



ISLANDER ENGINEERING

Memorandum

Date: May 12 2021

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

Project: 2181

Re: **Environmental Monitoring Inspection (May 10, 2021) 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 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 provides the results of a subsequent site inspection, carried out on May 10, 2021, that was conducted to assess compliance with the recommended Best Management Practices (BMPs) provided within the EMP.

It is clear that GEL has made efforts to comply with the EMP, but there are several non-conformances noted within the attached inspection that should be addressed prior to the rainy season of 2021.

Please contact the undersigned with any questions.

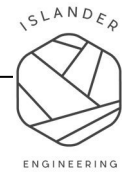
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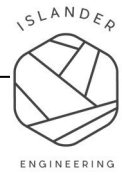
Sean Babulic, P. Eng
Project Engineer

Attachments:

1. May 10 2021 Site Inspection Checklist
2. May 10 2021 Site Inspection Photos



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 has an order in place for dust suppression material. Truck traffic is advised to reduce speeds in area to reduce dust generation.
- 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	Staff appear to be informed.
- 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 used as available. Limited to no fresh water use is required.
- 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.
CONDITION/REGULATION	COMPLETE D/COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
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	Batching area is paved with concrete. Grading within the vicinity of the batching area generally allows for capture and transport of wastewater to the water management area. GEL plans to expand paved area to improve wastewater capture and reduce excess runoff from other parts of Site from entering batching area. (Photo 34, 16)
- Any surface water not related to concrete production should be directed away from wastewater collection areas;	No	GEL intends to construct berms / curbs along the front of the batching area to ensure that stormwater runoff from the general operations area does not enter the batching area. IEL recommends that this curbing be completed before the 2021 rainy season begins.
- Equipment and vehicular traffic	Yes	To enter the batching area, concrete trucks



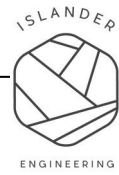
<p>should be minimized through batching area where wastewater may be present;</p>		<p>back in, are filled with concrete and then pull out in the forward direction. This configuration discourages any other vehicular traffic from entering the area. No other equipment is stored within the bay.</p>
<p>- Sufficient capacity must be provided for wastewater holding tanks / basins;</p>	<p>Yes</p>	<p>Water is circulated throughout the closed system to allow for additional capacity as needed. Additional basins have been added that can act as additional storage volume. (Photos 20-22, 32 & 33)</p>
<p>- Wastewater holding tanks / basin shall be impermeable;</p>	<p>Yes</p>	<p>45 mil poly liners are present within all wastewater basins. Primary wastewater basin is a steel drum that is located within a poly lined cell (Photo 32 & 33)</p>
<p>- Sufficient secondary containment (i.e., berms) shall be provided to capture any overflow from wastewater holding facilities.</p>	<p>Yes</p>	<p>At the time of inspection, the secondary containment area was temporarily being used as the primary holding area to allow for cleaning of the primary holding area. (Photo 32 & 33)</p>
<p>- 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.</p>	<p>Yes</p>	<p>Acknowledged by GEL.</p>

CONDITION/REGULATION	COMPLETED /COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
5.2. Storm Water Runoff		
5.2.2 BMP:		
- Encourage surface water to seep into the soil naturally;	Yes	Where appropriate
- Preserve natural vegetation where possible;	Yes	GEL intends to maintain current vegetated areas, not specified to be altered within the TUP. Clearing of the grassy area to the south of Site Access 'A' has occurred per the TUP landscape plan. (Photo 3)
- If possible, retain woody debris and organic matter on-site as mulch;	Yes	Acknowledged by GEL.
- Roughen or terrace slopes to prevent erosion. Limit slope steepness and length to reduce runoff velocity;	Yes	Existing slopes appear to have adequate vegetation to prevent erosion. GEL should consider erosion control along new slopes lining the newly constructed Site Access 'A' prior to rainy season. (Photo 2)
- Cover soil stockpiles and bare slopes with mulch, tarps, etc;	Yes	Dry stockpile of excess concrete noted to have tarp cover (Photo 23). Other stockpiles onsite are accessed with enough frequency to make tarping unfeasible. It is recommended that stockpiles containing silts, sands and other fine materials be tarped ahead of heavy rain events (Photo 24)
- 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	Landscaped area south of Site Access 'A' has been seeded but it is recommended that the area be monitored to evaluate the success of the seed growth over the summer.
- apply mulch or lay geotextile to stabilize exposed soils;	Yes	Hay has been laid over disturbed soils south of Site Access 'A'. (Photo 3)
- 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;	No	It is noted that several pieces of equipment, possibly related to the operations noted within the TUP are currently stored outside of the designated Temporary Use Area lists in Schedule B of the TUP. (Photo 31)
- Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with	Yes	Measures appear to be in place to detain / treat runoff but as inspection took place in a dry period, it is not clear at the time of inspection how the Site runoff behaves

