	0.050	0.208	0.249	17.9%
Vanadium	1.0	21.5	25.5	17.0%
Zinc	1.0	16.6	17.3	4.1%
Zirconium	0.50	1.05	1.34	(24.3%)

NOTES:

Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

RPD	Relative percent difference. Calculated as: (sample value - duplicate value) X 100% / ((sample + duplicate value)/2)
RDL	Reported detection limit
BOLD	RPD exceeds 35% for sample value greater than 5 times the RDL
(value)	One or both analytes less than 5 X RDL; RPD calculated for reference purposes
-	Sample not analyzed for this parameter / RPD calculations not performed if analytical result in one or both samples is less than RDL

Table 8
Soil Sample Duplicate Pairing QA/QC
Anions & Salinity
5297 Dusty Road, Sechelt, BC
Sperling Hansen Associates Inc.
Project No. 154-002-02

Sample Pairing		TP23-1-1 / TP23A		
Sample ID		**TP23-1-1**	**TP23A** Dup of TP23-1-1	**RPD**
Lab Sample ID	RDL	BYC025	BYC026	
Sample Depth (mbgs)		0.2 - 0.5	0.2 - 0.5	**(%)**
Date Sampled		30-Aug-23	30-Aug-23	
Anions				
Fluoride (F), Extractable	10	<10	<10	-
Nitrate (as N), Soluble	0.061	0.650	0.800	20.7%
Nitrite (as N), Soluble	0.015	0.080	0.030	**90.9%**
Nitrate + nitrite (N), Soluble	0.061	0.730	0.830	12.8%
Salinity				
Saturation %	-	40.1	39.3	2.0%
Chloride (Cl), Soluble	3.0	<4.0	<3.9	-
Sodium (Na), Soluble	1.5	<2.0	<2.0	-

NOTES:
Standards are concentration based and are presented in units of micrograms per gram (µg/g) or parts per million (ppm), unless otherwise noted.

RPD	Relative percent difference. Calculated as: (sample value - duplicate value) X 100% / ((sample + duplicate value)/2)
RDL	Reported detection limit
BOLD	RPD exceeds 35% for sample value greater than 5 times the RDL
(value)	One or both analytes less than 5 X RDL; RPD calculated for reference purposes
-	Sample not analyzed for this parameter / RPD calculations not performed if analytical result in one or both samples is less than RDL

Figures

LEGEND

- Site
- Parcel Boundary
- Fence line
- Test Pit
- Surface Sample
- 105.3m Surface Elevation (District of Sechelt GIS Data)

DRAWING BASE SOURCE:
Google Earth, 2022 (accessed Mar 31, 2023)

Approx Scale 1:910

0 5 20
metres

Notes: All measurements are approximate.
No guarantee is made as to the accuracy.

trillium

CLIENT:
District of Sechelt c/o
Sperling Hansen Associates Inc.

PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
5297 DUSTY ROAD, SECHELT BC

SITE PLAN & ASSESSMENT LOCATIONS

PROJECT No.		
154-002-02	DEC 2023	FIGURE 1

Soil Analytical Summary

Location	Depth (m)	BTEX/VPH	LEPH/HEPH	PAH	VOC	Metals	Anions/Salinity	Other*
TP23-1	0.2 - 0.5	-	<RDL	<RDL	-	<CSR	<CSR	-
TP23A	0.2 - 0.5	-	<RDL	<RDL	-	<CSR	<CSR	-
TP23-2	0.6 - 0.9	-	<RDL	<RDL	-	<CSR	-	-
	2.7 - 3.0	-	-	-	-	-	<CSR	-
TP23-3	0.1 - 0.4	-	-	-	-	<CSR	-	-
	0.4 - 0.7	-	<RDL	<RDL	-	<CSR	<CSR	<CSR
TP23-4	0.1 - 0.3	<RDL	<RDL	<RDL	<RDL	<CSR	Chloride > CSR	-
	1.0 - 1.2	-	-	-	-	-	Chloride > CSR	-
TP23-B	0.1 - 0.3	<RDL	-	-	<RDL	-	-	-
TP23-4	1.0 - 1.2	-	-	-	-	-	<CSR	-
TP23-5	2.3 - 2.6	<RDL	<RDL	<RDL	<RDL	<CSR	<CSR	-
TP23-6	0.1 - 0.3	-	<RDL	<RDL	-	<CSR	-	-
	2.5 - 2.8	<RDL	<RDL	<RDL	<RDL	<CSR	<CSR	-
TP23-7	0.3 - 0.6	-	<RDL	<RDL	-	<CSR	<CSR	-
TP23-8	0.1 - 0.3	-	-	-	-	<CSR	-	-
	0.4 - 0.6	-	<RDL	<RDL	-	<CSR	<CSR	-
SS23-1	0.1 - 0.3	-	<RDL	<RDL	-	<CSR	<CSR	-
SS23-2	0.1 - 0.3	-	-	-	-	-	<CSR	-
SS23-3	0.1 - 0.3	-	<RDL	<CSR	-	<CSR	<CSR	-

Notes

value	Specified parameter(s) exceed one or more CSR standard
*	Includes non-routine parameters: ethanolamines, phthalates, butylated hydroxytoluene, bisphenol A, and nonylphenol and nonylphenol ethoxylates
RDL	Reported detection limit
CSR	Contaminated Sites Regulation, effective April 1, 1997, including amendments up to July 7, 2021

TP23-4
Chloride
510 ug/g at 0.1-0.2 m
342 ug/g at 1.0-1.2 m
> CSR DW

N

DUSTY RD

Control building

Receiving station

TP23-4

Racetrack

Chlorine contact chamber

TP23-7

SS23-2

Sludge drying pad

Aeration lagoon

TP23-8

SS23-3

TP23-1

TP23-5

TP23-6

Septage storage lagoon

TP23-3

Clarifier

TP23-2

SS23-1

Haul road

RIGHT-OF-WAY

LEGEND

- Site
- Parcel Boundary
- Fence line
- Test Pit
- Surface Sample
- Soil Concentrations Below CSR Soil Standards
- Soil Concentrations Above CSR Soil Standards

DRAWING BASE SOURCE:
Google Earth, 2022 (accessed Mar 31, 2023)

Approx Scale 1:910

0 5 20
metres

Notes: All measurements are approximate.
No guarantee is made as to the accuracy.

trillium

CLIENT:
District of Sechelt c/o
Sperling Hansen Associates Inc.

PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
5297 DUSTY ROAD, SECHELT BC

SOIL RESULTS SUMMARY

PROJECT No.		
154-002-02	DEC 2023	FIGURE 2

Appendix A

Site Photographs

Photos 1-3: Advancing Test Pit TP23-1 below chlorine contact chamber (August 30, 2023)

Photos 4 & 5: Advancing Test Pit TP23-2 adjacent to clarifier (August 30, 2023)

Photos 6 & 7: Advancing Test Pit TP23-3 adjacent to storage lagoon (August 30, 2023)

Photos 8 & 9: Advancing test pit TP23-4 adjacent to receiving station (August 30, 2023)

Photo 10: Advancing Test Pit TP23-5 downgradient of aerated lagoon and racetrack (August 30, 2023)

Photo 11: Advancing Test Pit TP23-6 downgradient of aerated lagoon and storage lagoon (August 30, 2023)

Photos 12 & 13: Advancing Test Pit TP23-7 adjacent to sludge drying pad and aerated lagoon (August 30, 2023)

Photos 14-16: Advancing Test Pit TP23-8 adjacent to sludge drying pad (August 30, 2023)

Photo 17: View of native silt/fine sand material encountered at TP23-7 (August 30, 2023)

Photo 17: View of suspected biosolids material encountered at TP23-3 (August 30, 2023)

Appendix B

Field Methodology

1.0 FIELD METHODOLOGIES

The following sections detail the methodologies employed during the field work for the 2023 Phase 2 Environmental Site Assessment.

1.1 Standard Procedures

All work was carried out in accordance with Trillium's Standard Field Procedures and general environmental industry standards of practice. A project-specific health and safety plan was prepared prior to the field activities, with a health and safety meeting held immediately prior to initiating the subsurface investigation.

1.2 Test Pit Investigation and Soil Sampling

The test pit investigation was directed by Trillium utilizing a track-mounted Volvo ECR88D excavator supplied and operated by the District of Sechelt.

Soil sampling was conducted in general accordance with Technical Guidance 1 (BC ENV, 2023). Soil samples were generally collected from test pits in ≤0.5 m increments or intervals of interest based on field observations. Soil stratigraphy was classified according to type, structure, colour, moisture, and odour. Soil samples were field screened for headspace vapour concentrations using a MiniRAE 2000 photoionization detector (PID) calibrated to an isobutylene standard.

Soil samples were collected directly from the test pit or excavator bucket and placed in Ziploc® bags for field screening. Based on field observations and headspace readings, select soil samples were placed in sealed laboratory-supplied 125 mL or 250 mL glass jars or 40 mL vials, as dictated by the desired laboratory analysis. For glass jars, soil was packed with no headspace. For vials, approximately 5 g of soil measured via Terra Core® sampler was added to about 10 mL of pre-loaded methanol preservative. Nitrile gloves were replaced prior to each soil sample collection. The soil samples were then labelled and placed in an ice-filled cooler and cooled to ≤10 °C for transport to the laboratory. Select soil samples and an accompanying chain-of-custody form were submitted to the laboratory for analysis.

1.3 Elevation Survey

Test pit coordinates and ground surface elevations, as well as on-site facility elevations were surveyed by District of Sechelt staff using Arrow Series® submeter GPS equipment. The elevation data was then used in concert with historical drawings to determine the investigation extents relative to the bottoms of the respective facilities/APECs.

1.4 References

BC ENV, 2023. Technical Guidance on Contaminated Sites, Site Characterization and Confirmation Testing. March, 2023.

CCME (Canadian Council of Ministers of the Environment). 2016. Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volume 3 Suggested Operating Procedures. Available online: https://ccme.ca/en/res/guidancemanual-environmentalsitecharacterization_vol_3_epn1555.pdf.

Appendix C

Test Pit Logs

TEST PIT LOG TP23-1

PROJECT #: 154-002-02
PROJECT NAME: Phase 2 ESA
SITE LOCATION: 5297 Dusty Road
CLIENT: District of Sechelt c/o Sperling Hansen Associates Inc.

DATE: August 30, 2023
CONTRACTOR: District of Sechelt
EQUIPMENT: Track-mounted excavator
DEPTH: 1.8 m

LOCATION: Chlorine Contact Chamber
ELEVATION: 98.3 masl
COORDINATES: -123.7361, 49.48991

COMMENTS

LOGGED BY: P. Antonelli
CHECKED BY: S. Quaglia

Depth (m)	Soil Description	Graphic Log	Samples	PID (ppm)	Lab Analysis
0	silty TOP SOIL with roots, light brown, dry				
0.2	SILT & fine SAND, trace gravel (suspect fill or disturbed/reworked soil), light brown, dry, uniformly graded,		TP23-1-1 / TP23A (0.2 - 0.5 m)	12.8	LEPH/HEPH, PAH, metals, nitrate & nitrite, sodium & chloride, fluoride
0.4					
0.6					
0.8	medium to coarse SAND & fine GRAVEL (undisturbed), beige, damp, moderately cemented, well-graded		0.8 - 1.2 m	11.1	
1					
1.2	coarse GRAVEL & small COBBLES with some sand, beige, damp, loose				
1.4					
1.6			1.5 - 1.8 m	11.5	
1.8	Test pit terminated at 1.8 m				
2					
2.2					
2.4					
2.6					
2.8					
3					
3.2					
3.4					
3.6					
3.8					
4					
4.2					
4.4					
4.6					
4.8					

Disclaimer This test pit log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 23 Oct 2023

TEST PIT LOG TP23-2

PROJECT #: 154-002-02
PROJECT NAME: Phase 2 ESA
SITE LOCATION: 5297 Dusty Road
CLIENT: Sperling Hansen Associates Inc.

DATE: August 30, 2023
CONTRACTOR: District of Sechelt
EQUIPMENT: Track-mounted excavator
DEPTH: 3 m

LOCATION: Clarifier
ELEVATION: 98.1 masl
COORDINATES: -123.7362, 49.48977

COMMENTS

LOGGED BY: P. Antonelli
CHECKED BY: S. Quaglia

Depth (m)	Soil Description	Graphic Log	Samples	PID (ppm)	Lab Analysis
0	silty TOP SOIL with roots, light brown, dry				
0.2	SILT & fine SAND, trace gravel, light brown, dry, uniformly graded, suspected fill or disturbed/reworked soil		0.1 - 0.4 m	11.4	
0.4					
0.6	brown, damp at 0.5 m		TP23-2-1 (0.6 - 0.9 m)	10.6	LEPH/HEPH, PAH, metals
0.8					
1					
1.2					
1.4					
1.6					
1.8					
2			1.9 - 2.2 m	11.3	
2.2	SILT & fine SAND (undisturbed), trace gravel, light brown with iron mottling, damp, blocky, hard				
2.4					
2.6					
2.8			TP23-2-2 (2.7 - 3.0 m)	11.3	nitrate & nitrite, sodium & chloride, fluoride
3	Test pit terminated at 3 m				
3.2					
3.4					
3.6					
3.8					
4					
4.2					
4.4					
4.6					
4.8					

Disclaimer This test pit log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 23 Oct 2023

TEST PIT LOG TP23-3

PROJECT #: 154-002-02
PROJECT NAME: Phase 2 ESA
SITE LOCATION: 5297 Dusty Road
CLIENT: District of Sechelt c/o Sperling Hansen Associates Inc.

DATE: August 30, 2023
CONTRACTOR: District of Sechelt
EQUIPMENT: Track-mounted excavator
DEPTH: 1.8 m

LOCATION: Storage Lagoon
ELEVATION: 104.8 masl
COORDINATES: -123.7359, 49.48975

COMMENTS

LOGGED BY: P. Antonelli
CHECKED BY: S. Quaglia

Depth (m)	Soil Description	Graphic Log	Samples	PID (ppm)	Lab Analysis
0	silty TOP SOIL with roots, light brown, dry				
0.2	SILT & fine SAND, trace gravel (suspect fill or disturbed/reworked soil), light brown, dry, uniformly graded,		0.1 - 0.4 m	11.4	LEPH/HEPH, PAH, metals, nitrate & nitrite, sodium & chloride, fluoride, nonylphenol and nonylphenol ethoxylates, amines, BHT, phthalates, BPA
0.4	Thin, interbedded layer of black organics (suspected biosolids)		TP23-3-2 (0.4 - 0.7 m)	8.4	
0.6	fine to medium SAND with trace gravel, thin interbedded layer of black organics (suspected biosolids), reddish brown, poorly graded, weak cementation				
0.8					
1					
1.2					
1.4	medium to coarse SAND & fine GRAVEL (undisturbed), beige, damp, moderately cemented, well-graded				
1.6			1.5 - 1.8 m	5.4	
1.8	Test pit terminated at 1.8 m				
2					
2.2					
2.4					
2.6					
2.8					
3					
3.2					
3.4					
3.6					
3.8					
4					
4.2					
4.4					
4.6					
4.8					

Disclaimer This test pit log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 23 Oct 2023

TEST PIT LOG TP23-4

PROJECT #: 154-002-02
PROJECT NAME: Phase 2 ESA
SITE LOCATION: 5297 Dusty Road
CLIENT: District of Sechelt c/o Sperling Hansen Associates Inc.

DATE: August 30, 2023
CONTRACTOR: District of Sechelt
EQUIPMENT: Track-mounted excavator
DEPTH: 1.2 m

LOCATION: Receiving Station
ELEVATION: 108.1 masl
COORDINATES: -123.7355, 49.48896

COMMENTS

LOGGED BY: P. Antonelli
CHECKED BY: S. Quaglia

Depth (m)	Soil Description	Graphic Log	Samples	PID (ppm)	Lab Analysis
0	SAND & GRAVEL (road crush), moist, grey, compact		TP23-4-1 / TP23-B (0.1 - 0.3 m)	6.3	BTEX/VPH, LEPH/HEPH, PAH, VOC, metals, nitrate & nitrite, sodium & chloride, fluoride
0.2	SILT & fine SAND (undisturbed), trace gravel, light brown with iron mottling, damp, blocky, hard				
0.4	fine to coarse SAND with some gravel, brown, damp, well graded, moderate cementation		0.4 - 0.6 m	9.4	
0.6					
0.8					
1	gravelly, some small cobbles at 1 m		TP23-4-2 (1.0 - 1.2 m)	10.9	chloride
1.2	Test pit terminated at 1.2 m				
1.4					
1.6					
1.8					
2					
2.2					
2.4					
2.6					
2.8					
3					
3.2					
3.4					
3.6					
3.8					
4					
4.2					
4.4					
4.6					
4.8					

Disclaimer This test pit log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 23 Oct 2023

TEST PIT LOG TP23-5

PROJECT #: 154-002-02
PROJECT NAME: Phase 2 ESA
SITE LOCATION: 5297 Dusty Road
CLIENT: District of Sechelt c/o Sperling Hansen Associates Inc.

DATE: August 30, 2023
CONTRACTOR: District of Sechelt
EQUIPMENT: Track-mounted excavator
DEPTH: 2.8 m

LOCATION: Racetrack / Aerated Lagoon
ELEVATION: 102.0 masl
COORDINATES: -123.7361, 49.48937

COMMENTS

LOGGED BY: P. Antonelli
CHECKED BY: S. Quaglia

Depth (m)	Soil Description	Graphic Log	Samples	PID (ppm)	Lab Analysis
0	silty TOP SOIL with roots, light brown, dry				
0.2	SILT & fine SAND with trace coarse sand & trace gravel (suspected fill or disturbed/reworked soil), roots, light brown, dry, loose		TP23-5-1 (0.1 - 0.3 m)	3.1	
0.4	damp, blocky, firm at 0.3 m		0.3 - 0.6 m	5.2	
0.6	trace organic lenses from 0.5 to 0.8 m				
0.8					
1					
1.2					
1.4			1.3 - 1.6 m	8.4	
1.6					
1.8					
2			2.0 - 2.3 m	8.4	
2.2					
2.4	SILT & fine SAND (undisturbed), trace gravel, light brown with iron mottling, damp, blocky, hard		TP23-5-2 (2.3 - 2.6 m)	9.9	BTEX/VPH, LEPH/HEPH, PAH, VOC, metals, nitrate & nitrite, sodium & chloride, fluoride
2.6					
2.8	Test pit terminated at 2.8 m				
3					
3.2					
3.4					
3.6					
3.8					
4					
4.2					
4.4					
4.6					
4.8					

Disclaimer This test pit log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 23 Oct 2023

TEST PIT LOG TP23-6

PROJECT #: 154-002-02
PROJECT NAME: Phase 2 ESA
SITE LOCATION: 5297 Dusty Road
CLIENT: District of Sechelt c/o Sperling Hansen Associates Inc.

DATE: August 30, 2023
CONTRACTOR: District of Sechelt
EQUIPMENT: Track-mounted excavator
DEPTH: 4.0 m

LOCATION: Aerated Lagoon
ELEVATION: 103.9 masl
COORDINATES: -123.7361, 49.48913

COMMENTS

LOGGED BY: P. Antonelli
CHECKED BY: S. Quaglia

Depth (m)	Soil Description	Graphic Log	Samples	PID (ppm)	Lab Analysis
	silty TOP SOIL with roots, light brown, dry				
0.2	SILT & fine SAND with trace coarse sand & trace gravel (suspected fill or disturbed/reworked soil), roots, light brown, dry, loose		TP23-6-1 (0.1 - 0.3 m)	3.9	LEPH/HEPH, PAH, metals
0.4					
0.6	fine to coarse SAND & GRAVEL, silty, light browm, dry, moderate cementation, well graded				
0.8			0.7 - 1.0 m	5.5	
1					
1.2					
1.4	trace gravel, brown at 1.3 m		1.3 - 1.5 m	5.3	
1.6					
1.8					
2					
2.2	medium to coarse SAND & fine GRAVEL (undisturbed), beige, damp, moderately cemented, well-graded				
2.4					
2.6			TP23-6-2 (2.5 - 2.8 m)	5.8	BTEX/VPH, LEPH/HEPH, PAH, VOC, metals, nitrate & nitrite, sodium & chloride, fluoride
2.8	fine to coarse SAND & GRAVEL, silty, light browm, dry, moderate cementation, well graded				
3					
3.2					
3.4					
3.6			3.5 - 3.8 m	3.8	
3.8					
4					
	Test pit terminated at 4 m				
4.2					
4.4					
4.6					
4.8					

TEST PIT LOG TP23-7

PROJECT #: 154-002-02
PROJECT NAME: Phase 2 ESA
SITE LOCATION: 5297 Dusty Road
CLIENT: District of Sechelt c/o Sperling Hansen Associates Inc.

DATE: August 30, 2023
CONTRACTOR: District of Sechelt
EQUIPMENT: Track-mounted excavator
DEPTH: 1.8 m

LOCATION: Storage Lagoon / Drying Pad
ELEVATION: 98.1 masl
COORDINATES: -123.7362, 49.48977

COMMENTS

LOGGED BY: P. Antonelli
CHECKED BY: S. Quaglia

Depth (m)	Soil Description	Graphic Log	Samples	PID (ppm)	Lab Analysis
0	silty TOP SOIL with roots, light brown, dry				
0.2	SILT & fine SAND with trace coarse sand & trace gravel (suspected fill or disturbed/reworked soil), roots, light brown, dry, loose				
0.4			TP23-7-1 (0.3 - 0.6 m)	6.5	LEPH/HEPH, PAH, metals, nitrate & nitrite, sodium & chloride, fluoride
0.6					
0.8	silty fine SAND with trace gravel (undisturbed), light brown, trace iron mottling (laminated or in lenses), moist, weak cementation				
1			1.0 - 1.2 m	0.8	
1.2					
1.4					
1.6	becoming less gravelly with depth		1.5 - 1.8 m	6.5	
1.8	Test pit terminated at 1.8 m				
2					
2.2					
2.4					
2.6					
2.8					
3					
3.2					
3.4					
3.6					
3.8					
4					
4.2					
4.4					
4.6					
4.8					

Disclaimer This test pit log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 23 Oct 2023

TEST PIT LOG TP23-8

PROJECT #: 154-002-02
PROJECT NAME: Phase 2 ESA
SITE LOCATION: 5297 Dusty Road
CLIENT: District of Sechelt c/o Sperling Hansen Associates Inc.

