



ISLANDER ENGINEERING

Memorandum

Date: May 31 2022

To: **Aaron Grimmer**
Gulf Excavation Ltd.
4415 Bedwell Harbour Road
North Pender Island, BC

Project: 2181

Re: **Environmental Monitoring Inspection (May 31 2022) at 4415 Bedwell Harbour
Road, North Pender Island, BC**

Islander Engineering Ltd. (IEL) was retained by Mr. Aaron Grimmer of Gulf Excavation Ltd. (GEL) to provide environmental services in support of a Temporary Use Permit Application related to a concrete batch plant operation, shale rock quarrying and general operations at 4415 Bedwell Harbour Road on North Pender Island, BC ("the Site").

IEL and TRI Environmental Consulting Inc. (TRI) previously completed an Environmental Impact Assessment for the Site in January 2019. The assessment concluded that while there were no observable environmental impacts at the Site as a result of the Site activities, management plans should be prepared for the storage and handling of wash water, petroleum hydrocarbons, and other chemicals in order to mitigate any potential risks of environmental impacts. Following this recommendation, IEL prepared an Environmental Management Plan (EMP) for the Site activities in October 2019. This letter includes the results of a subsequent site inspection, carried out on May 31, 2022, that was conducted to assess compliance with the recommended Best Management Practices (BMPs) provided within the EMP.

Please contact the undersigned with any questions.

Prepared by:

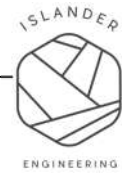


Sean Babulic, P. Eng
Project Engineer

Attachments:

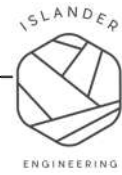
1. May 31 2022 Site Inspection Checklist
2. May 31 2022 Site Inspection Photos

CONDITION/REGULATION	COMPLETE (Y/N)	COMMENTS
5. WATER MANAGEMENT		
5.1.1 Wastewater Reduction (BMP):		
- Minimize the need for exterior truck washing by controlling dust losses from the batching area;	Yes	Site supervisor reports that dust suppression treatments are applied to accessways annually.
- Train employees with regards to water use, ensuring that they understand the importance of controls and the possible impact to the environment and company liability;	Yes	Only trained staff (Site supervisor & lead hand) are permitted to operate water treatment system.
- Limit or eliminate freshwater use by recycling processed water and using captured storm water runoff wherever possible; Reduce total water usage during drum washout by using multiple small rinses, rather than large volume single rinses;	Yes	Recycled process water is now treated to neutral acidity prior to re-use onsite.
- Consider the use of hydration stabilization admixtures;	Yes	Plastocrete-250 is used for concrete batching.
- Consider dry washout procedures;	Yes	Operator considers this option but does not find it appropriate or necessary.
5.1.2 Water Collection/Containment (p.9)		
- All paved surfaces within the batching area should be curbed and graded to allow for effective capture and collection of wastewater;	Yes	Concrete apron at entrance to batching area has been expanded to allow for more effective capture of wastewater generated during production of concrete. (Photo 6)
- Any surface water not related to concrete production should be directed away from wastewater collection areas;	Yes	The working area outside of the batching area has been regraded with crushed rock to prevent general site runoff from entering the batching area. (Photo 7)
- Equipment and vehicular traffic should be minimized through batching area where wastewater may be present;	Yes	Only concrete trucks will enter the batching area.
- Sufficient capacity must be provided for wastewater holding tanks / basins;	Yes	Treatment of pH laden waters is now carried out on a regular basis to reduce wastewater volumes. Carbon dioxide injection is being used

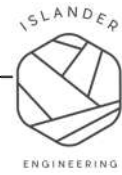


CONDITION/REGULATION	COMPLETE (Y/N)	COMMENTS
		<p>in batches as required to lower pH prior to reuse of waters for concrete manufacturing.</p> <p>An additional 10,000 gallon tank has been added to the wastewater circulation system to accommodate large storm flows, if needed.</p> <p>GEL intends to add a sump pump to the treatment area to pump to storage in case of flooding.</p> <p>Reduction in the overall catchment area contributing to the wastewater collection is expected to reduce volume of wastewater generated during heavy rains.</p>
<ul style="list-style-type: none"> - Wastewater holding tanks / basin shall be impermeable; 	Yes	45 mil poly liners are present within all wastewater basins.
<ul style="list-style-type: none"> - Sufficient secondary containment (i.e., berms) shall be provided to capture any overflow from wastewater holding facilities. 	Yes	<p>GEL to ensure regular / timely treatment of wastewater to minimize the amount of stored volume present at any given time, but especially in anticipation of large volumes of rainfall.</p> <p>If possible, fully treat all wastewater and pump treated volume to holding tanks ahead of rains to prevent overflow of high pH waters.</p>
<ul style="list-style-type: none"> - Any breaches in containment facilities that cause release of wastewater to the environment shall be considered a spill incident and spill response measures, described in Section 6, shall be followed. 	Yes	Acknowledged by GEL. Site supervisor to inform IEL in case of breach / spill.
5.2. Storm Water Runoff		
5.2.2 BMP:		
<ul style="list-style-type: none"> - Encourage surface water to seep into the soil naturally; 	Yes	Where appropriate, site grading has improved to encourage general site runoff to infiltrate to ground. (Photo 7)
<ul style="list-style-type: none"> - Preserve natural vegetation where possible; 	Yes	No new disturbance to vegetated areas noted.
<ul style="list-style-type: none"> - If possible, retain woody debris and organic matter on-site as mulch; 	Yes	Acknowledged by GEL.