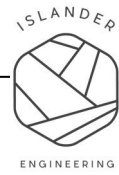
federal, provincial and municipal requirements;		during rainy season. Limited sedimentation was noted at the silt fencing where overflow volumes would exit the site indicating that suspended solids are not being discharged offsite. (Photo 29)
- If it is not possible to isolate and divert flowing water 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;	N/A	
CONDITION/REGULATION	COMPLETED /COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
- Avoid clearing vegetation from work zones during snowmelt or heavy rains;	Yes	Any vegetation removal to occur during dry summer months.
- Isolate work / excavation areas from all flowing water;	Yes	
- Inspect all silt fences and other controls (i.e., catch basin inserts, stop logs) on a daily basis prior 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	Yes	Silt fencing appears to be functioning adequately. It is recommended that inspections be documented to allow confirmation of inspection. (Photo 25 & 26)
5.3 Water Treatment		
- Protocol in place for overflow incidents	Yes	Several additional poly lined basins have been constructed which can be used in event of overflow. (Photo 21 & 22)

CONDITION/REGULATION	COMPLETED /COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
6. CHEMICAL AND PETROLEUM HYDROCARBON MANGEMENT		
6.2 Storage and Handling		
<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. 	Yes	The additive storage shed is adequately lined and covered in a secure manner (Photo 4 &5)
<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. 	Yes	Photo 7 & 8
<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 	Yes	One tidy tank is used for onsite equipment. (Photo 19)
Best Management Practices		
<ul style="list-style-type: none"> - Locate storage facilities away from high traffic areas, with reasonable protection from vehicle / equipment damage; 	Yes	Storage facility is outside of trafficked areas.
<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 (Photo 10 & 4)
<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.

CONDITION/REGULATION	COMPLETED /COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
- 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.
- Protect liquids from freezing, where applicable;	N/A	
- Provide minimum 120% secondary containment for all volumes of liquid stored;	Yes	
- 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.
- 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 as needed. (Photo 4)
- Provide emergency spill kits/supplies within the storage area, including fire extinguishers, non-sparking shovels, sand bags, etc.	Yes	Spill kits are located within the mechanical fluid shed, the additive shed, the batching area and within all active vehicles.
6.3 Disposal		
- Source reduction procedure in place	Yes	Procedure limited to following prescribed maintenance schedules, thereby limiting unnecessary waste.
- Returns procedure in place	Yes	Heatherington Industries is contracted to dispose of oily waste products.



CONDITION/REGULATION	COMPLETED /COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
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. (Photo 9)
7.2 Spill Response Equipment		
- Standard Spill Kit	Yes	Spill kits are located within the mechanical fluid shed, the additive shed, the batching area and within all active vehicles. (Photo 17)
- Vehicle Spill Kit	Yes	(Photo 12)
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 will arrange repairs or transport	Yes	Equipment appears to have drip trays placed under appropriate components when not in use, overnight and when under repair / maintenance. (Photo 14)



off-site, and/or mechanic, if on site.		
CONDITION/REGULATION	COMPLETED /COMPLIANT (Y/N)	SCHEDULE DATE TO BE COMPLETED/COMMENTS
- 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. Oily rags from cleanup are stored in a sealable drum until time of disposal (Photo 11)
- 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	Equipment is onsite to allow for proper fueling of equipment.
- 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	Empty cans are stored within a lockable unit. (Photo 13)
- 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 all pieces of heavy machinery (Photos 14-16)

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<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 confirmed to be onsite in accessible locations, and with current certification. Contact information is posted along with spill response plans.</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. (Photo 9)</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)	No	IEL was not retained for a wet season follow up monitoring event. Suggest follow up monitoring event at start of 2021 rainy season.
- Annual Monitoring	No	Inspection not conducted during 2020. IEL has inspected the Site on May 10, 2021, August 19, 2019 and November 28 2018.
8.2 Gulf Excavating Ltd.		
- Procedure for weekly Site Inspection including completion of 'Environmental Monitoring Checklist/Report' with each inspection.	No	No documented inspection reports on file. Recommend that GEL begin weekly inspections with proper documentation in time for next inspection ahead of rainy season.