DATE: August 30, 2023
CONTRACTOR: District of Sechelt
EQUIPMENT: Track-mounted excavator
DEPTH: 1.9 m

LOCATION: Drying Pad
ELEVATION: 108.3 masl
COORDINATES: -123.7360, 49.48815

COMMENTS

LOGGED BY: P. Antonelli
CHECKED BY: S. Quaglia

Depth (m)	Soil Description	Graphic Log	Samples	PID (ppm)	Lab Analysis
	silty TOP SOIL with roots, light brown, dry				
0.2	SAND & GRAVEL with trace silt (suspected fill or disturbed/reworked soil), damp, light brown, loose, well graded		TP23-8-1 (0.1 - 0.3 m)	4.7	metals
0.4	asphalt				
	SAND & GRAVEL with some silt (suspected fill or road base), brown, damp, moderate cementation, well graded		TP23-8-2 (0.4 - 0.6 m)	2.1	LEPH/HEPH, PAH, metals, nitrate & nitrite, sodium & chloride, fluoride
0.6					
0.8					
1	medium to coarse SAND & fine GRAVEL (undisturbed), beige, damp, moderately cemented, well-graded		1.0 - 1.2 m	3.2	
1.2					
1.4	increasing coarse sand and gravel				
1.6			1.5 - 1.8 m	2.2	
1.8					
2	Test pit terminated at 1.9 m				
2.2					
2.4					
2.6					
2.8					
3					
3.2					
3.4					
3.6					
3.8					
4					
4.2					
4.4					
4.6					
4.8					

Disclaimer This test pit log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 23 Oct 2023

Appendix D

Laboratory Certificates of Analysis

Your Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Your C.O.C. #: 08525548

Attention: Paul Antonelli

Trillium Environmental
126 Ingram St.
Unit 203
Duncan, BC
CANADA V9M 1P1

Report Date: 2023/09/26
Report #: R3400981
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C368822
Received: 2023/09/01, 09:40

Sample Matrix: Soil
Samples Received: 18

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Amines Scan - Soil (1)	1	2023/09/18	2023/09/18	CAL SOP-00246 / CAL SOP-00054	AWICUS6-0193-062014m
Total BTEX (calc'd)	4	2023/09/01	2023/09/07	BBY WI-00033	Auto Calc
Chloride (soluble)	12	2023/09/07	2023/09/07	BBY6SOP-00011	SM 23 4500-Cl- E m
Chloride (soluble)	1	2023/09/25	2023/09/25	BBY6SOP-00011	SM 23 4500-Cl- E m
Soluble Chloride Ion Calc. (mg/kg)	12	N/A	2023/09/07	BBY WI-00033	Auto Calc
Soluble Chloride Ion Calc. (mg/kg)	1	N/A	2023/09/25	BBY WI-00033	Auto Calc
Fluoride in Soil (5:1 DI Water Extract)	12	2023/09/07	2023/09/07	BBY6SOP-00048	SM 24 4500-F C m
Elements by ICPMS (total) (3)	14	2023/09/05	2023/09/07	BBY7SOP-00004 / BBY7SOP-00001	EPA 6020b R2 m
Moisture	13	2023/09/03	2023/09/05	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Soluble Sodium Ion Calc. (mg/kg)	12	N/A	2023/09/07	BBY WI-00033	Auto Calc
Soluble Nitrite+Nitrate as N Calc(mg/kg)	12	N/A	2023/09/13	BBY WI-00033	Auto Calc
Soluble Nitrite (as N) Calc. (mg/kg)	12	N/A	2023/09/13	BBY WI-00033	Auto Calc
Soluble Nitrate (as N) Calc. (mg/kg)	12	N/A	2023/09/13	BBY WI-00033	Auto Calc
PAH in Soil by GC/MS (SIM)	12	2023/09/03	2023/09/06	BBY8SOP-00022	BCMOE BCLM Jul2017m
Total PAH and B(a)P Calculation (4)	6	N/A	2023/09/06	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation (4)	6	N/A	2023/09/07	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	14	2023/09/05	2023/09/05	BBY6SOP-00028	BCMOE BCLM Mar2005 m
Saturated Paste	12	2023/09/07	2023/09/07	BBY6SOP-00030	BC Lab Manual 2015 m
Saturated Paste	1	2023/09/25	2023/09/25	BBY6SOP-00030	BC Lab Manual 2015 m
Soluble Cations (Ca,K,Mg,Na,S)	12	N/A	2023/09/07	BBY7SOP-00018 / BBY7SOP-00030 / BCLM Nov 2015	EPA 6010d m
EPH less PAH in Soil By GC/FID (5)	6	N/A	2023/09/06	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID (5)	6	N/A	2023/09/07	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	12	2023/09/03	2023/09/05	BBY8SOP-00029	BCMOE BCLM Dec2016 m
Extra VOCs in Soil - Field Pres. (6)	1	N/A	2023/09/06	BBY8SOP-00040	BCMOE BCLM Sep 2017m
VOCs, VH, F1, LH in Soil - Field Pres. (6)	1	N/A	2023/09/06	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep2017 m

Your Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Your C.O.C. #: 08525548

Attention: Paul Antonelli

Trillium Environmental
126 Ingram St.
Unit 203
Duncan, BC
CANADA V9M 1P1

Report Date: 2023/09/26
Report #: R3400981
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C368822
Received: 2023/09/01, 09:40

Sample Matrix: Soil
Samples Received: 18

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
VOCs, VH, F1, LH in Soil - Field Pres. (6)	3	N/A	2023/09/07	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep2017 m
Volatile HC-BTEX for Soil (7)	4	N/A	2023/09/07	BBY WI-00033	Auto Calc
Phthalates (2)	1	2023/09/13	2023/09/18	STL SOP-00111	MA.400-COSV 1.0 R1 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) This test was performed by Bureau Veritas Montreal , 889 Montee de Liesse , Ville St-Laurent, QC, H4T 1P5
(3) The sample is prepaired per the BC MOE Lab Manual "Strong Acid Leachable Metals (SALM) in Soil - Prescriptive", Revision Nov 6, 2015.
(4) Total PAHs in Soil include: Quinoline, Naphthalene, 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Acridine, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(g,h,i)perylene.

Total PAHs in Sediment include (B.C. Reg. 116/2018, Schedule 3.4): Naphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene,

Your Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Your C.O.C. #: 08525548

Attention: Paul Antonelli

Trillium Environmental
126 Ingram St.
Unit 203
Duncan, BC
CANADA V9M 1P1

Report Date: 2023/09/26
Report #: R3400981
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C368822

Received: 2023/09/01, 09:40

Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(a)pyrene, and Dibenz(a,h)anthracene.
(5) LEPH = EPH (C10 to C19) - (Naphthalene + Phenanthrene)
HEPH = EPH (C19 to C32) - (Benzo(a)anthracene + Benzo(a)pyrene + Benzo(b)fluoranthene + Benzo(k)fluoranthene + Dibenz(a,h)anthracene + Indeno(1,2,3-cd)pyrene + Pyrene)
(6) The extraction date for VOC, BTEX, VH, or F1 samples that are field preserved with methanol equals the date sampled, unless otherwise stated.
(7) VPH = VH - (Benzene + Toluene + Ethylbenzene + m & p-Xylene + o-Xylene + Styrene)

Encryption Key

Shanaz Akbar
Customer Solutions Representative
26 Sep 2023 14:28:27

Please direct all questions regarding this Certificate of Analysis to:
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C368822
Report Date: 2023/09/26

Trillium Environmental
Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		BYC025		BYC026			BYC027	
Sampling Date		2023/08/30		2023/08/30			2023/08/30	
COC Number		08525548		08525548			08525548	
	UNITS	TP23-1-1	RDL	TP23A	RDL	QC Batch	TP23-2-1	QC Batch
Calculated Parameters								
Soluble Nitrate (N)	mg/kg	0.650	0.080	0.800	0.079	B105930		
Soluble Nitrate plus Nitrite (N)	mg/kg	0.730	0.080	0.830	0.079	B105926		
Soluble Nitrite (N)	mg/kg	0.080	0.020	0.030	0.020	B105927		
Anions								
Extractable Fluoride (F)	ug/g	<10	10	<10	10	B098178		
Physical Properties								
Soluble (2:1) pH	pH	5.81	N/A	5.65	N/A	B094889	5.55	B094889

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		BYC028			BYC029		BYC030		
Sampling Date		2023/08/30			2023/08/30		2023/08/30		
COC Number		08525548			08525548		08525548		
	UNITS	TP23-2-2	RDL	QC Batch	TP23-3-1	QC Batch	TP23-3-2	RDL	QC Batch
Amines									
Extractable (Water) Diethanolamine (DEA)	mg/kg						<1.5	1.5	B111985
Extractable (Water) Methyldiethanolamine (MDEA)	mg/kg						<1.5	1.5	B111985
Extractable (Water) Monoethanolamine (MEA)	mg/kg						<1.5	1.5	B111985
Calculated Parameters									
Soluble Nitrate (N)	mg/kg	1.48	0.090	B105930			1.47	0.084	B105930
Soluble Nitrate plus Nitrite (N)	mg/kg	1.52	0.090	B105926			1.47	0.084	B105926
Soluble Nitrite (N)	mg/kg	0.040	0.023	B105927			<0.021	0.021	B105927
Anions									
Extractable Fluoride (F)	ug/g	<10	10	B098178			<10	10	B098178
Physical Properties									
Soluble (2:1) pH	pH				5.78	B094889	5.40	N/A	B094889
Soluble Parameters									
Saturation %	%	45.1	N/A	B097836					

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C368822
Report Date: 2023/09/26

Trillium Environmental
Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		BYC031			BYC032			BYC035		
Sampling Date		2023/08/30			2023/08/30			2023/08/30		
COC Number		08525548			08525548			08525548		
	UNITS	TP23-4-1	RDL	QC Batch	TP23-B	RDL	QC Batch	TP23-5-2	RDL	QC Batch
Calculated Parameters										
VPH (VH6 to 10 - BTEX)	mg/kg	<10	10	B093015	<10	10	B093015	<10	10	B093015
Soluble Nitrate (N)	mg/kg	1.36	0.085	B105930				0.100	0.089	B105930
Soluble Nitrate plus Nitrite (N)	mg/kg	1.36	0.085	B105926				0.200	0.089	B105926
Soluble Nitrite (N)	mg/kg	<0.021	0.021	B105927				0.100	0.022	B105927
Anions										
Extractable Fluoride (F)	ug/g	<10	10	B098178				<10	10	B098178
Physical Properties										
Soluble (2:1) pH	pH	5.79	N/A	B094889				5.90	N/A	B094889
Soluble Parameters										
Saturation %	%							44.6	N/A	B097836

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		BYC036		BYC037			BYC038		
Sampling Date		2023/08/30		2023/08/30			2023/08/30		
COC Number		08525548		08525548			08525548		
	UNITS	TP23-6-1	QC Batch	TP23-6-2	RDL	QC Batch	TP23-7-1	RDL	QC Batch
Calculated Parameters									
VPH (VH6 to 10 - BTEX)	mg/kg			<10	10	B093015			
Soluble Nitrate (N)	mg/kg			0.140	0.061	B105930	0.670	0.092	B105930
Soluble Nitrate plus Nitrite (N)	mg/kg			0.170	0.061	B105926	0.750	0.092	B105926
Soluble Nitrite (N)	mg/kg			0.030	0.015	B105927	0.080	0.023	B105927
Anions									
Extractable Fluoride (F)	ug/g			<10	10	B098178	<10	10	B098178
Physical Properties									
Soluble (2:1) pH	pH	5.19	B094889	6.03	N/A	B094889	6.96	N/A	B094889

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C368822
Report Date: 2023/09/26

Trillium Environmental
Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		BYC040		BYC041		BYC042		
Sampling Date		2023/08/30		2023/08/30		2023/08/30		
COC Number		08525548		08525548		08525548		
	UNITS	TP23-8-1	QC Batch	TP23-8-2	RDL	SS23-1	RDL	QC Batch
Calculated Parameters								
Soluble Nitrate (N)	mg/kg			6.27	0.088	2.72	0.083	B105930
Soluble Nitrate plus Nitrite (N)	mg/kg			6.40	0.088	2.72	0.083	B105926
Soluble Nitrite (N)	mg/kg			0.130	0.022	<0.021	0.021	B105927
Anions								
Extractable Fluoride (F)	ug/g			<10	10	<10	10	B098178
Physical Properties								
Soluble (2:1) pH	pH	6.34	B094889	7.08	N/A	5.00	N/A	B094889

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		BYC043			BYC045		
Sampling Date		2023/08/30			2023/08/30		
COC Number		08525548			08525548		
	UNITS	SS23-2-1	RDL	QC Batch	SS23-3	RDL	QC Batch
Calculated Parameters							
Soluble Nitrate (N)	mg/kg	0.100	0.083	B105930	0.720	0.072	B105930
Soluble Nitrate plus Nitrite (N)	mg/kg	0.150	0.083	B105926	0.800	0.072	B105926
Soluble Nitrite (N)	mg/kg	0.060	0.021	B105927	0.080	0.018	B105927
Anions							
Extractable Fluoride (F)	ug/g	<10	10	B098178	<10	10	B098178
Physical Properties							
Soluble (2:1) pH	pH				6.43	N/A	B094889

RDL = Reportable Detection Limit
N/A = Not Applicable

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PHYSICAL TESTING (SOIL)

Bureau Veritas ID		BYC025	BYC026	BYC027	BYC030	BYC031	BYC032	BYC035		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	TP23-1-1	TP23A	TP23-2-1	TP23-3-2	TP23-4-1	TP23-B	TP23-5-2	RDL	QC Batch
Physical Properties										
Moisture	%	3.6	3.7	8.4	6.2	9.3	9.0	5.7	0.30	B094157
RDL = Reportable Detection Limit										

Bureau Veritas ID		BYC036		BYC037	BYC038	BYC041	BYC042	BYC045		
Sampling Date		2023/08/30		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548		08525548	08525548	08525548	08525548	08525548		
	UNITS	TP23-6-1	QC Batch	TP23-6-2	TP23-7-1	TP23-8-2	SS23-1	SS23-3	RDL	QC Batch
Physical Properties										
Moisture	%	2.7	B094157	1.2	15	7.4	2.9	3.4	0.30	B094264
RDL = Reportable Detection Limit										

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Trillium Environmental
Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		BYC025	BYC026	BYC027	BYC029	BYC030	BYC031	BYC035		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	TP23-1-1	TP23A	TP23-2-1	TP23-3-1	TP23-3-2	TP23-4-1	TP23-5-2	RDL	QC Batch
Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	8360	10100	12500	12200	9670	12400	13300	100	B094880
Total Antimony (Sb)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.10	B094880
Total Arsenic (As)	mg/kg	0.71	0.83	1.35	1.26	1.08	1.56	1.43	0.20	B094880
Total Barium (Ba)	mg/kg	38.2	38.5	50.9	39.2	22.1	62.3	53.6	0.10	B094880
Total Beryllium (Be)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	B094880
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	B094880
Total Boron (B)	mg/kg	2.6	2.1	1.6	1.4	1.1	2.1	2.5	1.0	B094880
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.057	0.050	B094880
Total Calcium (Ca)	mg/kg	1340	1310	1600	1810	1340	2360 (1)	2220	100	B094880
Total Chromium (Cr)	mg/kg	6.44	7.94	9.50	8.60	5.88	11.3	10.9	0.50	B094880
Total Cobalt (Co)	mg/kg	2.78	3.03	3.77	3.46	2.44	3.96	3.99	0.10	B094880
Total Copper (Cu)	mg/kg	5.95	7.52	9.01	10.2	4.43	10.2	10.3	0.50	B094880
Total Iron (Fe)	mg/kg	8650	9770	12300	11500	8000	13800	13200	100	B094880
Total Lead (Pb)	mg/kg	1.83	2.17	3.07	2.45	2.19	2.63	2.78	0.10	B094880
Total Lithium (Li)	mg/kg	7.30	7.13	7.91	7.86	6.04	9.34	8.30	0.50	B094880
Total Magnesium (Mg)	mg/kg	1890	2030	2400	2580	1310	2950	2900	100	B094880
Total Manganese (Mn)	mg/kg	135	132	224	183	143	213	187	0.20	B094880
Total Mercury (Hg)	mg/kg	<0.050	<0.050	0.090	<0.050	0.061	<0.050	<0.050	0.050	B094880
Total Molybdenum (Mo)	mg/kg	0.11	0.13	0.26	0.23	0.12	0.17	0.12	0.10	B094880
Total Nickel (Ni)	mg/kg	3.93	4.56	5.01	5.32	3.33	5.39	5.58	0.50	B094880
Total Phosphorus (P)	mg/kg	102	73	336	349	697	318	335	10	B094880
Total Potassium (K)	mg/kg	328	291	446	501	190	674	648	100	B094880
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B094880
Total Silver (Ag)	mg/kg	<0.050	<0.050	<0.050	0.077	0.084	<0.050	<0.050	0.050	B094880
Total Strontium (Sr)	mg/kg	14.9	14.3	23.2	17.7	12.8	35.2	34.9	0.10	B094880
Total Thallium (Tl)	mg/kg	<0.050	<0.050	0.052	<0.050	<0.050	0.054	0.071	0.050	B094880
Total Tin (Sn)	mg/kg	0.20	0.19	0.25	0.25	0.16	0.21	0.22	0.10	B094880
Total Titanium (Ti)	mg/kg	520	592	562	553	386	669	666	1.0	B094880
Total Tungsten (W)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B094880
Total Uranium (U)	mg/kg	0.208	0.249	0.369	0.371	0.133	0.495	0.399	0.050	B094880
Total Vanadium (V)	mg/kg	21.5	25.5	31.3	27.2	19.7	34.5	32.8	1.0	B094880
Total Zinc (Zn)	mg/kg	16.6	17.3	29.5	24.7	21.9	25.4	25.0	1.0	B094880

RDL = Reportable Detection Limit
(1) Matrix spike exceeds acceptance limits due to matrix interference.

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

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Trillium Environmental
Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		BYC025	BYC026	BYC027	BYC029	BYC030	BYC031	BYC035		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	**TP23-1-1**	**TP23A**	**TP23-2-1**	**TP23-3-1**	**TP23-3-2**	**TP23-4-1**	**TP23-5-2**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg	1.05	1.34	0.87	0.60	0.73	1.73	2.01	0.50	B094880
RDL = Reportable Detection Limit										

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		BYC036	BYC037	BYC038	BYC040	BYC041	BYC042	BYC045		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	TP23-6-1	TP23-6-2	TP23-7-1	TP23-8-1	TP23-8-2	SS23-1	SS23-3	RDL	QC Batch
Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	9900	8870	12300	8460	11700	12100	11300	100	B094880
Total Antimony (Sb)	mg/kg	<0.10	0.10	0.13	<0.10	<0.10	0.10	0.18	0.10	B094880
Total Arsenic (As)	mg/kg	1.43	2.00	2.39	1.06	1.31	1.20	1.42	0.20	B094880
Total Barium (Ba)	mg/kg	39.7	54.1	62.9	30.1	47.8	42.4	46.0	0.10	B094880
Total Beryllium (Be)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	B094880
Total Bismuth (Bi)	mg/kg	0.22	<0.10	<0.10	<0.10	<0.10	0.53	0.37	0.10	B094880
Total Boron (B)	mg/kg	2.0	1.6	1.3	1.3	1.7	<1.0	1.1	1.0	B094880
Total Cadmium (Cd)	mg/kg	0.166	<0.050	0.107	<0.050	<0.050	0.084	0.129	0.050	B094880
Total Calcium (Ca)	mg/kg	1580	2350	3750	2120	2040	1350	1810	100	B094880
Total Chromium (Cr)	mg/kg	8.27	11.5	12.2	7.39	9.29	8.05	12.0	0.50	B094880
Total Cobalt (Co)	mg/kg	3.33	3.80	7.50	2.95	4.00	3.14	3.44	0.10	B094880
Total Copper (Cu)	mg/kg	13.4	12.7	14.5	10.8	11.0	22.3	27.3	0.50	B094880
Total Iron (Fe)	mg/kg	10900	13800	16000	10600	13100	10000	12000	100	B094880
Total Lead (Pb)	mg/kg	2.23	1.78	4.03	2.12	2.35	3.52	9.17	0.10	B094880
Total Lithium (Li)	mg/kg	7.32	7.86	11.1	6.74	8.46	7.09	7.64	0.50	B094880
Total Magnesium (Mg)	mg/kg	2360	2860	3530	2520	2930	2220	2410	100	B094880
Total Manganese (Mn)	mg/kg	206	172	374	212	201	160	225	0.20	B094880
Total Mercury (Hg)	mg/kg	0.051	<0.050	<0.050	0.051	0.051	0.098	0.510	0.050	B094880
Total Molybdenum (Mo)	mg/kg	0.22	0.18	0.31	0.21	0.22	0.24	0.49	0.10	B094880
Total Nickel (Ni)	mg/kg	4.74	5.51	6.91	3.97	5.75	5.26	6.28	0.50	B094880
Total Phosphorus (P)	mg/kg	915	356	484	390	297	691	526	10	B094880
Total Potassium (K)	mg/kg	557	1160	915	636	794	469	485	100	B094880
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B094880
Total Silver (Ag)	mg/kg	0.227	<0.050	<0.050	0.064	0.053	0.576	0.498	0.050	B094880
Total Strontium (Sr)	mg/kg	16.7	23.0	48.6	16.5	21.8	13.5	17.5	0.10	B094880
Total Thallium (Tl)	mg/kg	0.051	0.067	0.074	<0.050	<0.050	<0.050	<0.050	0.050	B094880
Total Tin (Sn)	mg/kg	0.33	0.18	0.24	0.21	0.21	0.87	1.14	0.10	B094880
Total Titanium (Ti)	mg/kg	398	538	776	413	595	399	451	1.0	B094880
Total Tungsten (W)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B094880
Total Uranium (U)	mg/kg	0.336	0.446	0.552	0.267	0.372	0.285	0.317	0.050	B094880
Total Vanadium (V)	mg/kg	25.7	37.7	38.4	26.1	31.5	24.3	28.2	1.0	B094880
Total Zinc (Zn)	mg/kg	56.5	21.9	37.1	20.5	26.8	33.3	44.1	1.0	B094880

RDL = Reportable Detection Limit

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Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		BYC036	BYC037	BYC038	BYC040	BYC041	BYC042	BYC045		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	**TP23-6-1**	**TP23-6-2**	**TP23-7-1**	**TP23-8-1**	**TP23-8-2**	**SS23-1**	**SS23-3**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg	0.52	1.12	2.01	1.01	1.61	<0.50	0.59	0.50	B094880
RDL = Reportable Detection Limit										

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Sampler Initials: PA

BTEX BY GC-MS (SOIL)

Bureau Veritas ID		BYC031	BYC032	BYC035	BYC037		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548		
	UNITS	TP23-4-1	TP23-B	TP23-5-2	TP23-6-2	RDL	QC Batch
Calculated Parameters							
BTEX Total	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	B093376
RDL = Reportable Detection Limit							

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VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BYC030			BYC031		BYC032		
Sampling Date		2023/08/30			2023/08/30		2023/08/30		
COC Number		08525548			08525548		08525548		
	UNITS	TP23-3-2	RDL	QC Batch	TP23-4-1	QC Batch	TP23-B	RDL	QC Batch
Volatiles									
F1 (C6-C10)	mg/kg				<10	B095271	<10	10	B096344
LH (C5-C10)	mg/kg				<10	B095271	<10	10	B096344
VH C6-C10	mg/kg				<10	B095271	<10	10	B096344
1,1,1,2-tetrachloroethane	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,1,1-trichloroethane	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,1,2,2-tetrachloroethane	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,1,2Trichloro-1,2,2Trifluoroethane	mg/kg				<0.20	B095271	<0.20	0.20	B096344
1,1,2-trichloroethane	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,1,2-Trichloropropane	mg/kg				<15	B095271	<15	15	B096344
1,1-dichloroethane	mg/kg				<0.025	B095271	<0.025	0.025	B096344
1,1-dichloroethene	mg/kg				<0.025	B095271	<0.025	0.025	B096344
1,1-dichloropropene	mg/kg				<15	B095271	<15	15	B096344
1,2,3-trichlorobenzene	mg/kg				<0.030	B095271	<0.030	0.030	B096344
1,2,3-trichloropropane	mg/kg				<0.030	B095271	<0.030	0.030	B096344
1,2,3-Trichloropropene	mg/kg				<2.0	B095271	<2.0	2.0	B096344
1,2,3-Trimethylbenzene	mg/kg				<15	B095271	<15	15	B096344
1,2,4-trichlorobenzene	mg/kg				<0.030	B095271	<0.030	0.030	B096344
1,2,4-trimethylbenzene	mg/kg				<0.20	B095271	<0.20	0.20	B096344
1,2-dibromo-3-chloropropane	mg/kg				<1.0	B095271	<1.0	1.0	B096344
1,2-dibromoethane	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,2-dichlorobenzene	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,2-dichloroethane	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,2-dichloropropane	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,3,5-trichlorobenzene	mg/kg				<0.030	B095271	<0.030	0.030	B096344
1,3,5-trimethylbenzene	mg/kg				<0.20	B095271	<0.20	0.20	B096344
1,3-Butadiene	mg/kg				<0.080	B095271	<0.080	0.080	B096344
1,3-dichlorobenzene	mg/kg				<0.020	B095271	<0.020	0.020	B096344
1,3-dichloropropane	mg/kg				<15	B095271	<15	15	B096344
1,4-dichlorobenzene	mg/kg				<0.020	B095271	<0.020	0.020	B096344
2-chlorotoluene	mg/kg				<15	B095271	<15	15	B096344
2-Butanone (MEK)	mg/kg				<15	B095271	<15	15	B096344
4-chlorotoluene	mg/kg				<15	B095271	<15	15	B096344