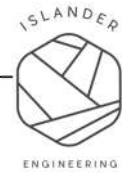
CONDITION/REGULATION	COMPLETE (Y/N)	COMMENTS
- Roughen or terrace slopes to prevent erosion. Limit slope steepness and length to reduce runoff velocity;	Yes	Slopes of exposed soils appear to have been vegetated. (Photo 1)
- Cover soil stockpiles and bare slopes with mulch, tarps, etc;	Yes	Stockpiles of excess concrete / grout have tarp covers. (Photo 13 / 14)
- Re-vegetate or landscape disturbed areas of the Site as soon as possible. If areas of the Site must be left disturbed during the rainy seasons, sow a temporary cover crop,	Yes	Seeding of landscaped area south of Site Access 'A' appears to have successfully provided cover to disturbed area. (Photo 1)
- apply mulch or lay geotextile to stabilize exposed soils;	Yes	Limited exposed soils are noted to be present.
- Keep machinery within specific access areas. Limit the extent of machine access areas to the minimum necessary to conduct operations in a feasible and practical manner;	Yes	It is noted that Access A is now being used as primary access point for the Site, and equipment used for concrete batching is limited to the permit area. (Photo 2)
- Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with federal, provincial and municipal requirements;	Yes	On-site reservoirs are expected to provide adequate settling time to prevent discharge of sediment laden waters to the municipal right of way. Site inspection was performed during relatively dry period so behaviour of site runoff was not observed in person. Surface water pH within upper pond was recorded within acceptable range (pH = 7.6). (Photo 18)
- If it is not possible to isolate and divert flowing water from a work area (due to water depth and volume) isolate works with a structure (e.g., silt curtain, sand bags, earthen berm, etc.) to keep silty water from leaving the Site;	Yes	Sedimentation was observed on the up-gradient side of silt fencing in several areas, indicating that isolation / sediment control measures have being working at times. It is recommended that GEL clears sedimentation and reinstalls silt fencing on a more consistent basis (Photo 11)
- Avoid clearing vegetation from work zones during snowmelt or heavy rains;	Yes	Noted, but no further vegetation removal is planned.
- Isolate work / excavation areas from all flowing water;	Yes	Site regrading to further increase isolation of work area.
- Inspect all silt fences and other controls (i.e., catch basin inserts, stop logs) on a daily basis prior	No	Silt fencing appears to have performed but likely requires increased inspection /



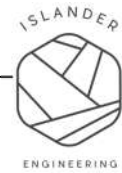
CONDITION/REGULATION	COMPLETE (Y/N)	COMMENTS
<p>to the start of work and correct deficiencies immediately. Pay special attention in areas where construction activities have changed natural contours or drainage patterns to ensure that controls are properly located for effectiveness</p>		<p>maintenance (sediment removal) to ensure ongoing performance. (Photo 11)</p>
<p>5.3 Water Treatment</p>		
<ul style="list-style-type: none"> - Protocol in place for overflow incidents 	<p>Yes</p>	<p>Protocol in place, however GEL is continually adapting to changing site operations. It is recommended that uncovered surplus concrete / grout and wastewater is kept to a minimum before being stored / treated to avoid potential overflow situations. (Photo 12)</p>
<p>6. CHEMICAL AND PETROLEUM HYDROCARBON MANGEMENT</p>		
<p>6.2 Storage and Handling</p>		
<ul style="list-style-type: none"> - Concrete additives are currently stored within manufacturer containers within a covered, plastic sheet-lined secondary containment structure at the top of the batch plant. 	<p>Yes</p>	<p>The additive storage shed continues to adequately contain materials.</p>
<ul style="list-style-type: none"> - Mechanical fluids (oils / waste oils) are stored within a transportation seacan with a welded lip at the entrance, which provides secondary containment to small jugs of hydraulic fluid within. Waste oil is stored within an above ground storage tank within a separate plastic sheet-lined cell within the seacan. 	<p>Yes</p>	<p>Mechanical fluids continue to be stored adequately.</p>
<ul style="list-style-type: none"> - Fuel is stored within fuel tanks and tidy tanks aboard various vehicles and equipment throughout the Site. There is no bulk fuel storage on Site 	<p>Yes</p>	<p>Three tidy tanks present onsite.</p>
<p>Best Management Practices</p>		
<ul style="list-style-type: none"> - Locate storage facilities away from high traffic areas, with reasonable protection from vehicle / equipment damage; 	<p>Yes</p>	<p>Storage facility is outside of trafficked areas.</p>