Additional Comments:	
1.	Recently cleared area to the south of Site Access 'A' has been covered with hay and seeded but it is recommended that silt fencing or hay bales be placed along the bottom of the slope to prevent erosion / sedimentation from the bare soils from migrating offsite into the ditching along Bedwell Harbour Road.
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.
3.	IEL notes that GEL is considering reconfiguration of the waste water management area as well as installation of a pH treatment system (CO ₂ bubbling, or similar).
4.	It is recommended that all recommended actions listed within this report be completed before the start of the rainy season.



Photo 1 – Site Access 'B' currently used as primary access to Site.



Photo 2 – Current progress of proposed Site Access 'A'.



Photo 3 – Natural grassed area, south of Site Access ‘A’. Vegetation has been cleared and seeded, exposed ground is covered with hay as a means to prevent erosion.



Photo 4 – Looking northeast at modified chemical storage shed, including new roof and lockable doors.



Photo 5 – Interior of chemical storage shed includes concrete additives (stabilizer & water reducers). The shed is lined with 45 mil poly liner as a means of secondary containment. Note spill kit and spill response plans posted on 1000L totes.

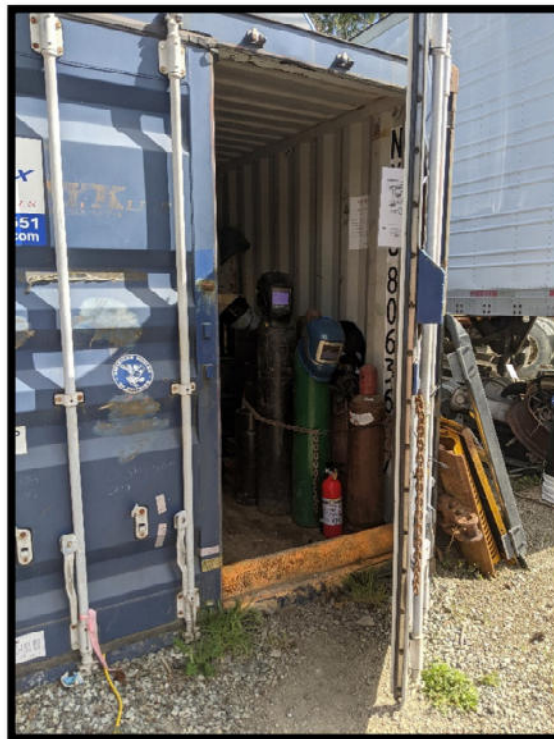


Photo 6 – Hydrocarbon storage sea container. Note orange toe board, welded to edge of container as a means of providing secondary containment to fluids within the container.

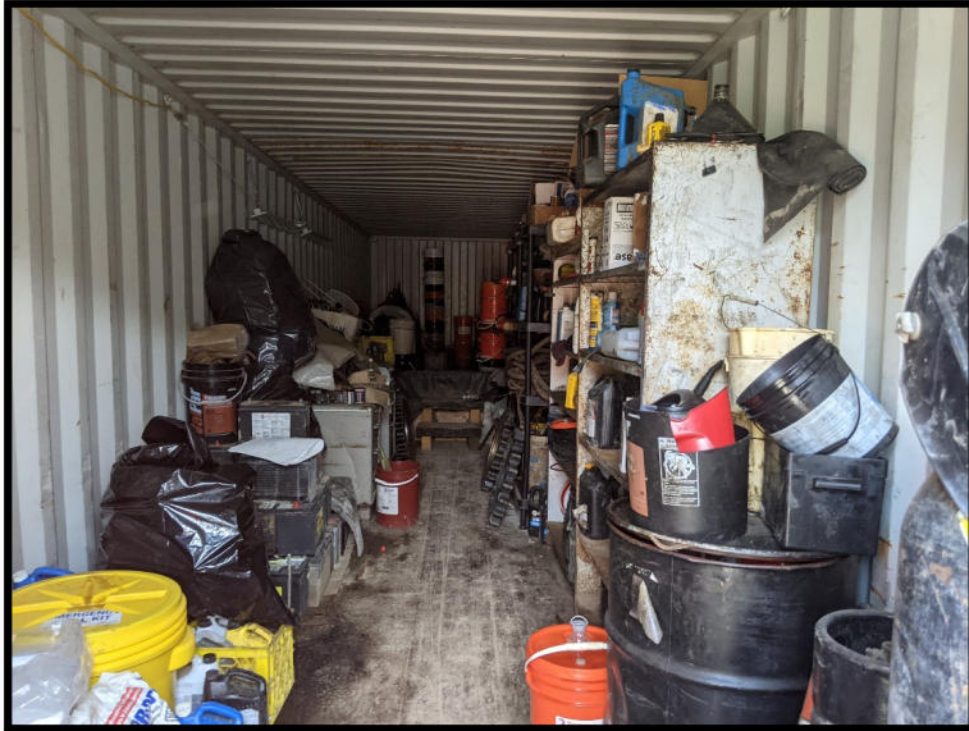


Photo 7 – Interior of hydrocarbon storage container. Note yellow spill kit and supplies to the left. Waste oils and bulk fluids stored within lined cell at rear of unit.