RDL = Reportable Detection Limit

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VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BYC030			BYC031		BYC032		
Sampling Date		2023/08/30			2023/08/30		2023/08/30		
COC Number		08525548			08525548		08525548		
	UNITS	TP23-3-2	RDL	QC Batch	TP23-4-1	QC Batch	TP23-B	RDL	QC Batch
4-Methyl-2-pentanone (MIBK)	mg/kg				<0.50	B095271	<0.50	0.50	B096344
Acetone	mg/kg				<5.0	B095271	<5.0	5.0	B096344
Benzene	mg/kg				<0.0050	B095271	<0.0050	0.0050	B096344
Bromobenzene	mg/kg				<0.20	B095271	<0.20	0.20	B096344
Bromodichloromethane	mg/kg				<0.050	B095271	<0.050	0.050	B096344
Bromoform	mg/kg				<0.050	B095271	<0.050	0.050	B096344
Bromomethane	mg/kg				<0.30	B095271	<0.30	0.30	B096344
Carbon tetrachloride	mg/kg				<0.020	B095271	<0.020	0.020	B096344
Chlorobenzene	mg/kg				<0.020	B095271	<0.020	0.020	B096344
Dibromochloromethane	mg/kg				<0.050	B095271	<0.050	0.050	B096344
Chloroethane	mg/kg				<0.10	B095271	<0.10	0.10	B096344
Chloroform	mg/kg				<0.020	B095271	<0.020	0.020	B096344
Chloromethane	mg/kg				<0.050	B095271	<0.050	0.050	B096344
cis-1,2-dichloroethene	mg/kg				<0.030	B095271	<0.030	0.030	B096344
cis-1,3-dichloropropene	mg/kg				<0.020	B095271	<0.020	0.020	B096344
Dibromomethane	mg/kg				<0.20	B095271	<0.20	0.20	B096344
Dichlorodifluoromethane	mg/kg				<0.20	B095271	<0.20	0.20	B096344
Dichloromethane	mg/kg				<0.080	B095271	<0.080	0.080	B096344
Ethylbenzene	mg/kg				<0.010	B095271	<0.010	0.010	B096344
Hexachlorobutadiene	mg/kg				<0.20	B095271	<0.20	0.20	B096344
Hexane	mg/kg				<0.50	B095271	<0.50	0.50	B096344
Isopropylbenzene	mg/kg				<0.20	B095271	<0.20	0.20	B096344
Methylcyclohexane	mg/kg				<0.20	B095271	<0.20	0.20	B096344
Methyl-tert-butylether (MTBE)	mg/kg				<0.10	B095271	<0.10	0.10	B096344
n-Butylbenzene	mg/kg				<15	B095271	<15	15	B096344
n-Decane	mg/kg				<2.0	B095271	<2.0	2.0	B096344
n-Propylbenzene	mg/kg				<15	B095271	<15	15	B096344
Pentachloroethane	mg/kg				<10	B095271	<10	10	B096344
p-Isopropyltoluene	mg/kg				<15	B095271	<15	15	B096344
sec-Butylbenzene	mg/kg				<15	B095271	<15	15	B096344
tert-Butylbenzene	mg/kg				<15	B095271	<15	15	B096344
Styrene	mg/kg				<0.030	B095271	<0.030	0.030	B096344
Tetrachloroethene	mg/kg				<0.010	B095271	<0.010	0.010	B096344

RDL = Reportable Detection Limit

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BYC030			BYC031		BYC032		
Sampling Date		2023/08/30			2023/08/30		2023/08/30		
COC Number		08525548			08525548		08525548		
	UNITS	TP23-3-2	RDL	QC Batch	TP23-4-1	QC Batch	TP23-B	RDL	QC Batch
Toluene	mg/kg				<0.050	B095271	<0.050	0.050	B096344
trans-1,2-dichloroethene	mg/kg				<0.030	B095271	<0.030	0.030	B096344
trans-1,3-dichloropropene	mg/kg				<0.020	B095271	<0.020	0.020	B096344
Trichloroethene	mg/kg				<0.0090	B095271	<0.0090	0.0090	B096344
Trichlorofluoromethane	mg/kg				<0.20	B095271	<0.20	0.20	B096344
Vinyl chloride	mg/kg				<0.040	B095271	<0.040	0.040	B096344
m & p-Xylene	mg/kg				<0.040	B095271	<0.040	0.040	B096344
o-Xylene	mg/kg				<0.040	B095271	<0.040	0.040	B096344
Xylenes (Total)	mg/kg				<0.040	B095271	<0.040	0.040	B096344
Extractable (MeOH) Butylated hydroxytoluene	mg/kg	<15	15	B096499					
Surrogate Recovery (%)									
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	112		B096499					
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	99		B096499					
Extractable (MeOH) D10-o-Xylene (sur.)	%	85		B096499					
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	94		B096499					
1,4-Difluorobenzene (sur.)	%				101	B095271	99		B096344
4-Bromofluorobenzene (sur.)	%				94	B095271	106		B096344
D10-o-Xylene (sur.)	%				120	B095271	122		B096344
D4-1,2-Dichloroethane (sur.)	%				100	B095271	108		B096344

RDL = Reportable Detection Limit

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BYC035	BYC037		
Sampling Date		2023/08/30	2023/08/30		
COC Number		08525548	08525548		
	UNITS	TP23-5-2	TP23-6-2	RDL	QC Batch
Volatiles					
F1 (C6-C10)	mg/kg	<10	<10	10	B096344
LH (C5-C10)	mg/kg	<10	<10	10	B096344
VH C6-C10	mg/kg	<10	<10	10	B096344
1,1,1,2-tetrachloroethane	mg/kg	<0.020	<0.020	0.020	B096344
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	0.020	B096344
1,1,2,2-tetrachloroethane	mg/kg	<0.020	<0.020	0.020	B096344
1,1,2Trichloro-1,2,2Trifluoroethane	mg/kg	<0.20	<0.20	0.20	B096344
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	0.020	B096344
1,1,2-Trichloropropane	mg/kg	<15	<15	15	B096344
1,1-dichloroethane	mg/kg	<0.025	<0.025	0.025	B096344
1,1-dichloroethene	mg/kg	<0.025	<0.025	0.025	B096344
1,1-dichloropropene	mg/kg	<15	<15	15	B096344
1,2,3-trichlorobenzene	mg/kg	<0.030	<0.030	0.030	B096344
1,2,3-trichloropropane	mg/kg	<0.030	<0.030	0.030	B096344
1,2,3-Trichloropropene	mg/kg	<2.0	<2.0	2.0	B096344
1,2,3-Trimethylbenzene	mg/kg	<15	<15	15	B096344
1,2,4-trichlorobenzene	mg/kg	<0.030	<0.030	0.030	B096344
1,2,4-trimethylbenzene	mg/kg	<0.20	<0.20	0.20	B096344
1,2-dibromo-3-chloropropane	mg/kg	<1.0	<1.0	1.0	B096344
1,2-dibromoethane	mg/kg	<0.020	<0.020	0.020	B096344
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	B096344
1,2-dichloroethane	mg/kg	<0.020	<0.020	0.020	B096344
1,2-dichloropropane	mg/kg	<0.020	<0.020	0.020	B096344
1,3,5-trichlorobenzene	mg/kg	<0.030	<0.030	0.030	B096344
1,3,5-trimethylbenzene	mg/kg	<0.20	<0.20	0.20	B096344
1,3-Butadiene	mg/kg	<0.080	<0.080	0.080	B096344
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	B096344
1,3-dichloropropane	mg/kg	<15	<15	15	B096344
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	B096344
2-chlorotoluene	mg/kg	<15	<15	15	B096344
2-Butanone (MEK)	mg/kg	<15	<15	15	B096344
4-chlorotoluene	mg/kg	<15	<15	15	B096344
RDL = Reportable Detection Limit					

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BYC035	BYC037		
Sampling Date		2023/08/30	2023/08/30		
COC Number		08525548	08525548		
	UNITS	TP23-5-2	TP23-6-2	RDL	QC Batch
4-Methyl-2-pentanone (MIBK)	mg/kg	<0.50	<0.50	0.50	B096344
Acetone	mg/kg	<5.0	<5.0	5.0	B096344
Benzene	mg/kg	<0.0050	<0.0050	0.0050	B096344
Bromobenzene	mg/kg	<0.20	<0.20	0.20	B096344
Bromodichloromethane	mg/kg	<0.050	<0.050	0.050	B096344
Bromoform	mg/kg	<0.050	<0.050	0.050	B096344
Bromomethane	mg/kg	<0.30	<0.30	0.30	B096344
Carbon tetrachloride	mg/kg	<0.020	<0.020	0.020	B096344
Chlorobenzene	mg/kg	<0.020	<0.020	0.020	B096344
Dibromochloromethane	mg/kg	<0.050	<0.050	0.050	B096344
Chloroethane	mg/kg	<0.10	<0.10	0.10	B096344
Chloroform	mg/kg	<0.020	<0.020	0.020	B096344
Chloromethane	mg/kg	<0.050	<0.050	0.050	B096344
cis-1,2-dichloroethene	mg/kg	<0.030	<0.030	0.030	B096344
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	0.020	B096344
Dibromomethane	mg/kg	<0.20	<0.20	0.20	B096344
Dichlorodifluoromethane	mg/kg	<0.20	<0.20	0.20	B096344
Dichloromethane	mg/kg	0.19	0.089	0.080	B096344
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	B096344
Hexachlorobutadiene	mg/kg	<0.20	<0.20	0.20	B096344
Hexane	mg/kg	0.69	<0.50	0.50	B096344
Isopropylbenzene	mg/kg	<0.20	<0.20	0.20	B096344
Methylcyclohexane	mg/kg	<0.20	<0.20	0.20	B096344
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	0.10	B096344
n-Butylbenzene	mg/kg	<15	<15	15	B096344
n-Decane	mg/kg	<2.0	<2.0	2.0	B096344
n-Propylbenzene	mg/kg	<15	<15	15	B096344
Pentachloroethane	mg/kg	<10	<10	10	B096344
p-Isopropyltoluene	mg/kg	<15	<15	15	B096344
sec-Butylbenzene	mg/kg	<15	<15	15	B096344
tert-Butylbenzene	mg/kg	<15	<15	15	B096344
Styrene	mg/kg	<0.030	<0.030	0.030	B096344
Tetrachloroethene	mg/kg	<0.010	<0.010	0.010	B096344
RDL = Reportable Detection Limit					

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BYC035	BYC037		
Sampling Date		2023/08/30	2023/08/30		
COC Number		08525548	08525548		
	UNITS	TP23-5-2	TP23-6-2	RDL	QC Batch
Toluene	mg/kg	<0.050	<0.050	0.050	B096344
trans-1,2-dichloroethene	mg/kg	<0.030	<0.030	0.030	B096344
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	0.020	B096344
Trichloroethene	mg/kg	<0.0090	<0.0090	0.0090	B096344
Trichlorofluoromethane	mg/kg	<0.20	<0.20	0.20	B096344
Vinyl chloride	mg/kg	<0.040	<0.040	0.040	B096344
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	B096344
o-Xylene	mg/kg	<0.040	<0.040	0.040	B096344
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	B096344
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	101	100		B096344
4-Bromofluorobenzene (sur.)	%	105	104		B096344
D10-o-Xylene (sur.)	%	119	120		B096344
D4-1,2-Dichloroethane (sur.)	%	108	113		B096344
RDL = Reportable Detection Limit					

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

MISCELLANEOUS (SOIL)

Bureau Veritas ID		BYC030		
Sampling Date		2023/08/30		
COC Number		08525548		
	UNITS	TP23-3-2	RDL	QC Batch
Base Neutrals				
Bis(2-ethylhexyl)phthalate	mg/kg	<0.10	0.10	B114749
Diethyl phthalate	mg/kg	<0.10	0.10	B114749
Dimethyl phthalate	mg/kg	<0.10	0.10	B114749
Di-n-butyl phthalate	mg/kg	0.10	0.10	B114749
Di-n-octyl phthalate	mg/kg	<0.10	0.10	B114749
N-butylbenzyl phthalate	mg/kg	<0.10	0.10	B114749
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	84		B114749
D12-BENZO(A)PYRENE (sur.)	%	93		B114749
D5-NITROBENZENE (sur.)	%	87		B114749
RDL = Reportable Detection Limit				

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		BYC025	BYC026	BYC027	BYC030	BYC031	BYC035		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	TP23-1-1	TP23A	TP23-2-1	TP23-3-2	TP23-4-1	TP23-5-2	RDL	QC Batch
Calculated Parameters									
Low Molecular Weight PAH`s	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B092441
High Molecular Weight PAH`s	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B092441
Total PAH	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B092441
Polycyclic Aromatics									
Quinoline	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B095112
Naphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	B095112
1-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B095112
2-Methylnaphthalene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	B095112
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	B095112
Fluorene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	B095112
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0040	B095112
Fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Pyrene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(a)anthracene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Chrysene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(b&j)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(b)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(k)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(a)pyrene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Dibenz(a,h)anthracene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B095112
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	<100	<100	<100	100	B092442
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	<100	<100	<100	<100	100	B092442
Hydrocarbons									
EPH (C10-C19)	mg/kg	<100	<100	<100	<100	<100	<100	100	B095117
EPH (C19-C32)	mg/kg	<100	<100	<100	<100	<100	<100	100	B095117
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	77	77	76	74	80	77		B095112

RDL = Reportable Detection Limit

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C368822
Report Date: 2023/09/26

Trillium Environmental
Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		BYC025	BYC026	BYC027	BYC030	BYC031	BYC035		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	TP23-1-1	TP23A	TP23-2-1	TP23-3-2	TP23-4-1	TP23-5-2	RDL	QC Batch
D8-ACENAPHTHYLENE (sur.)	%	72	71	71	71	76	73		B095112
D8-NAPHTHALENE (sur.)	%	72	71	72	71	75	75		B095112
TERPHENYL-D14 (sur.)	%	78	78	77	75	82	78		B095112
O-TERPHENYL (sur.)	%	81	77	81	76	81	79		B095117
RDL = Reportable Detection Limit									

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		BYC036	BYC037	BYC038	BYC041	BYC042	BYC045		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	TP23-6-1	TP23-6-2	TP23-7-1	TP23-8-2	SS23-1	SS23-3	RDL	QC Batch
Calculated Parameters									
Low Molecular Weight PAH`s	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B092441
High Molecular Weight PAH`s	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B092441
Total PAH	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.056	0.050	B092441
Polycyclic Aromatics									
Quinoline	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B095112
Naphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	B095112
1-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B095112
2-Methylnaphthalene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	B095112
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	B095112
Fluorene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.010	B095112
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0040	B095112
Fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.024	0.020	B095112
Pyrene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	0.020	B095112
Benzo(a)anthracene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Chrysene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(b&j)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(b)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(k)fluoranthene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(a)pyrene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Dibenz(a,h)anthracene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B095112
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B095112
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	<100	<100	<100	100	B092442
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	<100	<100	<100	<100	100	B092442
Hydrocarbons									
EPH (C10-C19)	mg/kg	<100	<100	<100	<100	<100	<100	100	B095117
EPH (C19-C32)	mg/kg	<100	<100	<100	<100	<100	<100	100	B095117
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	79	81	75	77	73	73		B095112

RDL = Reportable Detection Limit

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C368822
Report Date: 2023/09/26

Trillium Environmental
Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		BYC036	BYC037	BYC038	BYC041	BYC042	BYC045		
Sampling Date		2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30	2023/08/30		
COC Number		08525548	08525548	08525548	08525548	08525548	08525548		
	UNITS	TP23-6-1	TP23-6-2	TP23-7-1	TP23-8-2	SS23-1	SS23-3	RDL	QC Batch
D8-ACENAPHTHYLENE (sur.)	%	79	74	74	73	70	71		B095112
D8-NAPHTHALENE (sur.)	%	81	76	75	75	72	73		B095112
TERPHENYL-D14 (sur.)	%	80	76	76	77	72	72		B095112
O-TERPHENYL (sur.)	%	82	82	80	78	78	78		B095117
RDL = Reportable Detection Limit									

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Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

SOLUBLE SODIUM AND CHLORIDE IN SOIL (SOIL)

Bureau Veritas ID		BYC025		BYC026			BYC028			BYC030		
Sampling Date		2023/08/30		2023/08/30			2023/08/30			2023/08/30		
COC Number		08525548		08525548			08525548			08525548		
	UNITS	TP23-1-1	RDL	TP23A	RDL	QC Batch	TP23-2-2	RDL	QC Batch	TP23-3-2	RDL	QC Batch
ANIONS												
Soluble Chloride (Cl)	mg/L	<10	10	<10	10	B098454	<10	10	B098454	<10	10	B098454
Calculated Parameters												
Soluble Chloride (Cl)	mg/kg	<4.0	4.0	<3.9	3.9	B093378	<4.5	4.5	B093378	<4.2	4.2	B093378
Soluble Sodium (Na)	mg/kg	<2.0	2.0	<2.0	2.0	B093380	2.6	2.3	B093380	<2.1	2.1	B093380
Soluble Parameters												
Saturation %	%	40.1	N/A	39.3	N/A	B097836				42.2	N/A	B097836
Soluble Sodium (Na)	mg/L	<5.0	5.0	<5.0	5.0	B098391	5.7	5.0	B098391	<5.0	5.0	B098391

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		BYC031			BYC033			BYC035		
Sampling Date		2023/08/30			2023/08/30			2023/08/30		
COC Number		08525548			08525548			08525548		
	UNITS	TP23-4-1	RDL	QC Batch	TP23-4-2	RDL	QC Batch	TP23-5-2	RDL	QC Batch
ANIONS										
Soluble Chloride (Cl)	mg/L	1200	10	B098454	852	10	B123012	<10	10	B098454
Calculated Parameters										
Soluble Chloride (Cl)	mg/kg	510	4.3	B093378	342	4.0	B120075	<4.5	4.5	B093378
Soluble Sodium (Na)	mg/kg	177	2.1	B093380				2.6	2.2	B093380
Soluble Parameters										
Saturation %	%	42.5	N/A	B097836	40.1	N/A	B122622			
Soluble Sodium (Na)	mg/L	416	5.0	B098391				5.8	5.0	B098391

RDL = Reportable Detection Limit
N/A = Not Applicable

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Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

SOLUBLE SODIUM AND CHLORIDE IN SOIL (SOIL)

Bureau Veritas ID		BYC037		BYC038		BYC041		BYC042	BYC043		
Sampling Date		2023/08/30		2023/08/30		2023/08/30		2023/08/30	2023/08/30		
COC Number		08525548		08525548		08525548		08525548	08525548		
	UNITS	TP23-6-2	RDL	TP23-7-1	RDL	TP23-8-2	RDL	SS23-1	SS23-2-1	RDL	QC Batch
ANIONS											
Soluble Chloride (Cl)	mg/L	<10	10	<10	10	<10	10	<10	<10	10	B098454
Calculated Parameters											
Soluble Chloride (Cl)	mg/kg	<3.0	3.0	<4.6	4.6	<4.4	4.4	<4.1	<4.1	4.1	B093378
Soluble Sodium (Na)	mg/kg	<1.5	1.5	5.4	2.3	7.5	2.2	2.1	10.3	2.1	B093380
Soluble Parameters											
Saturation %	%	30.5	N/A	46.2	N/A	43.8	N/A	41.3	41.4	N/A	B097836
Soluble Sodium (Na)	mg/L	<5.0	5.0	11.6	5.0	17.0	5.0	5.1	24.9	5.0	B098391

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		BYC045		
Sampling Date		2023/08/30		
COC Number		08525548		
	UNITS	SS23-3	RDL	QC Batch
ANIONS				
Soluble Chloride (Cl)	mg/L	<10	10	B098454
Calculated Parameters				
Soluble Chloride (Cl)	mg/kg	<3.6	3.6	B093378
Soluble Sodium (Na)	mg/kg	16.2	1.8	B093380
Soluble Parameters				
Saturation %	%	35.8	N/A	B097836
Soluble Sodium (Na)	mg/L	45.1	5.0	B098391

RDL = Reportable Detection Limit
N/A = Not Applicable

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.3°C

Version #2: Report issued to include results for Soluble Nitrate on below samples as per client request received 2023/09/13.

BYC025-01
BYC026-01
BYC028-01
BYC030-01
BYC031-01
BYC035-01
BYC037-01
BYC038-01
BYC041-01
BYC042-01
BYC043-01
BYC045-01

Version #3: Report reissued to include results for soluble chloride on sample BYC033/TP23-4-2 as per client request received 2023/09/18.

RESULTS OF CHEMICAL ANALYSES OF SOIL Comments

Sample BYC030 [TP23-3-2] Amines Scan - Soil: Detection limits raised due to sample matrix.

Results relate only to the items tested.