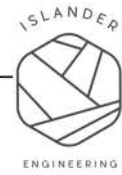
CONDITION/REGULATION	COMPLETE (Y/N)	COMMENTS
<ul style="list-style-type: none"> - Provide storage areas with a means (i.e., lock and key) to control access to the materials so that only authorized (e.g., trained) personnel may remove and use the materials; 	Yes	Both the mechanical fluid shed and additives shed can be locked to prevent unauthorized access
<ul style="list-style-type: none"> - Ensure tanks are corrosion-resistant and stable / anchored securely on a flat surface; 	Yes	
<ul style="list-style-type: none"> - If possible, store drums and pails of related products in same area; 	Yes	Products are stored together where applicable.
<ul style="list-style-type: none"> - Ensure all materials are properly labelled and remain in original containers with lid intact for as long as reasonable for Site operations; 	Yes	Materials remain in manufacturer containers with labels.
<ul style="list-style-type: none"> - Protect liquids from freezing, where applicable; 	N/A	
<ul style="list-style-type: none"> - Provide minimum 120% secondary containment for all volumes of liquid stored; 	Yes	
<ul style="list-style-type: none"> - Provide with a means of segregating combustible and flammable materials from oxidizing agents and other sources of ignition (i.e., away from sparks and/or with physically separated storage areas) 	Yes	No smoking or ignition sign posted outside of mechanical fluid storage shed.
<ul style="list-style-type: none"> - Provide with a means of preventing water reactive and pyrophoric materials from coming in contact with accumulated water (i.e., roofed enclosures) 	Yes	Roofs present for bulk material storage. Consider covering waste water area / excess concrete storage area.
<ul style="list-style-type: none"> - Provide emergency spill kits/supplies within the storage area, including fire extinguishers, non-sparking shovels, sand bags, etc. 	Yes	Spill kits are located throughout the site.
6.3 Disposal		



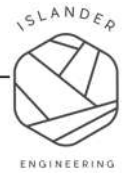
CONDITION/REGULATION	COMPLETE (Y/N)	COMMENTS
- Source reduction procedure in place	Yes	Procedure limited to following prescribed maintenance schedules, thereby limiting unnecessary waste.
- Returns procedure in place	Yes	
7. SPILL RESPONSE AND PREVENTION		
7.1 Spill Response		
- Spill Response Steps reviewed by all staff (pp. 14 -16)	Yes	
- Spill Response Steps posted in appropriate areas	Yes	Within mechanical fluid shed and additive shed.
7.2 Spill Response Equipment		
- Standard Spill Kit	Yes	Spill kits are located throughout the Site.
- Vehicle Spill Kit	Yes	
7.3 Spill Prevention (BMP)		
- Equipment is to be inspected daily to ensure that it is leak-free and functioning as intended. All fuel/oil caps will be manually checked to ensure that they are tightened down. Equipment will be tagged out of service if found to be leaking. Servicing of equipment that is absolutely necessary on-site is to be done within containment areas (i.e., bermed or otherwise isolated) or at an appropriate work yard operated by the contractor or his supplier;	Yes	Equipment is inspected during daily pre-trip inspections.
- Equipment or machinery found to be leaking will have containment trays/buckets placed under drips/leaks that cannot be stopped (e.g., cannot be drained into an appropriate container), will have absorbent pads wrapped around leaky connections or placed under areas where a tray or bucket cannot be fitted, etc.). The person identifying the malfunction or accidental leak will notify the foreman or site supervisor, who	Yes	Drip trays observed in place throughout site.