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B095112	D10-ANTHRACENE (sur.)	2023/09/05	75	50 - 140	79	50 - 140	87	%				
B095112	D8-ACENAPHTHYLENE (sur.)	2023/09/05	72	50 - 140	77	50 - 140	83	%				
B095112	D8-NAPHTHALENE (sur.)	2023/09/05	74	50 - 140	76	50 - 140	82	%				
B095112	TERPHENYL-D14 (sur.)	2023/09/05	78	50 - 140	81	50 - 140	89	%				
B095117	O-TERPHENYL (sur.)	2023/09/05	81	60 - 140	80	60 - 140	86	%				
B095271	1,4-Difluorobenzene (sur.)	2023/09/06	97	50 - 140	98	50 - 140	99	%				
B095271	4-Bromofluorobenzene (sur.)	2023/09/06	98	50 - 140	93	50 - 140	92	%				
B095271	D10-o-Xylene (sur.)	2023/09/06	116	50 - 140	80	50 - 140	90	%				
B095271	D4-1,2-Dichloroethane (sur.)	2023/09/06	102	50 - 140	95	50 - 140	92	%				
B096344	1,4-Difluorobenzene (sur.)	2023/09/07	86	50 - 140	108	50 - 140	100	%				
B096344	4-Bromofluorobenzene (sur.)	2023/09/07	100	50 - 140	109	50 - 140	103	%				
B096344	D10-o-Xylene (sur.)	2023/09/07	133	50 - 140	84	50 - 140	101	%				
B096344	D4-1,2-Dichloroethane (sur.)	2023/09/07	105	50 - 140	106	50 - 140	105	%				
B096499	Extractable (MeOH) 1,4-Difluorobenzene (sur.)	2023/09/06	105	50 - 140	106	50 - 140	114	%				
B096499	Extractable (MeOH) 4-Bromofluorobenzene (sur.)	2023/09/06	100	50 - 140	101	50 - 140	96	%				
B096499	Extractable (MeOH) D10-o-Xylene (sur.)	2023/09/06	85	50 - 140	63	50 - 140	67	%				
B096499	Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	2023/09/06	91	50 - 140	90	50 - 140	95	%				
B114749	D10-ANTHRACENE (sur.)	2023/09/18			91	50 - 130	92	%				
B114749	D12-BENZO(A)PYRENE (sur.)	2023/09/18			97	50 - 130	94	%				
B114749	D5-NITROBENZENE (sur.)	2023/09/18			87	50 - 130	88	%				
B094157	Moisture	2023/09/05					<0.30	%	0.50	20		
B094264	Moisture	2023/09/05					<0.30	%	1.2	20		
B094880	Total Aluminum (Al)	2023/09/07	NC	75 - 125	97	75 - 125	<100	mg/kg	0.39	40	103	70 - 130
B094880	Total Antimony (Sb)	2023/09/07	98	75 - 125	104	75 - 125	<0.10	mg/kg	9.6	30	109	70 - 130
B094880	Total Arsenic (As)	2023/09/07	104	75 - 125	105	75 - 125	<0.20	mg/kg	1.8	30	94	70 - 130
B094880	Total Barium (Ba)	2023/09/07	116	75 - 125	104	75 - 125	<0.10	mg/kg	0.85	40	107	70 - 130
B094880	Total Beryllium (Be)	2023/09/07	97	75 - 125	98	75 - 125	<0.20	mg/kg	NC	30	83	70 - 130
B094880	Total Bismuth (Bi)	2023/09/07	98	75 - 125	98	75 - 125	<0.10	mg/kg	NC	30		
B094880	Total Boron (B)	2023/09/07	95	75 - 125	96	75 - 125	<1.0	mg/kg	4.0	30		
B094880	Total Cadmium (Cd)	2023/09/07	100	75 - 125	101	75 - 125	<0.050	mg/kg	NC	30	105	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B094880	Total Calcium (Ca)	2023/09/07	193 (1)	75 - 125	100	75 - 125	<100	mg/kg	1.2	30	95	70 - 130
B094880	Total Chromium (Cr)	2023/09/07	96	75 - 125	99	75 - 125	<0.50	mg/kg	1.4	30	102	70 - 130
B094880	Total Cobalt (Co)	2023/09/07	94	75 - 125	97	75 - 125	<0.10	mg/kg	1.3	30	95	70 - 130
B094880	Total Copper (Cu)	2023/09/07	92	75 - 125	97	75 - 125	<0.50	mg/kg	3.0	30	99	70 - 130
B094880	Total Iron (Fe)	2023/09/07	NC	75 - 125	99	75 - 125	<100	mg/kg	1.0	30	98	70 - 130
B094880	Total Lead (Pb)	2023/09/07	106	75 - 125	105	75 - 125	<0.10	mg/kg	10	40	117	70 - 130
B094880	Total Lithium (Li)	2023/09/07	102	75 - 125	100	75 - 125	<0.50	mg/kg	1.4	30	105	70 - 130
B094880	Total Magnesium (Mg)	2023/09/07	NC	75 - 125	96	75 - 125	<100	mg/kg	0.62	30	100	70 - 130
B094880	Total Manganese (Mn)	2023/09/07	114	75 - 125	100	75 - 125	<0.20	mg/kg	0.93	30	104	70 - 130
B094880	Total Mercury (Hg)	2023/09/07	102	75 - 125	103	75 - 125	<0.050	mg/kg	NC	40	133 (2)	70 - 130
B094880	Total Molybdenum (Mo)	2023/09/07	99	75 - 125	101	75 - 125	<0.10	mg/kg	4.2	40	107	70 - 130
B094880	Total Nickel (Ni)	2023/09/07	92	75 - 125	95	75 - 125	<0.50	mg/kg	0.92	30	100	70 - 130
B094880	Total Phosphorus (P)	2023/09/07	94	75 - 125	96	75 - 125	<10	mg/kg	8.8	30	93	70 - 130
B094880	Total Potassium (K)	2023/09/07	114	75 - 125	99	75 - 125	<100	mg/kg	2.1	40	89	70 - 130
B094880	Total Selenium (Se)	2023/09/07	101	75 - 125	100	75 - 125	<0.50	mg/kg	NC	30		
B094880	Total Silver (Ag)	2023/09/07	92	75 - 125	92	75 - 125	<0.050	mg/kg	NC	40	100	70 - 130
B094880	Total Strontium (Sr)	2023/09/07	120	75 - 125	108	75 - 125	<0.10	mg/kg	0.53	40	113	70 - 130
B094880	Total Thallium (Tl)	2023/09/07	100	75 - 125	99	75 - 125	<0.050	mg/kg	6.4	30	96	70 - 130
B094880	Total Tin (Sn)	2023/09/07	99	75 - 125	100	75 - 125	<0.10	mg/kg	3.5	40	101	70 - 130
B094880	Total Titanium (Ti)	2023/09/07	NC	75 - 125	101	75 - 125	<1.0	mg/kg	1.6	40		
B094880	Total Tungsten (W)	2023/09/07	91	75 - 125	102	75 - 125	<0.50	mg/kg	NC	40		
B094880	Total Uranium (U)	2023/09/07	102	75 - 125	102	75 - 125	<0.050	mg/kg	15	30	101	70 - 130
B094880	Total Vanadium (V)	2023/09/07	99	75 - 125	98	75 - 125	<1.0	mg/kg	0.19	30	100	70 - 130
B094880	Total Zinc (Zn)	2023/09/07	97	75 - 125	97	75 - 125	<1.0	mg/kg	1.5	30	100	70 - 130
B094880	Total Zirconium (Zr)	2023/09/07	113	75 - 125	107	75 - 125	<0.50	mg/kg	9.5	40		
B094889	Soluble (2:1) pH	2023/09/05			100	97 - 103			0.50	N/A		
B095112	1-Methylnaphthalene	2023/09/06	79	50 - 140	82	50 - 140	<0.050	mg/kg	NC	50		
B095112	2-Methylnaphthalene	2023/09/06	81	50 - 140	82	50 - 140	<0.020	mg/kg	NC	50		
B095112	Acenaphthene	2023/09/06	81	50 - 140	83	50 - 140	<0.0050	mg/kg	NC	50		
B095112	Acenaphthylene	2023/09/06	78	50 - 140	80	50 - 140	<0.0050	mg/kg	NC	50		
B095112	Anthracene	2023/09/06	80	50 - 140	82	50 - 140	<0.0040	mg/kg	NC	50		
B095112	Benzo(a)anthracene	2023/09/06	79	50 - 140	83	50 - 140	<0.020	mg/kg	NC	50		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B095112	Benzo(a)pyrene	2023/09/06	80	50 - 140	85	50 - 140	<0.020	mg/kg	NC	50		
B095112	Benzo(b&j)fluoranthene	2023/09/06	78	50 - 140	81	50 - 140	<0.020	mg/kg	NC	50		
B095112	Benzo(b)fluoranthene	2023/09/06	79	50 - 140	80	50 - 140	<0.020	mg/kg	NC	50		
B095112	Benzo(g,h,i)perylene	2023/09/06	65	50 - 140	70	50 - 140	<0.050	mg/kg	NC	50		
B095112	Benzo(k)fluoranthene	2023/09/06	80	50 - 140	83	50 - 140	<0.020	mg/kg	NC	50		
B095112	Chrysene	2023/09/06	83	50 - 140	86	50 - 140	<0.020	mg/kg	NC	50		
B095112	Dibenz(a,h)anthracene	2023/09/06	63	50 - 140	69	50 - 140	<0.020	mg/kg	NC	50		
B095112	Fluoranthene	2023/09/06	82	50 - 140	84	50 - 140	<0.020	mg/kg	NC	50		
B095112	Fluorene	2023/09/06	82	50 - 140	83	50 - 140	<0.020	mg/kg	NC	50		
B095112	Indeno(1,2,3-cd)pyrene	2023/09/06	69	50 - 140	75	50 - 140	<0.020	mg/kg	NC	50		
B095112	Naphthalene	2023/09/06	79	50 - 140	81	50 - 140	<0.010	mg/kg	NC	50		
B095112	Phenanthrene	2023/09/06	81	50 - 140	81	50 - 140	<0.010	mg/kg	NC	50		
B095112	Pyrene	2023/09/06	79	50 - 140	80	50 - 140	<0.020	mg/kg	NC	50		
B095112	Quinoline	2023/09/06	119	50 - 140	104	50 - 140	<0.050	mg/kg	NC	50		
B095117	EPH (C10-C19)	2023/09/05	84	60 - 140	84	70 - 130	<100	mg/kg	NC	40		
B095117	EPH (C19-C32)	2023/09/05	85	60 - 140	80	70 - 130	<100	mg/kg	NC	40		
B095271	1,1,1,2-tetrachloroethane	2023/09/06	116	50 - 140	87	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,1,1-trichloroethane	2023/09/06	110	50 - 140	79	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,1,2,2-tetrachloroethane	2023/09/06	124	50 - 140	99	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,1,2Trichloro-1,2,2Trifluoroethane	2023/09/06	109	50 - 140	74	60 - 130	<0.20	mg/kg				
B095271	1,1,2-trichloroethane	2023/09/06	121	50 - 140	90	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,1,2-Trichloropropane	2023/09/06	136	50 - 140	102	60 - 130	<15	mg/kg				
B095271	1,1-dichloroethane	2023/09/06	119	50 - 140	85	60 - 130	<0.025	mg/kg	NC	50		
B095271	1,1-dichloroethene	2023/09/06	113	50 - 140	77	60 - 130	<0.025	mg/kg	NC	50		
B095271	1,1-dichloropropene	2023/09/06	119	50 - 140	80	60 - 130	<15	mg/kg				
B095271	1,2,3-trichlorobenzene	2023/09/06	120	50 - 140	96	60 - 130	<0.030	mg/kg	NC	50		
B095271	1,2,3-trichloropropane	2023/09/06	119	N/A	95	60 - 130	<0.030	mg/kg				
B095271	1,2,3-Trichloropropene	2023/09/06	121	50 - 140	95	60 - 130	<2.0	mg/kg				
B095271	1,2,3-Trimethylbenzene	2023/09/06	124	50 - 140	95	60 - 130	<15	mg/kg				
B095271	1,2,4-trichlorobenzene	2023/09/06	122	50 - 140	95	60 - 130	<0.030	mg/kg	NC	50		
B095271	1,2,4-trimethylbenzene	2023/09/06	121	50 - 140	92	60 - 130	<0.20	mg/kg				
B095271	1,2-dibromo-3-chloropropane	2023/09/06	122	50 - 140	95	60 - 130	<1.0	mg/kg				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B095271	1,2-dibromoethane	2023/09/06	123	50 - 140	93	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,2-dichlorobenzene	2023/09/06	123	50 - 140	97	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,2-dichloroethane	2023/09/06	103	50 - 140	77	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,2-dichloropropane	2023/09/06	129	50 - 140	95	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,3,5-trichlorobenzene	2023/09/06	120	50 - 140	91	60 - 130	<0.030	mg/kg				
B095271	1,3,5-trimethylbenzene	2023/09/06	122	50 - 140	94	60 - 130	<0.20	mg/kg	NC	50		
B095271	1,3-Butadiene	2023/09/06	125	50 - 140	74	50 - 140	<0.080	mg/kg	NC	50		
B095271	1,3-dichlorobenzene	2023/09/06	123	50 - 140	95	60 - 130	<0.020	mg/kg	NC	50		
B095271	1,3-dichloropropane	2023/09/06	134	N/A	105	60 - 130	<15	mg/kg				
B095271	1,4-dichlorobenzene	2023/09/06	120	50 - 140	94	60 - 130	<0.020	mg/kg	NC	50		
B095271	2-Butanone (MEK)	2023/09/06			106	50 - 140	<15	mg/kg				
B095271	2-chlorotoluene	2023/09/06	121	50 - 140	95	60 - 130	<15	mg/kg				
B095271	4-chlorotoluene	2023/09/06	126	50 - 140	96	60 - 130	<15	mg/kg				
B095271	4-Methyl-2-pentanone (MIBK)	2023/09/06			100	50 - 140	<0.50	mg/kg				
B095271	Acetone	2023/09/06			76	50 - 140	<5.0	mg/kg				
B095271	Benzene	2023/09/06	116	50 - 140	85	60 - 130	<0.0050	mg/kg	NC	50		
B095271	Bromobenzene	2023/09/06	113	50 - 140	91	60 - 130	<0.20	mg/kg	NC	50		
B095271	Bromodichloromethane	2023/09/06	112	50 - 140	85	60 - 130	<0.050	mg/kg	NC	50		
B095271	Bromoform	2023/09/06	113	50 - 140	92	60 - 130	<0.050	mg/kg	NC	50		
B095271	Bromomethane	2023/09/06	91	50 - 140	63	50 - 140	<0.30	mg/kg	NC	50		
B095271	Carbon tetrachloride	2023/09/06	113	50 - 140	73	60 - 130	<0.020	mg/kg	NC	50		
B095271	Chlorobenzene	2023/09/06	117	50 - 140	89	60 - 130	<0.020	mg/kg	NC	50		
B095271	Chloroethane	2023/09/06	88	50 - 140	57	50 - 140	<0.10	mg/kg	NC	50		
B095271	Chloroform	2023/09/06	113	50 - 140	85	60 - 130	<0.020	mg/kg	NC	50		
B095271	Chloromethane	2023/09/06	125	50 - 140	80	50 - 140	<0.050	mg/kg	NC	50		
B095271	cis-1,2-dichloroethene	2023/09/06	117	50 - 140	85	60 - 130	<0.030	mg/kg	NC	50		
B095271	cis-1,3-dichloropropene	2023/09/06	123	50 - 140	89	50 - 140	<0.020	mg/kg	NC	50		
B095271	Dibromochloromethane	2023/09/06	119	50 - 140	88	60 - 130	<0.050	mg/kg	NC	50		
B095271	Dibromomethane	2023/09/06	108	50 - 140	84	60 - 130	<0.20	mg/kg				
B095271	Dichlorodifluoromethane	2023/09/06	84	50 - 140	45 (3)	50 - 140	<0.20	mg/kg				
B095271	Dichloromethane	2023/09/06	117	50 - 140	85	60 - 130	<0.080	mg/kg	NC	50		
B095271	Ethylbenzene	2023/09/06	124	50 - 140	89	60 - 130	<0.010	mg/kg	NC	50		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B095271	F1 (C6-C10)	2023/09/06			81	60 - 130	<10	mg/kg				
B095271	Hexachlorobutadiene	2023/09/06	116	50 - 140	89	50 - 130	<0.20	mg/kg	NC	50		
B095271	Hexane	2023/09/06	111	50 - 140	77	60 - 130	<0.50	mg/kg				
B095271	Isopropylbenzene	2023/09/06	125	50 - 140	95	60 - 130	<0.20	mg/kg	NC	50		
B095271	LH (C5-C10)	2023/09/06			85	60 - 130	<10	mg/kg				
B095271	m & p-Xylene	2023/09/06	127	50 - 140	92	60 - 130	<0.040	mg/kg	NC	50		
B095271	Methylcyclohexane	2023/09/06	124	50 - 140	86	60 - 130	<0.20	mg/kg				
B095271	Methyl-tert-butylether (MTBE)	2023/09/06	115	50 - 140	84	60 - 130	<0.10	mg/kg	NC	50		
B095271	n-Butylbenzene	2023/09/06	125	50 - 140	91	60 - 130	<15	mg/kg	NC	50		
B095271	n-Decane	2023/09/06	136	50 - 140	99	60 - 130	<2.0	mg/kg				
B095271	n-Propylbenzene	2023/09/06	125	50 - 140	93	60 - 130	<15	mg/kg	NC	50		
B095271	o-Xylene	2023/09/06	124	50 - 140	91	60 - 130	<0.040	mg/kg	NC	50		
B095271	Pentachloroethane	2023/09/06	117	50 - 140	92	60 - 130	<10	mg/kg				
B095271	p-Isopropyltoluene	2023/09/06	128	50 - 140	95	60 - 130	<15	mg/kg				
B095271	sec-Butylbenzene	2023/09/06	122	50 - 140	92	60 - 130	<15	mg/kg	NC	50		
B095271	Styrene	2023/09/06	124	50 - 140	92	60 - 130	<0.030	mg/kg	NC	50		
B095271	tert-Butylbenzene	2023/09/06	119	40 - 150	89	60 - 130	<15	mg/kg	NC	50		
B095271	Tetrachloroethene	2023/09/06	113	50 - 140	82	60 - 130	<0.010	mg/kg	NC	50		
B095271	Toluene	2023/09/06	119	50 - 140	83	60 - 130	<0.050	mg/kg	NC	50		
B095271	trans-1,2-dichloroethene	2023/09/06	114	50 - 140	80	60 - 130	<0.030	mg/kg	NC	50		
B095271	trans-1,3-dichloropropene	2023/09/06	118	50 - 140	86	50 - 140	<0.020	mg/kg	NC	50		
B095271	Trichloroethene	2023/09/06	112	50 - 140	82	60 - 130	<0.0090	mg/kg	NC	50		
B095271	Trichlorofluoromethane	2023/09/06	113	50 - 140	74	60 - 130	<0.20	mg/kg	NC	50		
B095271	VH C6-C10	2023/09/06			82	70 - 130	<10	mg/kg	NC	50		
B095271	Vinyl chloride	2023/09/06	125	50 - 140	77	50 - 140	<0.040	mg/kg	NC	50		
B095271	Xylenes (Total)	2023/09/06					<0.040	mg/kg	NC	50		
B096344	1,1,1,2-tetrachloroethane	2023/09/07	126	50 - 140	95	60 - 130	<0.020	mg/kg				
B096344	1,1,1-trichloroethane	2023/09/07	118	50 - 140	91	60 - 130	<0.020	mg/kg				
B096344	1,1,2,2-tetrachloroethane	2023/09/07	114	50 - 140	89	60 - 130	<0.020	mg/kg				
B096344	1,1,2Trichloro-1,2,2Trifluoroethane	2023/09/07	113	50 - 140	81	60 - 130	<0.20	mg/kg				
B096344	1,1,2-trichloroethane	2023/09/07	133	50 - 140	100	60 - 130	<0.020	mg/kg				
B096344	1,1,2-Trichloropropane	2023/09/07	138	50 - 140	101	60 - 130	<15	mg/kg				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B096344	1,1-dichloroethane	2023/09/07	123	50 - 140	92	60 - 130	<0.025	mg/kg				
B096344	1,1-dichloroethene	2023/09/07	117	50 - 140	81	60 - 130	<0.025	mg/kg				
B096344	1,1-dichloropropene	2023/09/07	128	50 - 140	94	60 - 130	<15	mg/kg				
B096344	1,2,3-trichlorobenzene	2023/09/07	113	50 - 140	92	60 - 130	<0.030	mg/kg				
B096344	1,2,3-trichloropropane	2023/09/07	115	N/A	89	60 - 130	<0.030	mg/kg				
B096344	1,2,3-Trichloropropene	2023/09/07	112	50 - 140	89	60 - 130	<2.0	mg/kg				
B096344	1,2,3-Trimethylbenzene	2023/09/07	114	50 - 140	93	60 - 130	<15	mg/kg				
B096344	1,2,4-trichlorobenzene	2023/09/07	111	50 - 140	91	60 - 130	<0.030	mg/kg				
B096344	1,2,4-trimethylbenzene	2023/09/07	111	50 - 140	91	60 - 130	<0.20	mg/kg				
B096344	1,2-dibromo-3-chloropropane	2023/09/07	113	50 - 140	86	60 - 130	<1.0	mg/kg				
B096344	1,2-dibromoethane	2023/09/07	135	50 - 140	96	60 - 130	<0.020	mg/kg				
B096344	1,2-dichlorobenzene	2023/09/07	116	50 - 140	95	60 - 130	<0.020	mg/kg				
B096344	1,2-dichloroethane	2023/09/07	118	50 - 140	86	60 - 130	<0.020	mg/kg				
B096344	1,2-dichloropropane	2023/09/07	132	50 - 140	98	60 - 130	<0.020	mg/kg				
B096344	1,3,5-trichlorobenzene	2023/09/07	109	50 - 140	90	60 - 130	<0.030	mg/kg				
B096344	1,3,5-trimethylbenzene	2023/09/07	110	50 - 140	92	60 - 130	<0.20	mg/kg	NC	50		
B096344	1,3-Butadiene	2023/09/07	111	50 - 140	49 (3)	50 - 140	<0.080	mg/kg				
B096344	1,3-dichlorobenzene	2023/09/07	114	50 - 140	94	60 - 130	<0.020	mg/kg				
B096344	1,3-dichloropropane	2023/09/07	115	N/A	103	60 - 130	<15	mg/kg				
B096344	1,4-dichlorobenzene	2023/09/07	112	50 - 140	93	60 - 130	<0.020	mg/kg				
B096344	2-Butanone (MEK)	2023/09/07					<15	mg/kg				
B096344	2-chlorotoluene	2023/09/07	110	50 - 140	92	60 - 130	<15	mg/kg				
B096344	4-chlorotoluene	2023/09/07	114	50 - 140	95	60 - 130	<15	mg/kg				
B096344	4-Methyl-2-pentanone (MIBK)	2023/09/07			126	50 - 140	<0.50	mg/kg				
B096344	Acetone	2023/09/07			134	50 - 140	<5.0	mg/kg				
B096344	Benzene	2023/09/07	121	50 - 140	92	60 - 130	<0.0050	mg/kg	NC	50		
B096344	Bromobenzene	2023/09/07	106	50 - 140	88	60 - 130	<0.20	mg/kg				
B096344	Bromodichloromethane	2023/09/07	123	50 - 140	92	60 - 130	<0.050	mg/kg				
B096344	Bromoform	2023/09/07	110	50 - 140	88	60 - 130	<0.050	mg/kg				
B096344	Bromomethane	2023/09/07	108	50 - 140	59	50 - 140	<0.30	mg/kg				
B096344	Carbon tetrachloride	2023/09/07	124	50 - 140	85	60 - 130	<0.020	mg/kg				
B096344	Chlorobenzene	2023/09/07	124	50 - 140	96	60 - 130	<0.020	mg/kg				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B096344	Chloroethane	2023/09/07	100	50 - 140	54	50 - 140	<0.10	mg/kg				
B096344	Chloroform	2023/09/07	123	50 - 140	94	60 - 130	<0.020	mg/kg				
B096344	Chloromethane	2023/09/07	114	50 - 140	42 (3)	50 - 140	<0.050	mg/kg				
B096344	cis-1,2-dichloroethene	2023/09/07	124	50 - 140	93	60 - 130	<0.030	mg/kg				
B096344	cis-1,3-dichloropropene	2023/09/07	137	50 - 140	96	50 - 140	<0.020	mg/kg				
B096344	Dibromochloromethane	2023/09/07	133	50 - 140	98	60 - 130	<0.050	mg/kg				
B096344	Dibromomethane	2023/09/07	123	50 - 140	92	60 - 130	<0.20	mg/kg				
B096344	Dichlorodifluoromethane	2023/09/07	81	50 - 140	14 (3)	50 - 140	<0.20	mg/kg				
B096344	Dichloromethane	2023/09/07	124	50 - 140	91	60 - 130	<0.080	mg/kg				
B096344	Ethylbenzene	2023/09/07	129	50 - 140	97	60 - 130	<0.010	mg/kg	NC	50		
B096344	F1 (C6-C10)	2023/09/07			85	60 - 130	<10	mg/kg				
B096344	Hexachlorobutadiene	2023/09/07	104	50 - 140	89	50 - 130	<0.20	mg/kg				
B096344	Hexane	2023/09/07	119	50 - 140	76	60 - 130	<0.50	mg/kg				
B096344	Isopropylbenzene	2023/09/07	112	50 - 140	94	60 - 130	<0.20	mg/kg	NC	50		
B096344	LH (C5-C10)	2023/09/07			89	60 - 130	<10	mg/kg				
B096344	m & p-Xylene	2023/09/07	133	50 - 140	101	60 - 130	<0.040	mg/kg	NC	50		
B096344	Methylcyclohexane	2023/09/07	126	50 - 140	95	60 - 130	<0.20	mg/kg				
B096344	Methyl-tert-butylether (MTBE)	2023/09/07	122	50 - 140	91	60 - 130	<0.10	mg/kg	NC	50		
B096344	n-Butylbenzene	2023/09/07	112	50 - 140	92	60 - 130	<15	mg/kg	NC	50		
B096344	n-Decane	2023/09/07	117	50 - 140	104	60 - 130	<2.0	mg/kg				
B096344	n-Propylbenzene	2023/09/07	110	50 - 140	91	60 - 130	<15	mg/kg				
B096344	o-Xylene	2023/09/07	131	50 - 140	100	60 - 130	<0.040	mg/kg	NC	50		
B096344	Pentachloroethane	2023/09/07	110	50 - 140	90	60 - 130	<10	mg/kg				
B096344	p-Isopropyltoluene	2023/09/07	115	50 - 140	94	60 - 130	<15	mg/kg				
B096344	sec-Butylbenzene	2023/09/07	110	50 - 140	92	60 - 130	<15	mg/kg	NC	50		
B096344	Styrene	2023/09/07	133	50 - 140	99	60 - 130	<0.030	mg/kg	NC	50		
B096344	tert-Butylbenzene	2023/09/07	108	40 - 150	90	60 - 130	<15	mg/kg	NC	50		
B096344	Tetrachloroethene	2023/09/07	119	50 - 140	93	60 - 130	<0.010	mg/kg				
B096344	Toluene	2023/09/07	124	50 - 140	95	60 - 130	<0.050	mg/kg	NC	50		
B096344	trans-1,2-dichloroethene	2023/09/07	120	50 - 140	89	60 - 130	<0.030	mg/kg				
B096344	trans-1,3-dichloropropene	2023/09/07	135	50 - 140	95	50 - 140	<0.020	mg/kg				
B096344	Trichloroethene	2023/09/07	118	50 - 140	94	60 - 130	<0.0090	mg/kg				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B096344	Trichlorofluoromethane	2023/09/07	124	50 - 140	81	60 - 130	<0.20	mg/kg				
B096344	VH C6-C10	2023/09/07			87	70 - 130	<10	mg/kg	NC	50		
B096344	Vinyl chloride	2023/09/07	113	50 - 140	54	50 - 140	<0.040	mg/kg				
B096344	Xylenes (Total)	2023/09/07					<0.040	mg/kg	NC	50		
B096499	Extractable (MeOH) Butylated hydroxytoluene	2023/09/06			84	60 - 140	<15	mg/kg				
B097836	Saturation %	2023/09/07					0	%	0	30	101	75 - 125
B098178	Extractable Fluoride (F)	2023/09/07	100	75 - 125	98	75 - 125	<10	ug/g	NC	30		
B098391	Soluble Sodium (Na)	2023/09/07	98	80 - 120	99	80 - 120	<5.0	mg/L	0.27	40	110	75 - 125
B098454	Soluble Chloride (Cl)	2023/09/07	95	75 - 125	98	80 - 120	<10	mg/L	0.83	30	104	75 - 125
B111985	Extractable (Water) Diethanolamine (DEA)	2023/09/18	71	60 - 140	85	60 - 140	<0.30	mg/kg	NC	50		
B111985	Extractable (Water) Methyldiethanolamine (MDEA)	2023/09/18	65	60 - 140	83	60 - 140	<0.30	mg/kg	NC	50		
B111985	Extractable (Water) Monoethanolamine (MEA)	2023/09/18	72	60 - 140	83	60 - 140	<0.30	mg/kg	NC	50		
B114749	Bis(2-ethylhexyl)phthalate	2023/09/18			108	50 - 130	<0.10	mg/kg				
B114749	Diethyl phthalate	2023/09/18			99	50 - 130	<0.10	mg/kg				
B114749	Dimethyl phthalate	2023/09/18			102	50 - 130	<0.10	mg/kg				
B114749	Di-n-butyl phthalate	2023/09/18			104	50 - 130	<0.10	mg/kg				
B114749	Di-n-octyl phthalate	2023/09/18			108	50 - 130	<0.10	mg/kg				
B114749	N-butylbenzyl phthalate	2023/09/18			106	50 - 130	<0.10	mg/kg				
B122622	Saturation %	2023/09/25					0	%	0.018	30	102	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B123012	Soluble Chloride (Cl)	2023/09/25	103	75 - 125	96	80 - 120	<10	mg/L	6.6	30	104	75 - 125

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Reference outside acceptance criteria - re-analysis yields similar results.

(3) Spike recovery below acceptance criteria. Sensitivity is not an issue, As results are non-detect, there is no impact on data quality.

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Bureau Veritas Job #: C368822
Report Date: 2023/09/26

Trillium Environmental
Client Project #: 154-002-02
Site Location: DUSTY ROAD, BC
Sampler Initials: PA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Aomar Kaidi, B.Sc., Chemist, Senior Analyst

Mauro Oselin, Scientific Specialist

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

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CHAIN OF CUSTODY RECORD

ENV COC - 00015v3

08525548

C368822_COC

Invoice Information	Invoice to (requires report) ☑	Report Information (if differs from invoice)		Project Information	
Company:	Trillium Environmental Ltd.	Company:		Quotation #:	C30806
Contact Name:	Stefan Quaglia	Contact Name:	Paul Antonelli	P.O. #/ AFE#:	
Street Address:	203-126 Ingram St	Street Address:		Project #:	154-002-02
City:	Duncan Prov: BC Postal Code: V9L 1P1	City:	Prov: Postal Code:	Site #:	
Phone:	250-466-9990	Phone:	250-574-1983	Site Location:	Dusty Road
Email:	accounting@trilliumenviro.com	Email:	pantonelli@trilliumenviro.com	Site Location Province:	BC
Copies:		Copies:	squaglia@trilliumenviro.com	Sampled By:	PA

Regulatory Criteria

☑ BC CSR ☐ CCME ☐ Drinking Water
☐ YUKON CSR ☐ BC Water Quality ☐ Other: _____

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 BTEXS/VPH / VOC	5 LEPH/HEPH + PAH	6 Silica gel cleanup	7 Trillium Metals (no Na)	8 Nitrate and nitrite (total)	9 Sodium and chloride (soluble)	10 Fluoride	11 BHT (extra VOC parameter)	12 Amines scan	13 Phthalates (MA.400-COSV 1.0R)	14	15	16	17	18	19	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE
1	TP23-1-1	23	08	30			Soil					X		X	X	X	X											2	
2	TP23A	↓	↓	↓								X		X	X	X	X											2	
3	TP23-2-1											X		X														1	
4	TP23-2-2														X	X	X											2	
5	TP23-3-1													X														1	
6	TP23-3-2											X		X	X	X	X	X	X	X								7	
7	TP23-4-1										X	X		X	X	X	X											4	
8	TP23-B										X																	3	
9	TP23-4-2																											3	X
10	TP23-5-1																											1	X
11	TP23-5-2										X	X		X	X	X	X											4	
12	TP23-6-1	↓	↓	↓								X		X	-	-												1	

Regular Turnaround Time (TAT)
☑ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply
☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

Comments

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C				Temperature reading by:
Seal present		✓		4	8	7	
Seal intact		✓		1	2	3	
Cooling media present	✓						

LAB USE ONLY	Yes	No	°C			
Seal present						
Seal intact						
Cooling media present				1	2	3

LAB USE ONLY	Yes	No	°C			
Seal present						
Seal intact						
Cooling media present				1	2	3

Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special Instructions
1 Paul Antonelli	23	08	31	15	30							
2						2	2023	09	01	09	40	

08525549

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Tel: (604) 734-7276 Toll Free: (800) 665-8566

CHAIN OF CUSTODY RECORD

ENV COC - 00015v3

Page _____ of _____

CONTINUED

[PAGE 1 REFERENCE]

Company:	Trillium Environmental Ltd.
Contact Name:	Stefan Quaglia
Project #:	154-002-02

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 BTEXS/VPH/VOC	5 LEPH/HEPH + PAH	6 Silica gel cleanup	7 Trillium Metals (no Na)	8 Nitrate and nitrite (total)	9 Sodium and chloride (soluble)	10 Fluoride	11 BHT (extra VOC parameter)	12 Solvent VOC	13 Sodium & chloride (SPE)	14 Diesel VOC	15	16	17	18	19	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Same as above / Comments
13	TP23-6-2	23	08	30			SOIL				X	X		X	X	X	X										4		
14	TP23-7-1	↓	↓	↓			↓					X		X	X	X	X											2		
15	TP23-7-2																											2	X	
16	TP23-8-1													X														2		
17	TP23-8-2											X		X	X	X	X											2		
18	SS23-1											X		X	X	X	X											2		
19	SS23-2-1														X	X	X											2		
20	SS23-2-2																											2	X	
21	SS23-3	↓	↓	↓			↓					X		X	X	X	X											2		
22																														
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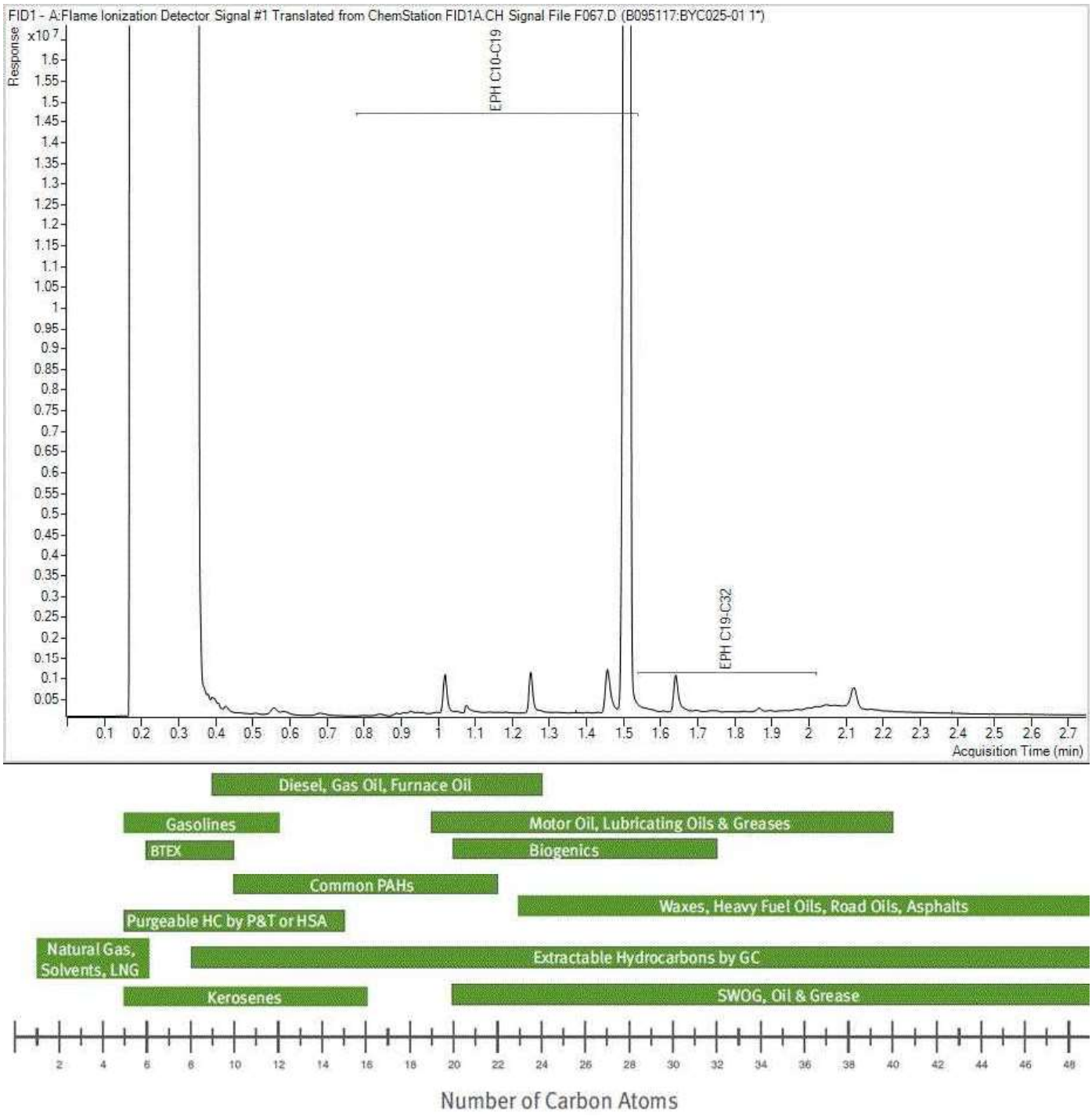
C368822_COC