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will arrange repairs or transport off-site, and/or mechanic, if on site.		
- All workers/operators will be responsible for cleaning up observed leaks and/or wiping down equipment, even if the leak or spill is non-reportable.	Yes	Acknowledged by staff at time of inspection.
- Grease and oil required for maintenance will be properly applied. Excess will be cleaned up and disposed of in an environmentally appropriate manner, as will all containers, lids, and contaminated cloths and applicators.	Yes	Acknowledged by staff at time of inspection.
- During fuelling of larger compressors, light plants, etc., a portable drip tray lined with absorbent pads will be placed under the fuel tube and cap area. Absorbent pads will be used to wipe off any drips on the fuel spigot or side of equipment.	Yes	Acknowledged by staff at time of inspection.
- Jerry cans will be stored within a sealed tool box tray with lid or other suitable storage locker with ventilation, and placed in a containment tray when outside of the storage container.	Yes	
- When heavy machinery is not in use (i.e., overnight, weekends, or idle for the day), a portable drip tray will be placed under the main engine compartment.	Yes	Drip trays noted below several pieces of heavy equipment. It is recommended that air compressors / generators / fuel containing equipment also be stored with drip trays / secondary containment.



CONDITION/REGULATION	COMPLETED /COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
<p>- Fire extinguishers and other emergency response equipment and supplies will be kept in known and visible locations and access to them will not be blocked by other materials or equipment. A list of emergency contacts will be posted at predetermined, accessible and visible locations, as well as kept with the emergency response equipment. By law, fire extinguishers are routinely inspected and certified, as is other fire-suppressant equipment and materials.</p>	<p>Yes</p>	<p>Fire extinguishers present onsite.</p>
<p>- Waste oil or materials will be removed from site as soon as possible in accordance with Transportation of Dangerous Goods requirements and the BC Special Waste Regulations.</p>	<p>Yes</p>	<p>Materials are removed from Site when necessary.</p>
<p>- The Emergency Spill Response Plan will be implemented when required.</p>	<p>Yes</p>	<p>Acknowledged by staff at time of inspection.</p>
<p>- The Emergency Spill Response Plan will be posted on-site, and all personnel made aware of its content and location of response materials, as well as emergency contact names and numbers.</p>	<p>Yes</p>	<p>Posted within mechanical fluid storage area and additive storage area.</p>
<p>- Oil spill response materials and equipment, such as absorbent pads, booms and leak proof containers, will be kept on-site in sufficient quantities and in an easily accessible location to contain and clean up the amount of fuel, oil or other petroleum hydrocarbons used/stored on site.</p>	<p>Yes</p>	<p>Several spill kits and bulk spill response supplies are located across the Site.</p>



CONDITION/REGULATION	COMPLETED /COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
8. MONITORING AND REPORTING		
8.1 Environmental Consultant		
- Scheduled Follow-Up Monitoring (Wet Season)	Yes	Wet season inspection planned for Oct / Nov 2022
- Annual Monitoring	Yes	Inspection conducted annually (2021 / 2022)
8.2 Gulf Excavating Ltd.		
- Procedure for weekly Site Inspection including completion of 'Environmental Monitoring Checklist/Report' with each inspection.	Yes	GEL reports weekly inspections are ongoing and will provide record to IEL.

Additional Comments:	
1.	GEL to pay close attention to rain forecast and ensure that wastewater / excess concrete has been treated / covered / stored within sealed vessel (10,000 gallon tank) ahead of rain fall.
2.	It is suggested that GEL consider installation of a groundwater monitoring well down gradient from the concrete batch plant and water management area to allow for monitoring of groundwater quality as a result of TUP activities.



Photo 1 – Grassy field to south of Access Road ‘A’. Vegetation has successfully covered previously disturbed area.



Photo 2 – Site Access ‘A’, complete with roadside ditching, gravel surfacing and stabilized banks.



Photo 3 – Site entrance at Access 'A'. Relatively clear of debris as a result of site activities.



Photo 4 – Lockable gate at site entrance.



Photo 5 – Overview of site, looking south towards batching area.



Photo 6 – Concrete batching area with enlarged concrete apron.



Photo 7 – Site grading improvements convey surface waters away from batching area.



Photo 8 – Poly lined lock block fabrication cell.



Photo 9 – Water treatment module including pH treatment.



Photo 10 – Automated pH treatment controller.



Photo 11 – Sediment buildup adjacent to silt fencing up-gradient of settling pond. It is recommended that ditching is excavated on a regular basis to avoid over sedimentation and rerouting of surface runoff.



Photo 12 – Excess concrete from cleaning of drums. Recommended to maintain minimum volume in this cell to avoid overflow / flooding.



Photo 13 – Parked trucks with spill trays and covered stockpile.



Photo 14 – Covered stockpile of waste concrete and mixed aggregate for reuse.



Photo 15 – Air compressors requiring drip trays.



Photo 16 – Water treatment area overview.



Photo 17 – Tidy tanks aboard flat bed truck, used for fueling equipment onsite.



Photo 18 – Upper pond, down gradient of batching operations (pH = 7.6).