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC025

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: TP23-1-1

EPH in Soil by GC/FID Chromatogram

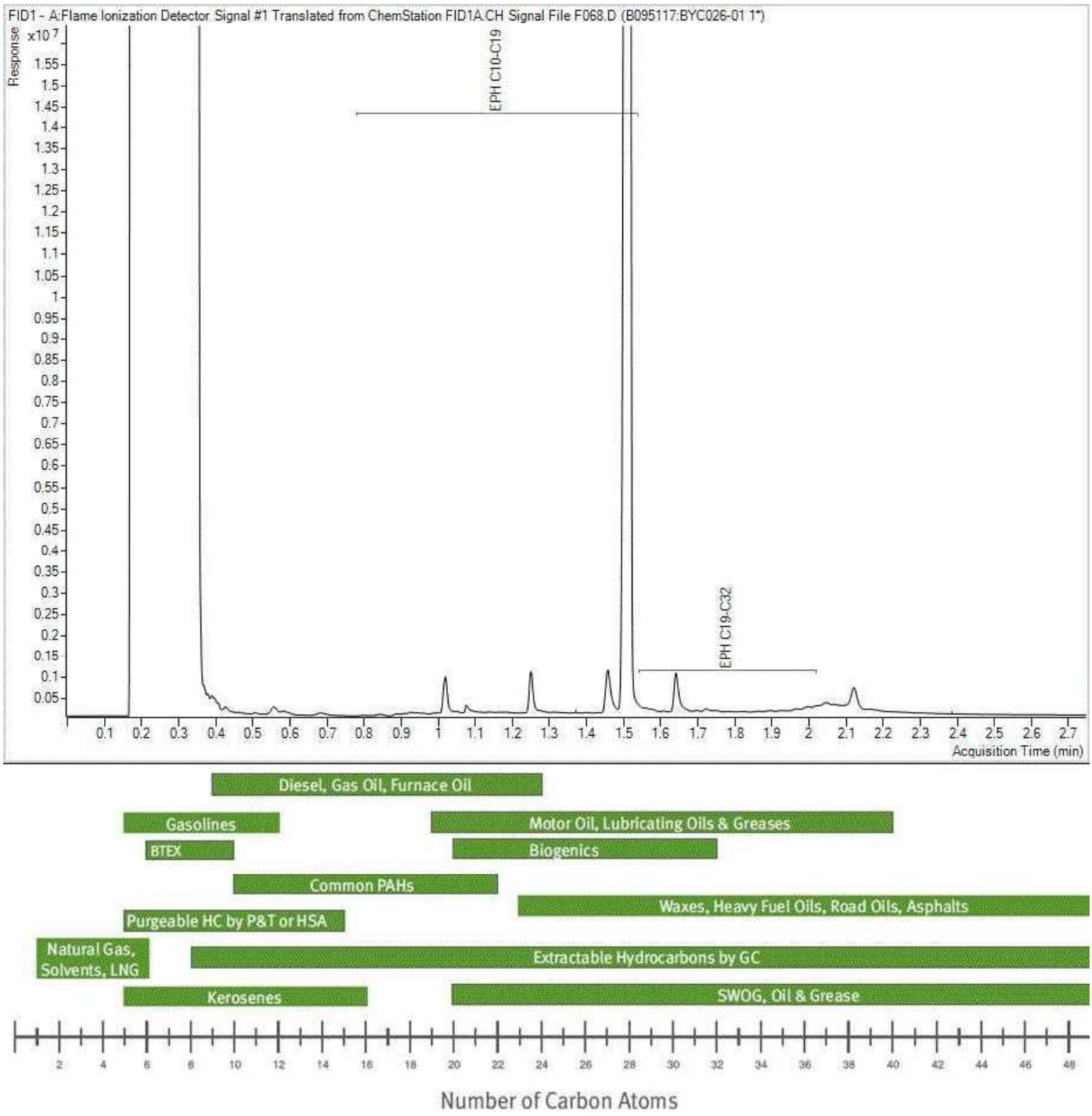


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC026

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: TP23A

EPH in Soil by GC/FID Chromatogram

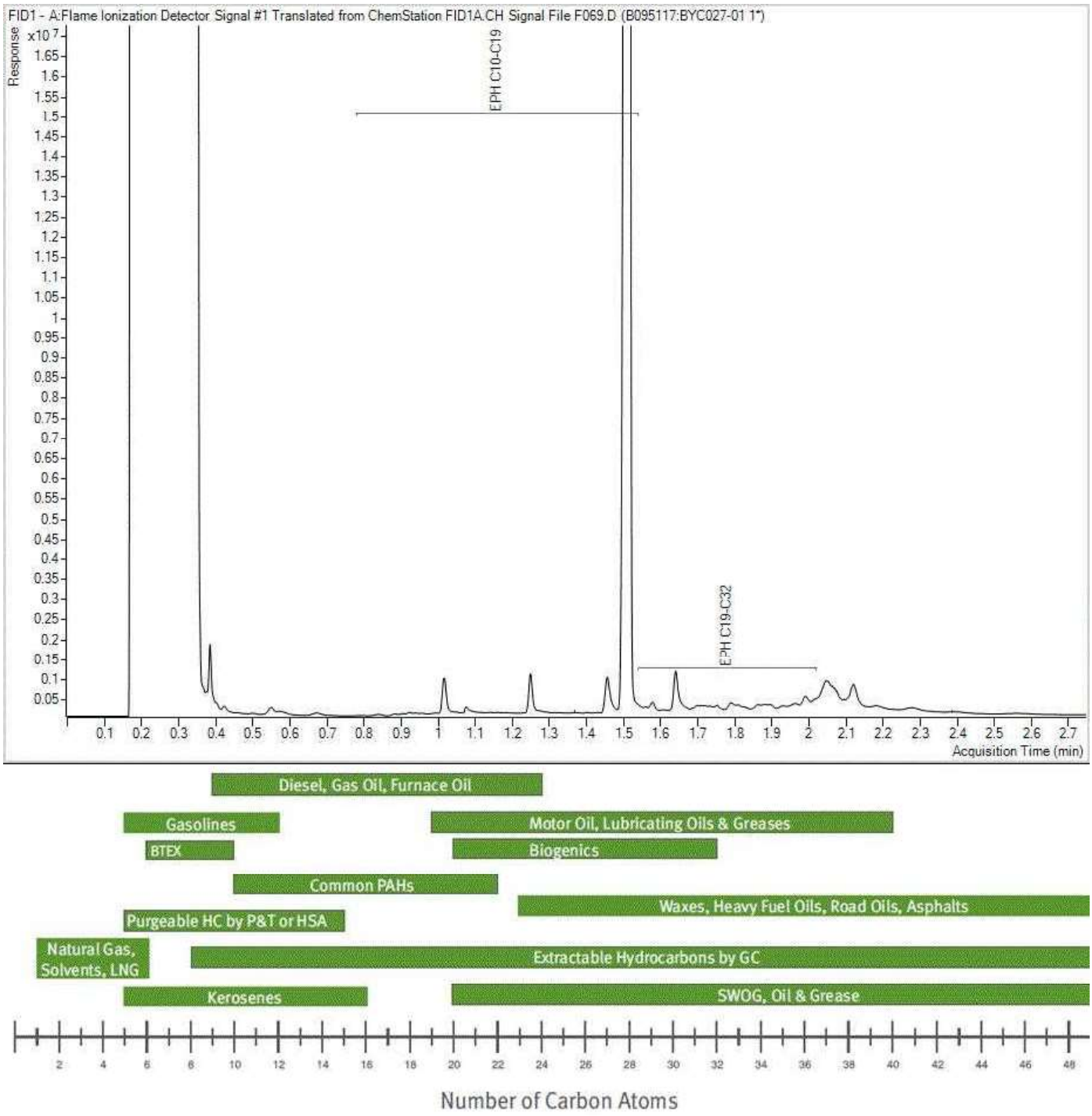


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC027

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: TP23-2-1

EPH in Soil by GC/FID Chromatogram

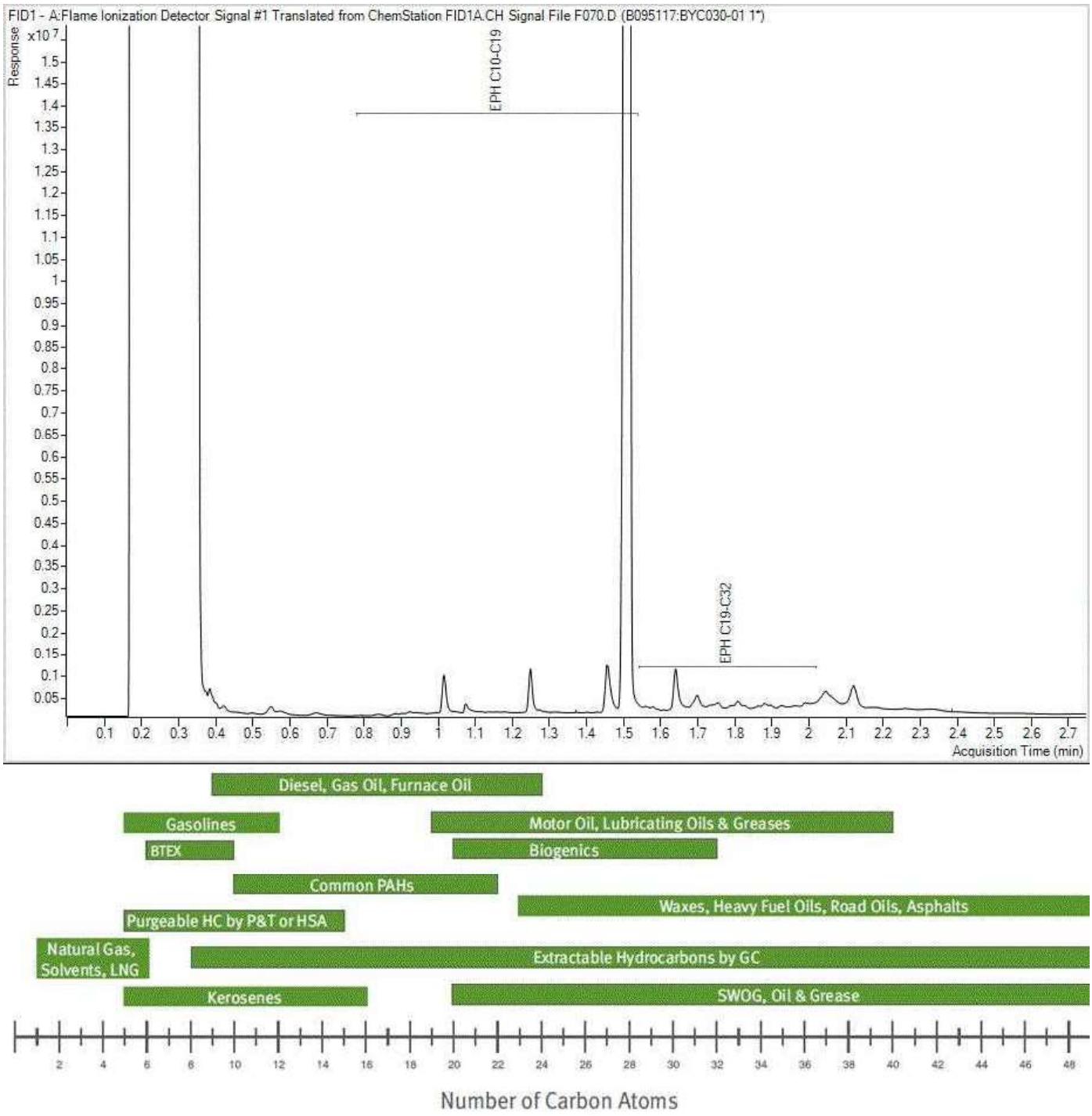


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC030

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: TP23-3-2

EPH in Soil by GC/FID Chromatogram

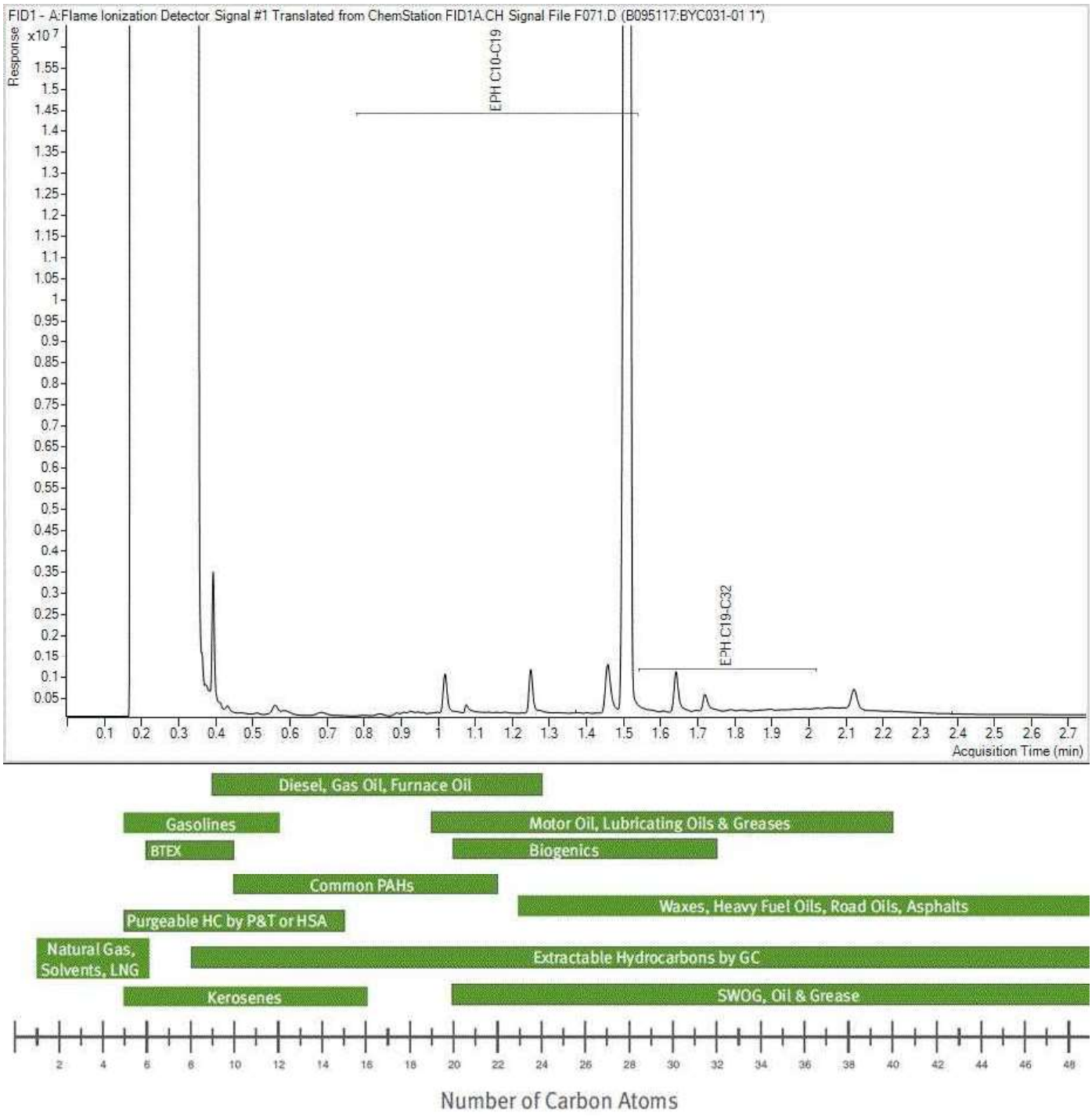


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC031

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: TP23-4-1

EPH in Soil by GC/FID Chromatogram

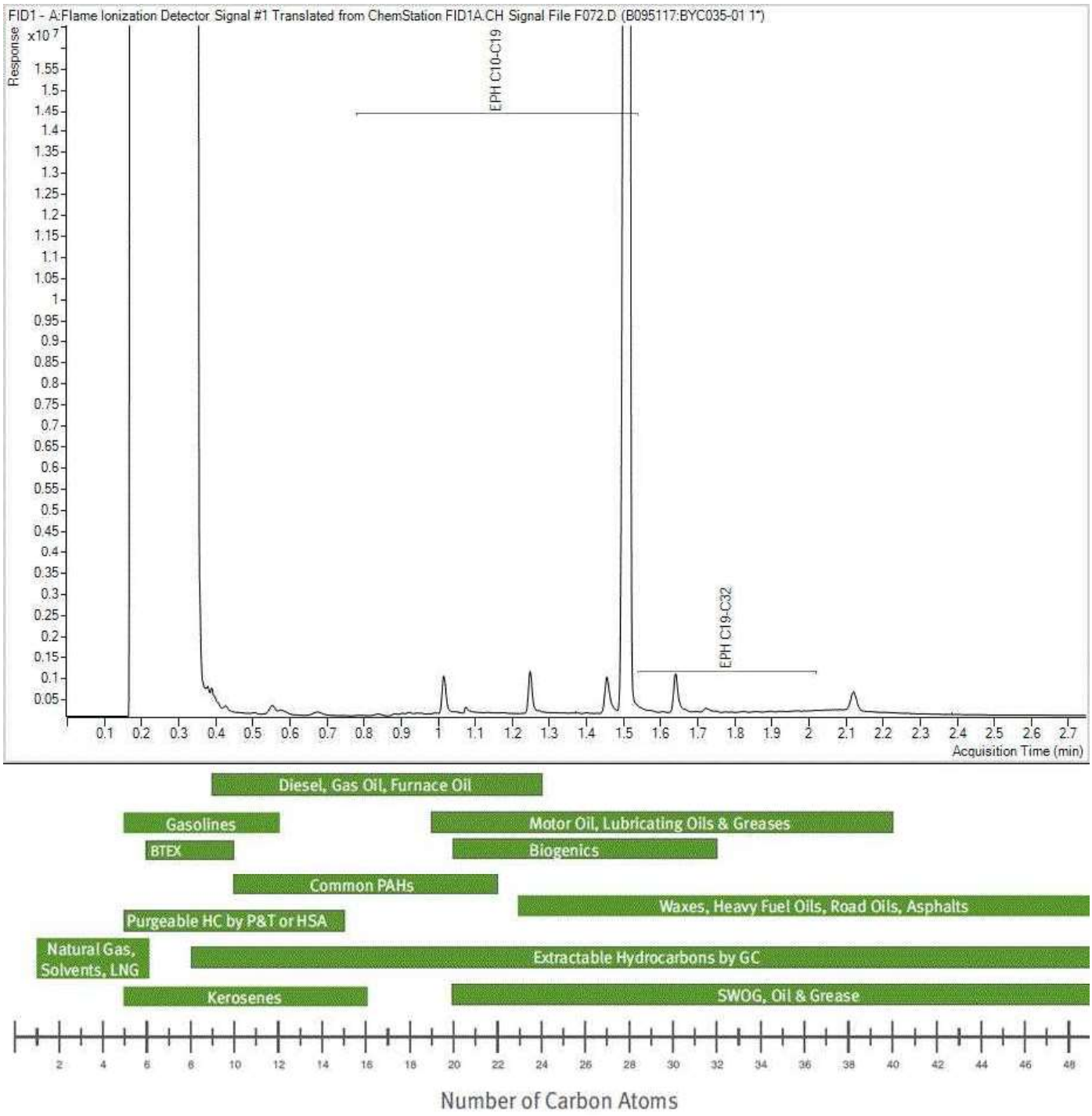


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC035

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: TP23-5-2

EPH in Soil by GC/FID Chromatogram

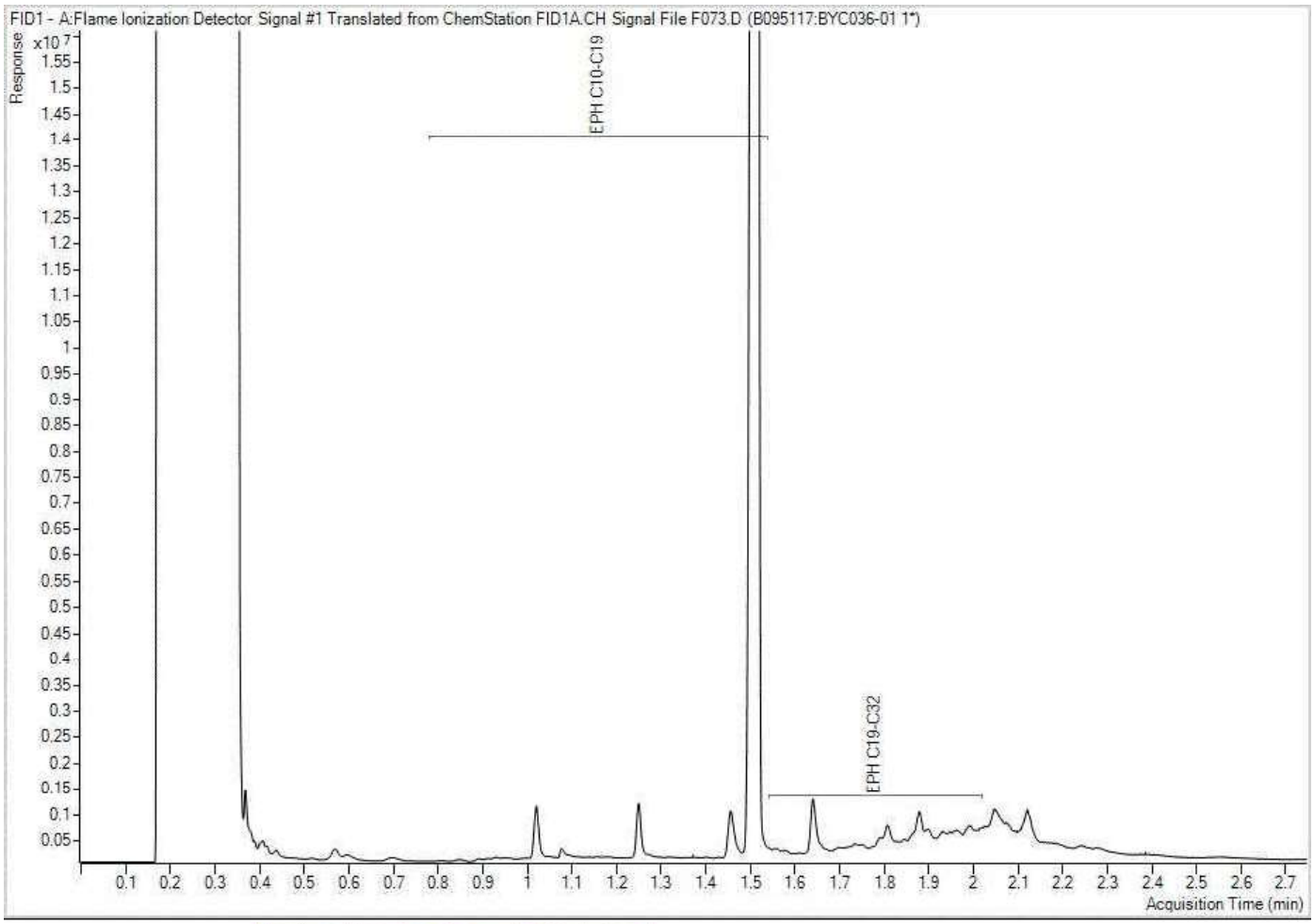


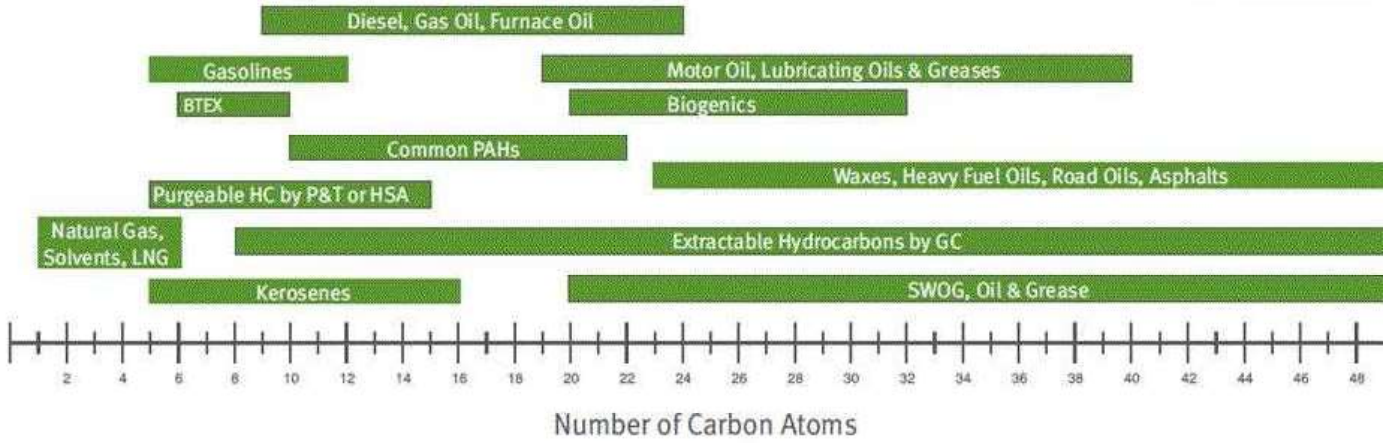
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC036

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: TP23-6-1

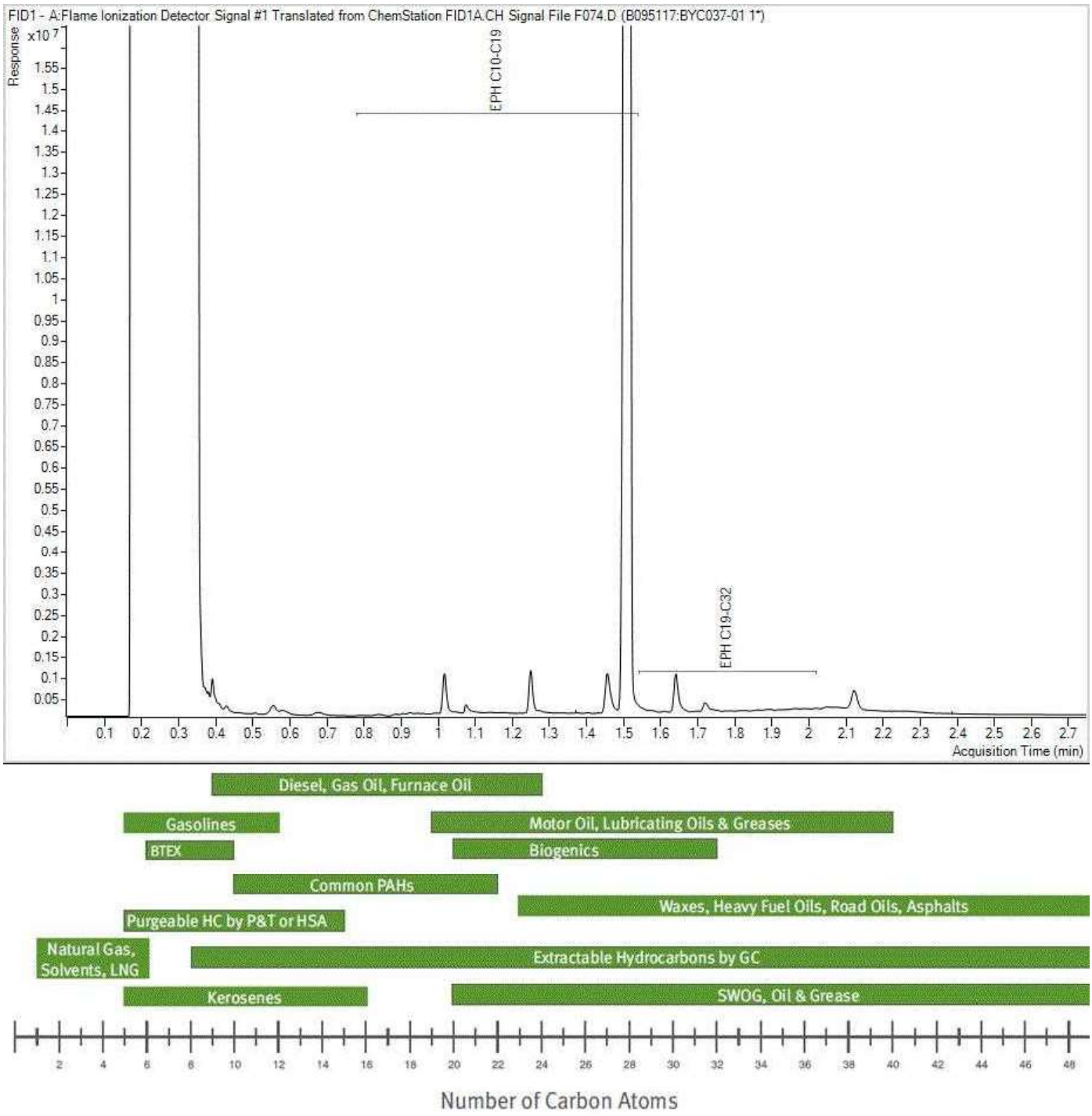
EPH in Soil by GC/FID Chromatogram





Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram

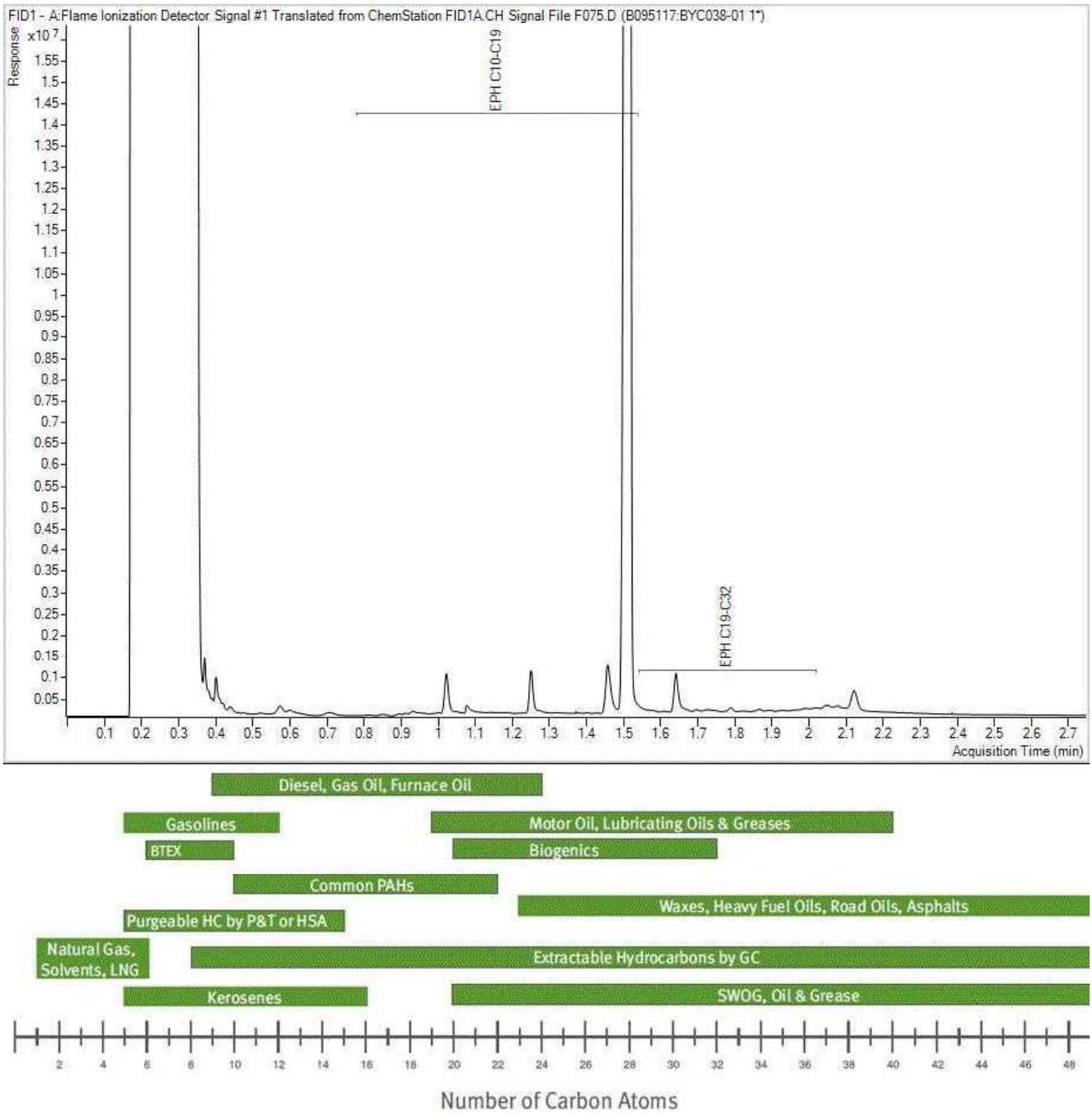


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC038

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: TP23-7-1

EPH in Soil by GC/FID Chromatogram

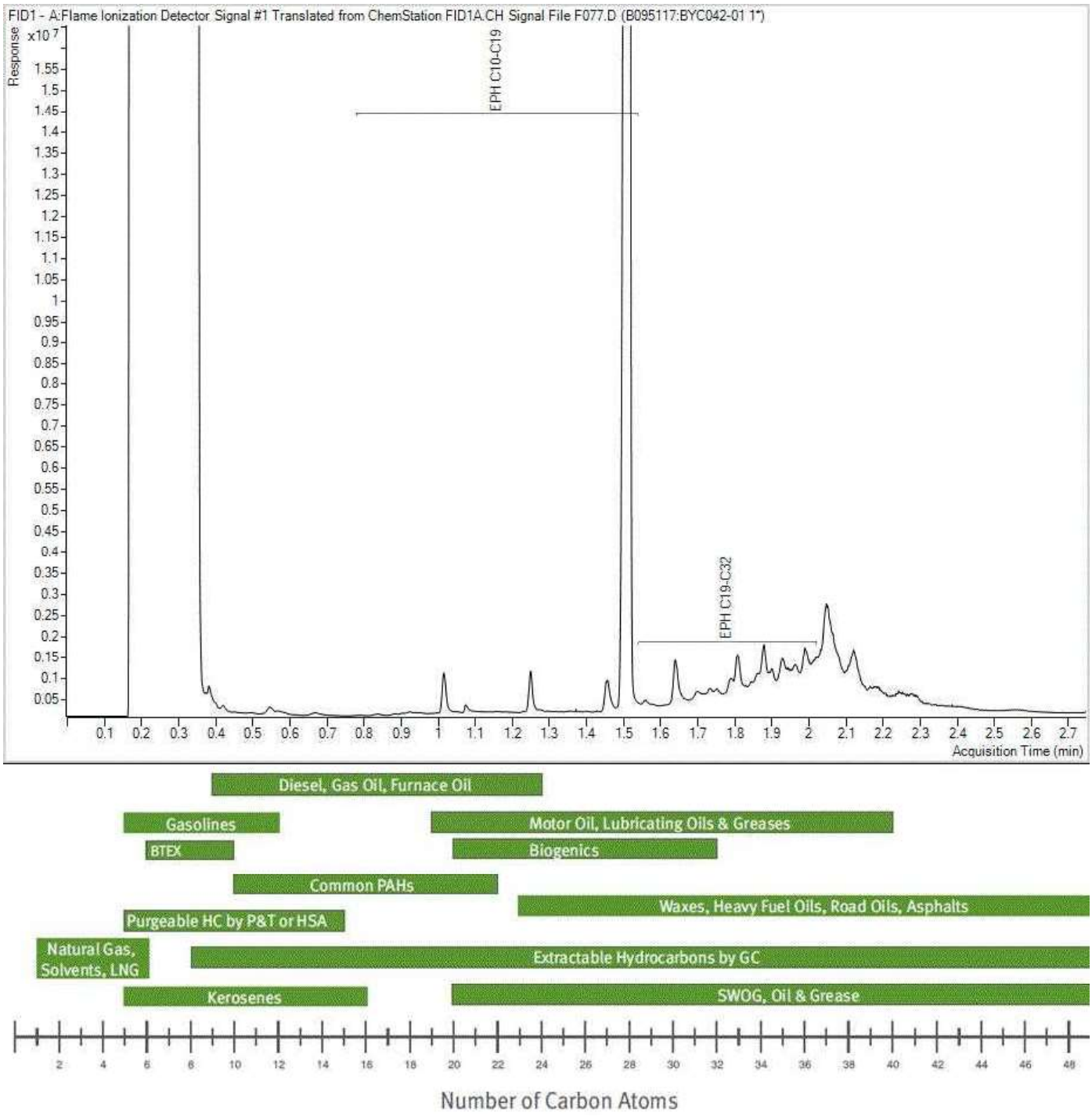


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC042

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: SS23-1

EPH in Soil by GC/FID Chromatogram

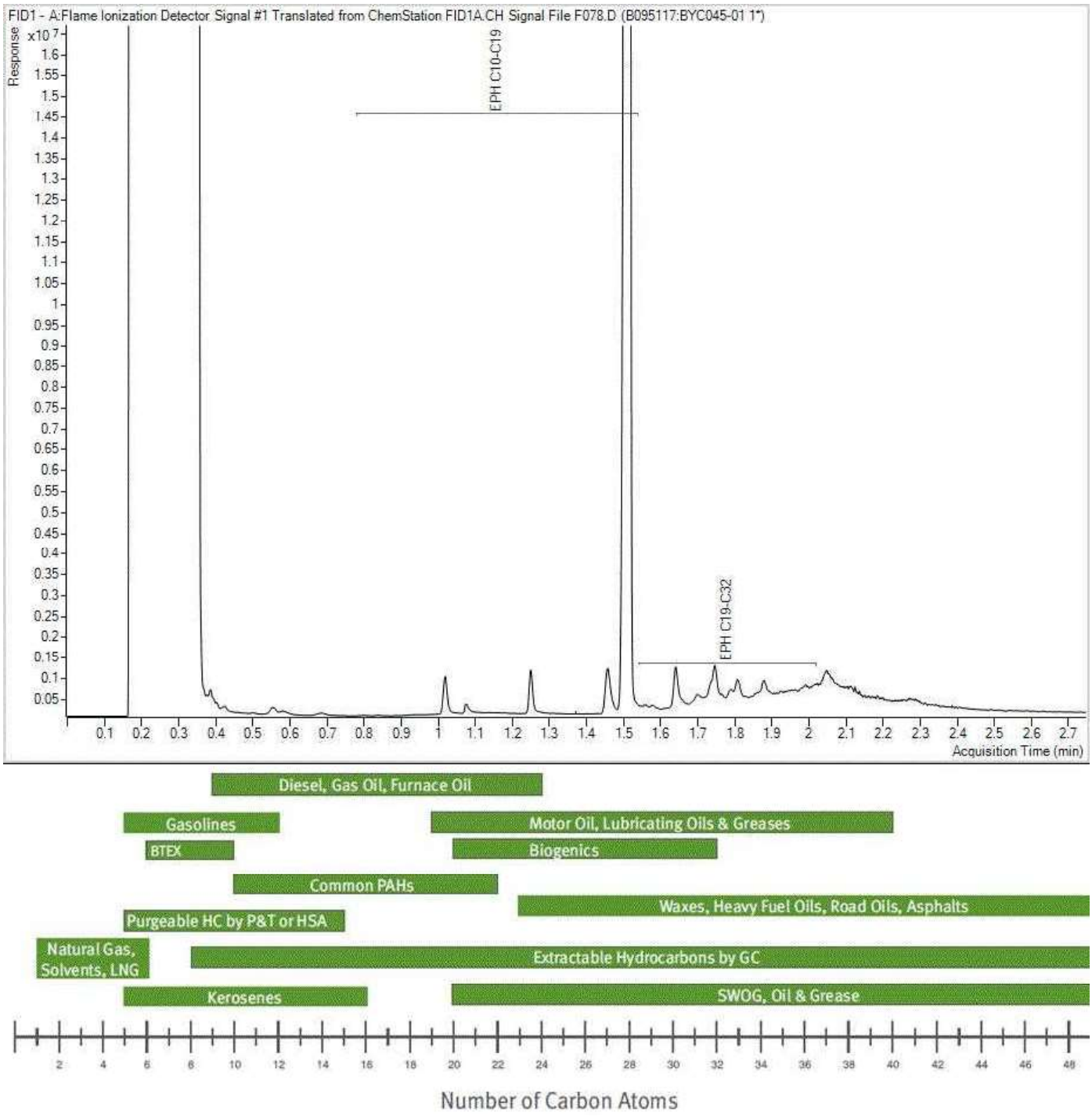


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C368822
Report Date: 2023/09/26
Bureau Veritas Sample: BYC045

Trillium Environmental
Client Project #: 154-002-02
Site Reference: DUSTY ROAD, BC
Client ID: SS23-3

EPH in Soil by GC/FID Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CIT Alert - Invoice over $10000 Sent false	**Is this a Client # Change?**	**Original Invoice Paid?**	**Client Communication**
		Credit Reason	**Credit Reason Code**
	3rd Party Approval Obtained?	**Reason for no 3rd Party Approval**	**Original Invoice Amt**
			Internal/External
Credit Full/Partial	**Corrective Action**	**Action for Credit**	**Action for Rebill**
Offset Required ?	**Credit #**	**Credit Amount**	**Rebill Invoice #**
Rebill Amount	**Credit Approver**	**Credit Status**	**Original Invoice #**
LIMS Client ID	**FlexID**	**Fault**	**Invoice Approval Breakdown**
Admin Fee	**Reason for no Admin Fee**	**Est Difference in Price**	**Credit Summary**
CheckPoint-Company Added Yes	**Department for Fault**	**Fault Reason**	**Fault Reason Other**
	Cloned Ticket Check false	**Praise Escalation Sent** false	

by **Paul Antonelli** on **Tue, 12 Sep at 5:12 PM** via **Email**

Automatic reply: Partial Report-Prj: 154-002-02 Site: DUSTY ROAD, BC ATT: Paul Antonelli Job#: C368822,

Be careful with this message: it is coming from an external sender
Do not open attachments nor click on links, unless you are sure that the content is safe

Thank you for your email. I am in the field returning Thursday, September 14. I will be checking emails intermittently but if this is an urgent matter please call my cell at (250) 574-1983 or contact Stefan Quaglia at (250) 466-9990 or squaglia@trilliumenviro.ca.

This message contains confidential information. To know more, please click on the following link: https://disclaimer.bureauveritas.com

Comments

by **Stefan Quaglia** on **Tue, 12 Sep at 5:57 PM** as **Incoming email**

Be careful with this message: it is coming from an external sender
Do not open attachments nor click on links, unless you are sure that the content is safe

Thank you for these results.

Can the report be revised so that it also shows the soil results for Nitrate (as N) and Nitrite (as N) in units of mg/kg, please?
This is so we can compare to the CSR soil standards.

Much appreciated,
Stefan

---

trillium

Stefan Quaglia, R.P.Bio., CSAP

Senior Risk Assessor

Trillium Environmental Ltd.

126 Ingram Street, Suite 203

Duncan, BC V9L 1P1

m: (250) 466-9990

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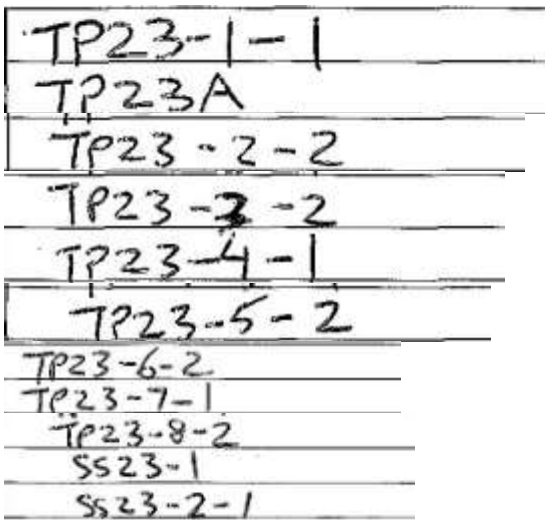
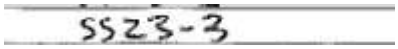
---

by **Augustina Isesele** on **Wed, 13 Sep at 10:28 AM** as **Private note**
Add NO23MGKG-S, NO2MGKG-S, NO3MGKG-S

TAT - 1 day TAT

Samples:





by **Augustina Isesele** on **Wed, 13 Sep at 10:31 AM** as **Outbound email**

Hi Paul,

We will have Nitrate and Nitrite reported in mg/kg and a revised report will be sent your way as soon as the lab is done.

Thank you,

Augustina Isesele, B.Sc
Customer Solutions Representative – Western Canada
Environmental Laboratories & Specialty Services
Bureau Veritas

Phone: 403-970-9057
customersolutionswest@bureauveritas.com
www.bvna.com
Shaping a World of Trust
Emergency/Spills 365/7/24: 1 844 BVSPILL, spills@bureauveritas.com
For urgent after-hours inquiries: 1-833-286-6358

CERTIFICATE OF ANALYSIS

Work Order	: **VA23C0755**	Page	: 1 of 3
Client	: **Cash Clients Canada**	Laboratory	: ALS Environmental - Vancouver
Contact	: Paul Antonelli	Account Manager	: Email: ALSEV.CC@alsglobal.com
Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: 604-253-4188
Project	: 154-002-02	Date Samples Received	: 01-Sep-2023 10:50
PO	: ----	Date Analysis Commenced	: 07-Sep-2023
C-O-C number	: 22-14200103a	Issue Date	: 25-Sep-2023 11:36
Sampler	: p Antonelli		
Site	: Dusty Road		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Niral Patel		Centralized Prep, Waterloo, Ontario
Sanja Risticevic	Department Manager - LCMS	LCMS, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
µg/g	micrograms per gram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	TP23-3-2	----	----	----	----
					Client sampling date / time	30-Aug-2023 00:00	----	----	----	----
						VA23C0755-001	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
Moisture	----	E144/WT	0.25	%		5.07	----	----	----	----
Nonylphenols										
Bisphenol A	80-05-7	E749A/WT	0.050	µg/g		<0.050	----	----	----	----
Nonylphenol diethoxylates [NP2EO]	n/a	E749B/WT	0.062	µg/g		<0.062	----	----	----	----
Nonylphenol ethoxylates, total	n/a	E749B/WT	0.50	µg/g		<0.50	----	----	----	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B/WT	0.50	µg/g		<0.50	----	----	----	----
Nonylphenols [NP]	84852-15-3	E749A/WT	0.25	µg/g		<0.25	----	----	----	----
Octylphenol [OP]	140-66-9	E749A/WT	0.25	µg/g		<0.25	----	----	----	----
Octylphenol diethoxylates [OP2EO]	n/a	E749B/WT	0.025	µg/g		<0.025	----	----	----	----
Octylphenol ethoxylates, total	n/a	E749B/WT	0.50	µg/g		<0.50	----	----	----	----
Octylphenol monoethoxylates [OP1EO]	n/a	E749B/WT	0.50	µg/g		<0.50	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 - 14200103a

Page 1 of 1

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division
Vancouver
Work Order Reference
VA23C0755

Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report
Company:	Trillium Environmental Ltd.
Contact:	Paul Antonelli
Phone:	(250) 574-1983
	Company address below will appear on the final report
Street:	203 - 126 Ingram Street
City/Province:	Duncan, BC
Postal Code:	V9L 1P1
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Trillium Environmental Ltd.
Contact:	Stefan Quaglia

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☑ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	pantonelli@trilliumenviro.com
Email 2	squaglia@trilliumenviro.com
Email 3	
Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accounting@trilliumenviro.com
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minim
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minir
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minir
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minir
☐ Same day [E2] if received by 10am M-S - 200% rush surcharg
Additional fees may apply to rush requests on weekend
Date and Time Required for all E&P TATs:
For all tests with rush TATs requested, please co

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	154-002-02	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:	Dusty Road	Location:	

ALS Lab Work Order # (ALS use only):	ALS Contact: J. Jatana	Sampler: P. Antonelli

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	NP / NPE in soil (Code #S749A)	BPA	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	TP23-3-2	30-Aug-23		SOIL		X	X			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO

Are samples for human consumption/ use?
☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please ensure BPA analysis is included in the requested analytical pakage

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
					12		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Paul Antonelli	Date: Aug 31/2023	Time: 1530	Received by:	Date:	Time:	Received by: JC	Date: 1 Sep 23	Time: 1050hr

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

APPENDIX C
Hazardous Building Materials Assessment, Joma Environmental

Hazardous Materials Assessment Report

Dusty Road Wastewater Treatment Plant

4901 Dusty Rd,

Sechelt BC

Prepared For:

Sperling Hansen Associates

Sample and Report Prepared By:

John Starchuk, PChem, AHERA
Environmental Chemist

Project Number: 23-717
May 16, 2023

1. Executive Summary

JOMA Environmental Ltd (JOMA) was commissioned by Sperling Hansen Associates (the Client) to carry out a Hazardous Materials Assessment (HMA) for 4901 Dusty Road, Sechelt, BC (the Site) constructed in 1994, as well as additional developments performed in 2000. This HMA was conducted to determine what, if any, hazardous building materials are present within the structure for the purpose of **Liability Assessment for Deconstruction**. Non-Invasive sampling was used during this HMA to obtain the sample materials. Sampling of building materials occurred on **April 26, 2023.**

Ten (10) bulk samples of building materials typically suspected to contain asbestos and/or lead-paint were collected from the building. Five (5) bulk samples were analyzed for asbestos fibres; Zero (0) samples were found to contain asbestos fibers.

Five (5) of the bulk samples collected were analyzed to determine Total Lead content. Three (3) **samples found to exceed the threshold limit of 100 mg/kg,** requiring paint removal or further analysis by Toxicity Characteristic Leaching Procedure (TCLP) for disposal considerations.

- S-02 - Septage Receiving Area - Yellow Barrier Pole - Yellow Paint - 61,500 mg/kg
- S-05 - Lift Station - Crane Arm - Red Paint - 2,560 mg/kg
- S-10 - Contact Chamber - Motor - Dark Blue Paint - 112 mg/kg

Contractors performing abatement and demolition work on the structure must have an appropriate worker exposure control plan in place prior to any construction activities commencing.

Table 1: Hazardous Material Assessment Observations and Results

Hazardous Material	Type
Asbestos (confirmed)	No asbestos containing materials identified
Lead (confirmed)	• S-02 - Septage Receiving Area - Yellow Barrier Pole - Yellow Paint - 61,500 mg/kg • S-05 - Lift Station - Crane Arm - Red Paint - 2,560 mg/kg • S-10 - Contact Chamber - Motor - Dark Blue Paint - 112 mg/kg
Silica	Assumed to be present in plaster, stucco, grout, ceramic tile, and concrete
Mercury	Fluorescent Light Bulbs
Hanta-Virus - Rodent Feces	None Observed
Arsenic	None observed
Radioactive Materials	None observed
Mould	None observed
Polychlorinated Biphenyls (PCB)	None observed

Ozone Depleting Substances (ODS)	Household AC unit
Urea Formaldehyde Foam Insulation (UFFI)	None observed
Fuel/Oil Storage Tanks	None observed
Cleaners/Chemicals	Industrial holding tanks, household cleaners, paint, oil

This executive summary is intended to be read in conjunction with the body of the report. As such, it is subject to the same limitations as the remainder of the report.

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1. INTRODUCTION

JOMA was commissioned by the Client to perform an investigation for hazardous building materials in the services building, as well as other areas of the wastewater treatment vessels at the Site. This HMA was conducted to determine the **Liability Assessment for Deconstruction**. Invasive sampling was used during this HMA to obtain the sample materials. Sampling of building materials occurred on **April 26, 2023.**

The site was originally constructed in 1994, with an addition to the services building and new septage screening and holding vessel construction taking place in 2000. The intention of this HMA is for performing deconstruction of the services building and treatment vessels for facility upgrading. Asbestos in buildings materials was discontinued in 1990 and Lead-in-residential construction paint was discontinued in 1978. ACM or lead-in-paint was not expected to be found within the Services building.

This HMA was conducted in accordance with WorksafeBC regulatory requirements for Safe Work Practices for Handling Asbestos and outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 (Hazardous Materials). The purpose of the survey was to identify hazardous materials, such as asbestos containing materials, lead containing paints, PCBs, mercury, mould, ozone depleting substances (ODS), silica, rodent/avian feces and radioactive material prior to demolition activities occurring.

2. SCOPE OF WORK

The scope of this HMA included viewing all interior and exterior areas of the structures and septage receiving and treatment vessels. Due to the age of the facility (1994), being constructed after the 1990 date when asbestos was discontinued, no ACM was anticipated to be encountered during this investigation. Confirmation samples were taken from various areas as a confidence measure. Various painted surfaces around the facility were tested to confirm lead concentration in paint was below 90 ppm for worker safety. Employers are required to prepare an Exposure Control Plan (ECP) for all hazardous materials or environments identified in this report.

3. BUILDING DESCRIPTIONS

The Site contains the following structures:

- Services Building (Five rooms). The building was originally constructed in 1994 and consisted of the Chlorination and Electrical Rooms. An addition was added to the building in 2000 to include an Office, Washroom, and Alkalinity Solution room.
    - Exterior - The exterior walls are constructed with concrete cinder blocks sitting on a concrete pad. The roof has metal soffits and asphalt shingles (recently replaced).
    - Interior - All rooms are constructed with cinder block walls, concrete floor, and plywood ceilings.
- Septage Receiving Area

- Clarifier
- Lift Station
- Race Track (Retention vessel)
- Chlorine Contact Vessel

4. LIMITATIONS

- Materials assumed not to contain asbestos during this HMA included:
  - Wood, and wood composite material
  - Metals
  - Glazing
  - Carpet
  - Plastics in non-industrial application
  - Exterior below-grade drainage and plumbing systems
  - Electrical Wiring

5. HAZARDOUS MATERIALS

A large number of common building materials contain, or did contain at some point, hazardous substances which must be removed or mitigated to prevent exposure to workers and the general public. When undertaking renovations and demolition work, these hazardous materials have an increased probability of being released into the work environment. Hazardous materials must be removed (abated) prior to the start of deconstruction activities. This is to ensure that workers are not exposed to hazardous substances and the contamination is not spread throughout adjacent areas.

The BC Hazardous Waste Regulations (BC HWR), Transportation of Dangerous Goods (TDG), and WorkSafeBC Occupational Health and Safety (OHS) regulations dictate proper handling for the following materials:

- Asbestos
- Lead
- Hantavirus
- Mould
- Arsenic
- Silica
- Radioactive Materials
- Mercury
- Lead - Leachable over 5.0 mg/L
- Light Ballasts - Polychlorinated biphenyls
- Insulating Foam - Urea formaldehyde (UFFI)
- Refrigerant Gases
- Flammable or corrosive liquids

5.1. Asbestos

the term Asbestos refers to a fibrous variety of six naturally occurring minerals, with (Chrysotile (white) and Amosite (brown) being the most common with the following properties:

- High Electrical Resistance making it a great insulator
- High Tensile Strength Fire Resistant
- Resistant to chemical degradation

Due to the robust properties, asbestos was widely used as a very common component of building materials. Although most asbestos containing materials were being phased out of use in the early 1980s, it can still be commonly found in most buildings. It is assumed by WorkSafeBC that buildings constructed up to 1990 have a high possibility to contain asbestos.

When asbestos is kept in place it poses little to no hazards, however when it is disturbed and becomes airborne, it becomes a significant hazard to those exposed in close proximity. Exposure to asbestos can lead to significant health effects including asbestosis, lung cancer and mesothelioma.

Asbestos containing material (ACM) is defined as one **containing 0.5% or more asbestos by weight**. Vermiculite (commonly found in insulation in attics) is considered to be asbestos containing if **trace amounts of asbestos is present**. ACM is considered an ALARA substance, meaning that exposures to this material must be kept “as low as reasonably achievable”.

5.2. Lead-in-Paint

Historically, paints that were created prior to 1950 are likely to contain high concentrations of lead. Residential paints manufactured after 1978 are unlikely to contain lead. Similar to asbestos, lead becomes a hazard when the painted surfaces are disturbed (sanded, cut, or removed) and airborne dust is generated. Lead can also be found in electrical equipment as well as some plumbing connections. Exposure to lead is known to have a number of health effects which can happen through breathing in the dust, by ingesting, or by the eyes or open sores. It also affects the uptake of oxygen in the blood and can accumulate in bones.

Other than in paint, lead is used in plumbing fixtures, flashings, solders and other plumbing lines, as well as on electrical equipment.

Lead is considered an ALARA substance, and OHS regulations dictated that employers must have an exposure control plan when workers may be exposed to airborne concentrations of lead greater than 90 ppm. Concentrations of lead in paint exceeding the threshold limit of 100 mg/kg triggers a requirement for analysis by Toxicity Characteristic Leaching Procedure (TCLP); this requirement is dependent on the planned disposal methodology (i.e. disposal or recycling facility permit requirements).

5.3. Silica

Crystalline silica is known to have a number of health effects. Workers must use caution to avoid creating airborne silica dust when working with material that contains silica (grouts, ceramic tiles, stucco, drywall fillers, concrete & foundations etc.). WorksafeBC has created approved procedures in order to mitigate dust levels. Crystalline silica is considered an ALARA substance requiring that worker exposures to this material must be kept minimal.

5.4. Hantavirus

Rodent droppings (excrement) bring the risk of workers contracting Hantavirus Pulmonary Syndrome when exposed. WorkSafeBC states that employers are required to develop and implement an exposure control plan when workers may be exposed to rodent or bird droppings. The handling of biological substances must comply with Section 6 of the BC OHS Regulations – Biohazards, which involves development of an ECP to mitigate or eliminate worker exposure.

5.5. Mercury

Mercury is an element found in air, water, and soil. The three forms of mercury are referred to as element, inorganic, and organic. Elemental mercury is liquid at room temperatures and found in thermometers, dental amalgams, fluorescent light bulbs, and electrical switches (thermostats)

Mercury is considered an ALARA substance and exposure control plans must minimize when workers may be exposed to airborne concentrations of mercury. Mercury waste requires appropriate packaging and disposal as dictated in the TDG and BC HWR requirements.

5.6. Arsenic

Common places to find arsenic are in pressure treated wood prior and pesticides prior to 2004. Exposures can occur when arsenic containing materials are disturbed and dust becomes airborne. Sawdust from cutting pressure treated wood or burning these materials can result in significant airborne arsenic concentrations. Workers must use the appropriate PPE when cutting pressure treated wood. Disposal of arsenic waste must be in accordance with current BC HWR.

5.7. Radioactive Material

In the home and workplace, low-dosage radioactive materials (Americium-241 are commonly found in smoke detectors. Due to this, the smoke detector casing should remain intact and not be disposed of as general debris to prevent accidental exposure to the environment. Waste smoke detectors are managed in accordance with Canadian Nuclear Safety Commission requirements. Many landfills will take them for disposal as part of the Special Waste Recycling by Product Care.

5.8. Mould

Mould is very common in homes and buildings due to water leaks from both rain and service piping. Mould will develop in areas with significant moisture buildup, such as roofs, windows, and where pipes have broken or leaked. Evidence of mould buildup is evident by black spores, and grows well on paper, cardboard, insulation, drywall, carpet, fabric, and ceiling tiles. The most common indoor molds are *Cladosporium*, *Penicillium*, and *Aspergillus*. Workers exposed to these spores can develop allergic responses, both short and long-term.

OHS dictates safe-handling guidelines when working around water damage or mould contamination. These guidelines are located in the Indoor Air Quality regulation guidelines.

5.9. Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) were manufactured into insulating oil from 1929, until they were banned in 1979. PCBs belong to a broad family of man-made organic chemicals referred to as chlorinated hydrocarbons. In the home and workplace, the most common source can be found in some fluorescent light ballasts produced prior to the cut-off. PCBs are considered a hazardous waste, and require proper handling and disposal with BC HWR. Fluorescent light fixtures removed during demolition, construction or maintenance activities must be inspected for the presence of PCBs prior to recycling as general electronics.

5.10. Ozone Depleting Substances

Ozone depleting substances (ODS) contain chlorine, fluorine, bromine, carbon, and hydrogen atoms and are generally referred to as halocarbons. ODS are used in refrigeration, air conditioning, foam blowing, fire extinguishers, solvents, and electronics cleaning. These compounds effectively deplete the ozone layer since they do not readily break-down in the atmosphere and contain a chlorine or bromine element which aid in natural reactions that break down the ozone layer. Environmental regulations restrict the release of these compounds into the environment and they must be disposed of at a licensed facility.

5.11. Urea Formaldehyde Foam Insulation (UFFI)

Urea formaldehyde foam insulation (UFFI) was banned in 1978, but residential structures built prior to that used it as a retrofit insulation; the expanding foam would be sprayed into wall and ceiling cavities to provide additional insulation. Over time, in the presence of moisture, the insulation can break down and release formaldehyde gas and off-gas into the home.

5.12. Fuel Storage Tanks

Storage tanks containing fuels have the ability to leak over time and can result in soil and groundwater contamination. These tanks must be observed and checked over time to ensure they do not leak. Evidence of leaks must be investigated, and any potential contamination

remediated. The Canadian Council of Ministers of the Environmental (CCME) publishes a Code of Practice for the safe management of aboveground and underground storage tanks.

6. METHODOLOGY

An initial walk-through was conducted throughout the site and structure. Observations were made of the walls, ceilings, floors and other materials to make a preliminary determination if asbestos could be present. As per both Asbestos Hazard Emergency Response Act (AHERA) and WorksafeBC regulations, requirements for sample numbers were determined and calculated based upon the building walk-through and identified areas with homogenous building materials. Drywall throughout a floor of the house can be determined to be homogeneous if the material is considered uniform in texture and appearance and looks like it was installed at the same time. The judgement of a qualified professional can be used to reduce the number of bulk samples of homogenous materials.

To confirm or refute the presence of asbestos, representative bulk samples were collected. The sample locations were identified with a unique sample number recorded at the time of sampling. Bulk samples were submitted to **Bureau Veritas Laboratories** for fiber analysis in accordance with NIOSH 9002 and for total lead analysis of painted surfaces. The asbestos analysis was completed using a stop positive approach when appropriate for site conditions. Stop positive means samples in a homogenous material sample set were analyzed consecutively and when a sample was identified as asbestos-containing, further sample analysis within the sample set was not completed.

Samples containing >0.5% asbestos are identified as being asbestos containing. Vermiculite insulation is identified as being asbestos containing if any trace was to be found.

Paint Bulk Sampling Procedure

During the assessment a visual review of the painted surfaces was conducted for paints both exterior and interior. Collected representative bulk samples from various painted surfaces in the building. The number of representative bulk samples collected was consistent with recognized industry standards and procedures. Paint samples were analyzed using an Atomic Absorption Spectrophotometer.

7. FINDINGS

The following tables identify the locations of identified hazardous materials located during the investigation. **Figures 1-2** are available in Appendix B highlighting approximate locations of samples and exceedances.

7.1. Asbestos

The following two tables summarize the results of asbestos analysis by building.

Table 2: Asbestos Containing Materials

Sample #	Location	Material	Asbestos Type (%)
S-01	Services Building - New Addition - East Wall	Concrete Block Grout	ND
S-06	Services Building - Original Structure - NW Wall	Concrete Block Grout	ND
S-07	Original Screener - Foundation Wall	Concrete	ND
S-08	Race Track - North Foundation	Concrete	ND
S-09	Chlorine Contact Chamber - North Foundation Wall	Concrete	ND

Note: ND indicates that asbestos containing materials were not detected

7.2. Lead in Paint

The following tables summarize the locations under analysis for lead in paint.

Table 3: Lead-in-Paint (Total Lead)

Sample #	Location	Material and Colour	Condition	Lead Content (mg/kg)
S-02	Septage Receiving Area - Yellow Barrier Pole	Yellow Paint	Fair	**61,500**
S-03	Clarifier - Walk Way	Light Blue Paint	Good	81.2
S-04	Original Screener - Metal Container	Yellow Paint	Flaking	18.9
S-05	Lift Station - Crane Arm	Red Paint	Flaking	**2,560**
S-10	Contact Chamber - Motor	Dark Blue Paint	Flaking	**112**

Note: Total lead concentrations above 100 ppm are **bold and underlined**

7.3. Other Hazardous Materials

Other hazardous materials assessed in the HMA are summarized in the table below:

Table 4: Other Hazardous Materials

Material	Type	Location
Silica	Walls, ceilings, floor, foundations	Assumed to be present in plaster, stucco, grout, ceramic tile, and concrete
Mercury	Fluorescent Light Ballasts	All rooms in the services building
Hanta-Virus	Rodent feces	None observed within the services building.
Arsenic	Treated wood	None observed
Radioactive Materials	Smoke detectors	None observed

Material	Type	Location
Mould	Water damage, black spores	None observed
Polychlorinated Biphenyls (PCB)	Fluorescent Light Ballasts	None observed
Ozone Depleting Substances (ODS)	Air conditioning units, commercial coolers, freezers, or residential refrigerators	None observed
Urea Formaldehyde Foam Insulation (UFFI)	Insulating foam	None observed
Fuel/Oil Storage Tanks	Home heating oil tank	None observed
Corrosive, Oxidizers	Chemical holding/feeding tanks	Chlorination room, Alkalinity room
Corrosive liquids, paint, Oil	Small jugs	Electrical room

8. Discussion

WorksafeBC Regulations require that all hazardous materials be removed prior to renovation or demolition or protected from damage prior to any sort of construction work. Removal or disturbance of hazardous materials must be undertaken by a qualified contractor employing WorksafeBC approved procedures for worker exposure.

Work must STOP if previously unidentified suspected hazardous materials are encountered, damaged or disturbed during renovation/demolition activities. These suspect materials must be left undisturbed until a qualified person has determined the status of the material.

All materials in the work area that are visually similar to those identified as hazardous materials in this report must be considered hazardous and addressed accordingly.

The following hazardous materials were reviewed for presence / absence within the building envelope:

8.1 Asbestos

All ACM with the potential to be impacted by the work must be removed, or protected, prior to the commencement of construction and/or demolition work. Any removal (abatement), or if ACM are encountered during construction or demolition, work must be compliant with applicable WorkSafeBC and BC Occupational Health and Safety Regulations for the Safe Practices for Handling Asbestos and be completed by a qualified professional.

8.2 Lead

Demolition work is recommended to follow an exposure plan that will contain any paint dust and be consistent with WorkSafeBC compliance regulations. Any wastes collected, tested, which is

deemed hazardous must be disposed of at a licensed disposal facility. The threshold limit of 100 mg/kg is a trigger requiring analysis by TCLP. The leachability will determine the appropriate disposal required.

8.3 Silica (crystalline)

Workers should use caution to avoid creating airborne silica dust while removing grout, drywall, concrete, and stucco. Use wetting techniques and/or HEPA equipped extraction systems attached to drills and other power equipment where possible in order to decrease dust levels.

8.4 Hantavirus

No rodent droppings observed within any rooms of the Services Building.

8.5 Mercury

Fluorescent light bulbs were observed in all rooms in the Services Building (14 fixtures, 28 bulbs).

8.6 Arsenic

None observed.

8.7 Radioactive Material

None observed.

8.8 Mould

None observed.

8.9 Polychlorinated Biphenyls

None observed.

8.10 Ozone Depleting Substances

Air conditioning unit in office room.

8.11 Urea Formaldehyde Foam Insulation (UFFI)

None observed.

8.12 Fuel Storage Tanks

None observed.

8.13 Other Materials

If any of the hazardous materials described in Section 2 are encountered and not referred to in these recommendations, refer to the corresponding material in Section 2 for a description on the safe handling or management of those materials.

9. SUMMARY & RECOMMENDATIONS

Based on the findings of this HMA, the following recommendations are:

- The contractor shall have an exposure control plan in place for each hazardous substance identified in this report as being in the way of the planned work.
- Provide copies of this report to site personnel, including contractors. A copy of the survey must be immediately available at the site whenever workers are present.
- Hazardous materials must be handled according to the Transportation of Dangerous Goods Regulation (TDGR) and disposed of according to the BC Hazardous Waste Regulation (BCHWR).

10. CLOSURE

The data and findings presented in this report are valid as of the date of assessment. If any condition may change or hidden/inaccessible conditions are found, or occurrence of future events may warrant further exploration of the site which may lead to re-evaluation of the findings, conclusions and recommendations.

This HMA was prepared for the use of **Sperling Hansen Associates and** provides a statement pertaining to the presence of the hazardous materials, if any, which were detected or observed at the site. All conclusions and recommendations are based upon conditions at the site at the time of this assessment. All conclusions and recommendations are based upon professional opinions. These opinions are in accordance with accepted AHERA Building Inspector assessment standards and practices and comply with current WorkSafeBC requirements.

No warranty or guarantee, whether expressed or implied, are made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon site conditions at the time of the investigation.

This report may not be used, relied upon, copied, published, or quoted by any party without the written consent of **JOMA Environmental Ltd**. Other parties reading this report must independently verify the completeness and accuracy of this report and its contents.

Any unauthorized use of this report in that fashion is at the sole discretion and liability of the Owner.

We trust that the information contained within this document is sufficient to meet your current requirements. Should you have any questions or require further information, please contact the undersigned below!

Thank you,

_____

John Starchuk, PChem, AHERA
Business Manager
250-884-4822
jstarchuk@jomaenv.ca

Appendix A – Site Pictures

Sample: S-01
Location: Services Bldg - New Addition - East Wall
Description: Concrete Block Grout
Asbestos: ND

Sample: S-02
Location: Septage Receiving Area - Yellow Pole
Description: Yellow Paint
Lead Content: **61,500 mg/kg**

Sample: S-03
Location: Clarifier - Walk Way
Description: Light Blue Paint
Lead Content: 81.2 mg/kg

Sample: S-04
Location: Original Screener - Metal Container
Description: Yellow Paint
Lead Content: 18.9 mg/kg

Sample: S-05
Location: Lift Station - Crane Arm
Description: Red Paint
Lead Content: **2,560 mg/kg**

Sample: S-06
Location: Services Bldg - Org Structure - NW Wall
Description: Concrete Block Grout
Asbestos: ND

Sample: S-07
Location: Original Screener - Foundation Wall
Description: Concrete
Asbestos: ND

Sample: S-08
Location: Race Track - North Foundation
Description: Concrete
Asbestos: ND

Sample: S-09 Location: Contact Chamber - North Foundtn Wall Description: Concrete Asbestos: ND	Sample: S-10 Location: Contact Chamber - Motor Description: Dark Blue Paint Lead Content: **112 mg/kg**

Appendix B – Sample Locations

Figure 1 – Sample Locations – Services Building

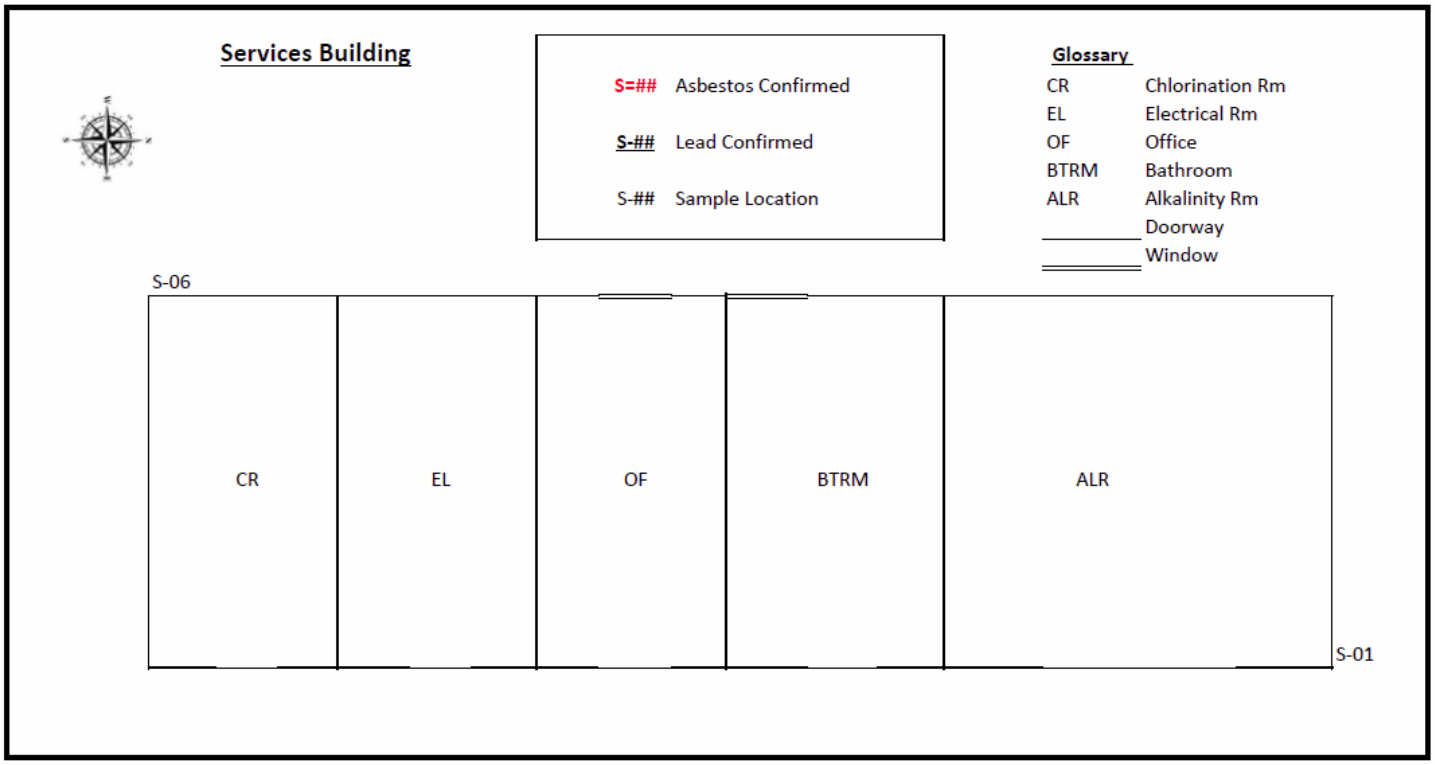
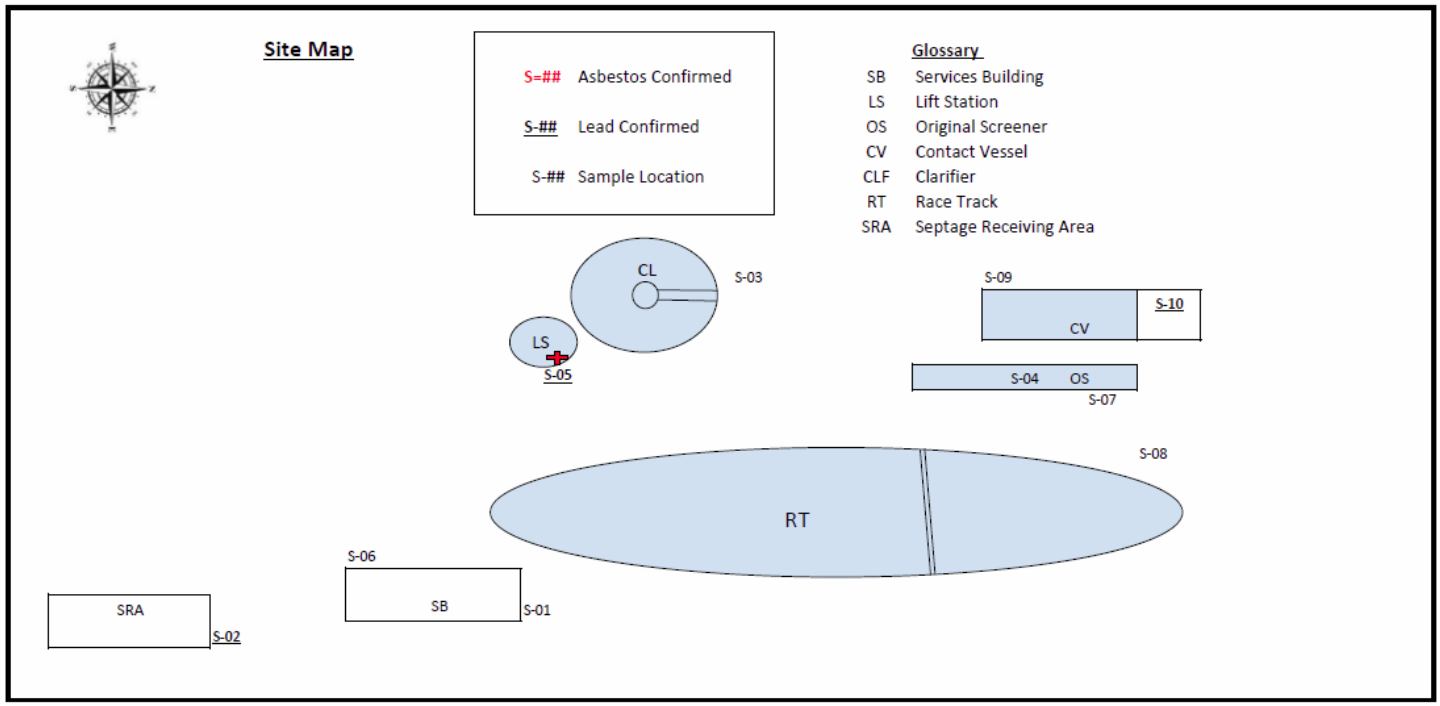
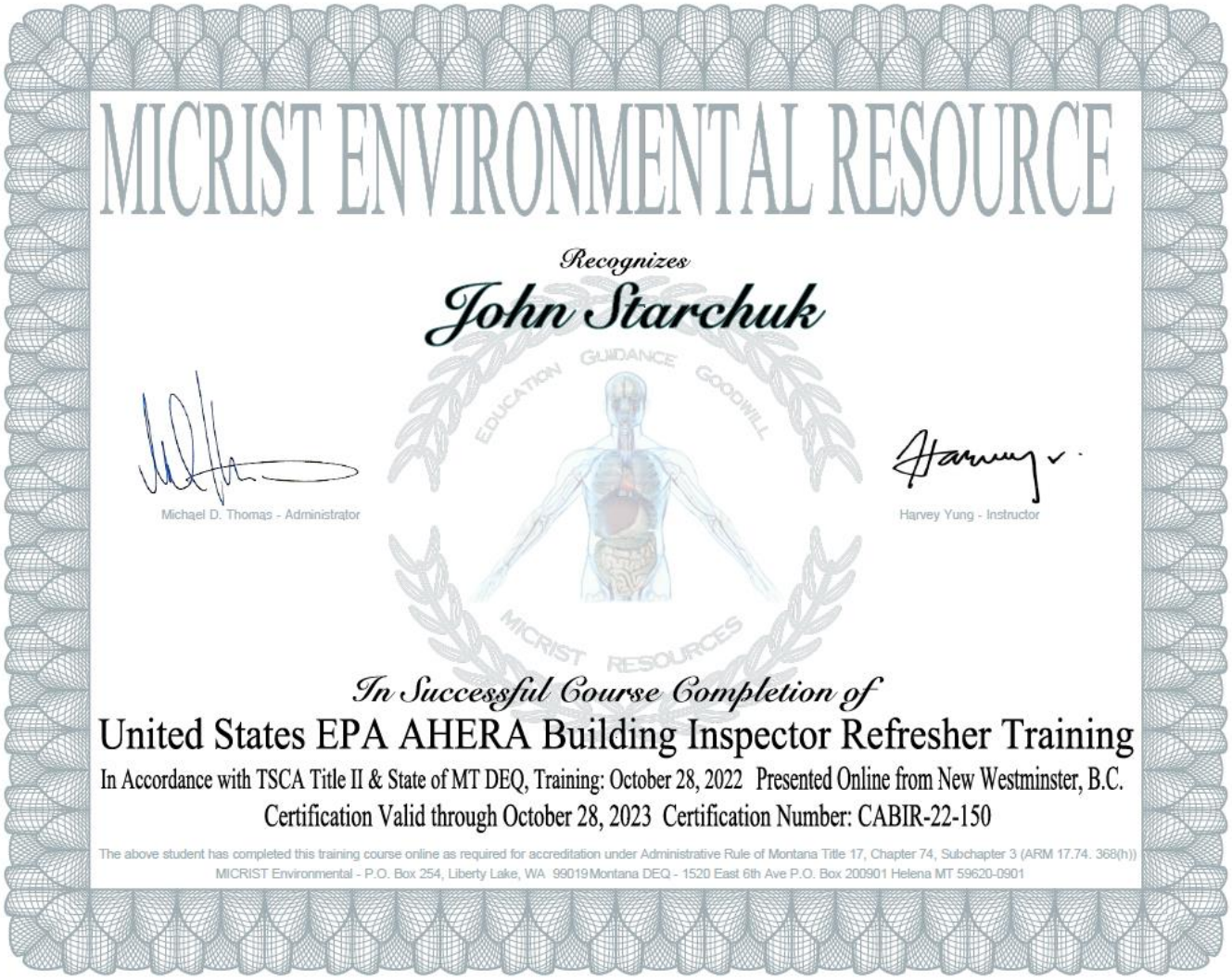


Figure 2 – Sample Locations – Site Layout



Appendix C – AHERA Certification



Appendix D – Laboratory Certificates

Your Project #: 23-717
Site#: SECHELT
Site Location: 4901 DUSTY RD
Your C.O.C. #: 08520096

Attention: John Starchuk

JOMA Environmental Ltd.
PO Box 23044
Cook St.
Victoria , BC
Canada V8V 4Z8

Report Date: 2023/05/02
Report #: R3330641
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C329343
Received: 2023/04/27, 11:24

Sample Matrix: Bulk
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Asbestos by PLM - 0.5 RDL (by layer) (1)	5	N/A	2023/05/01	COR3SOP-00002	EPA 600/M4-82-020

Sample Matrix: Paint
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICP-AES (acid extr. solid)	5	2023/05/02	2023/05/02	BBY7SOP-00004 / BBY7SOP-00018	EPA 6010d m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
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Bureau Veritas' Asbestos Laboratory is accredited by NVLAP for bulk asbestos analysis by polarized light microscopy, NVLAP Code 600163-0.
This report contains data that are not covered by the NVLAP accreditation.

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Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: 23-717
Site#: SECHELT
Site Location: 4901 DUSTY RD
Your C.O.C. #: 08520096

Attention: John Starchuk

JOMA Environmental Ltd.
PO Box 23044
Cook St.
Victoria , BC
Canada V8V 4Z8

Report Date: 2023/05/02
Report #: R3330641
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C329343
Received: 2023/04/27, 11:24

Bureau Veritas' scope of accreditation includes EPA -- 40 CFR Appendix E to Subpart E of Part 763, "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" and EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The Asbestos Analysis is based on NIOSH 9002 method and EPA/600R-93/116 Method.

Encryption Key

Bureau Veritas
02 May 2023 18:21:42

Please direct all questions regarding this Certificate of Analysis to:
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276

==========

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Bureau Veritas Job #: C329343
Report Date: 2023/05/02

JOMA Environmental Ltd.
Client Project #: 23-717
Site Location: 4901 DUSTY RD
Sampler Initials: JS

LEAD IN PAINT CHIPS (PAINT)

Bureau Veritas ID		BPL551			BPL552			BPL553		BPL554			
Sampling Date		2023/04/26 10:00			2023/04/26 10:00			2023/04/26 10:00		2023/04/26 10:00			
COC Number		08520096			08520096			08520096		08520096			
	UNITS	S-02	MU	RDL	S-03	MU	RDL	S-04	MU	S-05	MU	RDL	QC Batch
Total Metals by ICP													
Total Lead (Pb)	mg/kg	61500	N/A	20	81.2	N/A	6.0	18.9	N/A	2560	N/A	4.0	A949886

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

Bureau Veritas ID		BPL555			
Sampling Date		2023/04/26 10:00			
COC Number		08520096			
	UNITS	S-10	MU	RDL	QC Batch
Total Metals by ICP					
Total Lead (Pb)	mg/kg	112	N/A	10	A949886

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C329343
Report Date: 2023/05/02

JOMA Environmental Ltd.
Client Project #: 23-717
Site Location: 4901 DUSTY RD
Sampler Initials: JS

Asbestos Analytical Results

The Asbestos Analysis is based on NIOSH 9002 method and EPA/600R-93/116 Method. P.O.B. - Percent of Bulk

S-01

Bureau Veritas ID:	BPL546					Date Analyzed:	2023/05/01
	P.O.B	**Sample Morphology**	**Asbestos**	**Other Fibres**		**Particulate**
Layer 1	100	Homogeneous grey grout	Not Detected			Non-Fibrous

S-06

Bureau Veritas ID:	BPL547					Date Analyzed:	2023/05/01
	P.O.B	**Sample Morphology**	**Asbestos**	**Other Fibres**		**Particulate**
Layer 1	100	Homogeneous grey grout	Not Detected	Cotton	1%	Non-Fibrous

S-07

Bureau Veritas ID:	BPL548					Date Analyzed:	2023/05/01
	P.O.B	**Sample Morphology**	**Asbestos**	**Other Fibres**		**Particulate**
Layer 1	100	Homogeneous grey concrete	Not Detected	Cellulose	1%	Non-Fibrous

S-08

Bureau Veritas ID:	BPL549					Date Analyzed:	2023/05/01
	P.O.B	**Sample Morphology**	**Asbestos**	**Other Fibres**		**Particulate**
Layer 1	100	Non-homogeneous dark & light grey concrete	Not Detected	Cellulose	2%	Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

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Asbestos Analytical Results

The Asbestos Analysis is based on NIOSH 9002 method and EPA/600R-93/116 Method. P.O.B. - Percent of Bulk

S-09

Bureau Veritas ID:	BPL550			Date Analyzed:		2023/05/01
	P.O.B	**Sample Morphology**	**Asbestos**	**Other Fibres**		**Particulate**
Layer 1	100	Homogeneous grey concrete	Not Detected	Cellulose	2%	Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd

GENERAL COMMENTS

LEAD IN PAINT CHIPS (PAINT) Comments

Sample BPL552 [S-03] Elements by ICP-AES (acid extr. solid): Detection limits raised due to insufficient sample volume.
Sample BPL553 [S-04] Elements by ICP-AES (acid extr. solid): Detection limits raised due to insufficient sample volume.
Sample BPL554 [S-05] Elements by ICP-AES (acid extr. solid): Detection limits raised due to insufficient sample volume.
Sample BPL555 [S-10] Elements by ICP-AES (acid extr. solid): Detection limits raised due to insufficient sample volume.

The estimate of uncertainty has been reported as an expanded uncertainty and calculated using a coverage factor of 2, which gives a level of confidence of 95%.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A949886	USH	QC Standard	Total Lead (Pb)	2023/05/02		98	%	70 - 130
A949886	USH	Spiked Blank	Total Lead (Pb)	2023/05/02		99	%	75 - 125
A949886	USH	Method Blank	Total Lead (Pb)	2023/05/02	<2.0		mg/kg	
A949886	USH	RPD	Total Lead (Pb)	2023/05/02	5.6		%	40

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

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CHAIN OF CUSTODY RECORD
ENV COC - 00015v3

08520096

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C329343_COC

Invoice Information	Invoice to (requires report)	Report Information (if differs from invoice)		Project Information	
Company:	JOMA Environmental Ltd	Company:	Same	Quotation #:	
Contact Name:	John Starchuk	Contact Name:		P.O. #/ AFE#:	
Street Address:	PO Box 23049 Cooksit	Street Address:		Project #:	23-717
City:	Victoria Prov: BC Postal Code: V8V4	City:	Prov:	Postal Code:	Site #:
Phone:	250-884-4822	Phone:		Site Location:	4901 Dusty Rd
Email:	jstarchuk@jomaenv.ca	Email:		Site Location Province:	Sechelt BC
Copies:		Copies:		Sampled By:	John Starchuk

Regulatory Criteria

BC CSR | CCME | Drinking Water
YUKON CSR | BC Water Quality | Other: _____

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 BOD [ ] cBOD [ ]	5 TSS [ ] TDS [ ]	6 Total Coliform & E.coli [ ]	7 Fecal coliform [ ] Enterococcus [ ]	8 Chloride [ ] Sulphate [ ]	9 pH [ ] Conductivity [ ] Alkalinity [ ]	10 Nitrite [ ] Nitrate [ ] Ammonia [ ]	11 COD [ ] TOC [ ]	12 Dissolved metals	13 Dissolved mercury	14 Total metals	15 Total mercury	16	17	18 Total Lead Asbestos	19	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Comments
1	S-01,-06,-07,-08,-09	23	04	26	10	00	Grout Concrete																		X				
2	S-02,-03,-04,-05,-10	23	04	26	10	00	Paint																		X				
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Regular Turnaround Time (TAT)
5 to 7 Day | 10 Day

Rush Turnaround Time (TAT) Surcharges apply
Same Day | 1 Day | 2 Day | 3 Day | 4 Day

Date Required: YY MM DD

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C 1	2	3
Seal present		X			
Seal intact		N/A			
Cooling media present		X			

LAB USE ONLY	Yes	No	°C 1	2	3
Seal present					
Seal intact					
Cooling media present					

LAB USE ONLY	Yes	No	°C 1	2	3	Temperature reading by:
Seal present						
Seal intact						
Cooling media present						

	Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM
1	John Starchuk	23	04	27	10	00	Karen Mary Simm	23	04	27	11	24
2												

Special instructions