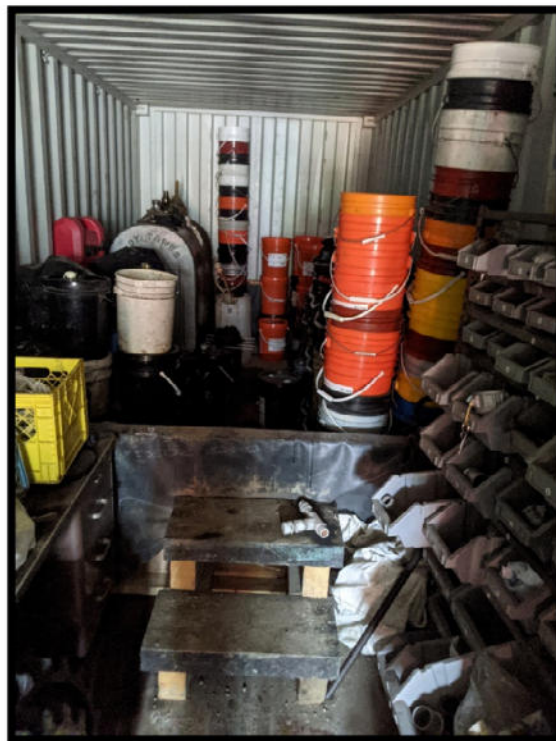


Photo 8 – At rear of storage container, used oil and bulk fluids are stored within a poly lined cell.

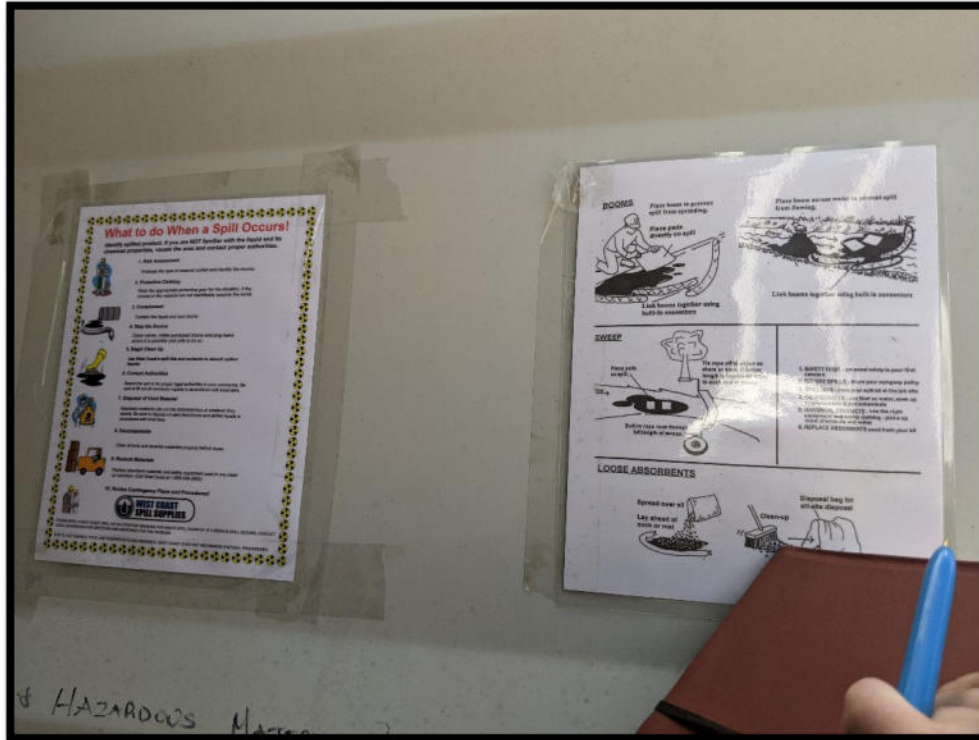


Photo 9 – Spill response plans posted within hydrocarbon storage container. Emergency contact information is provided below posted signs.

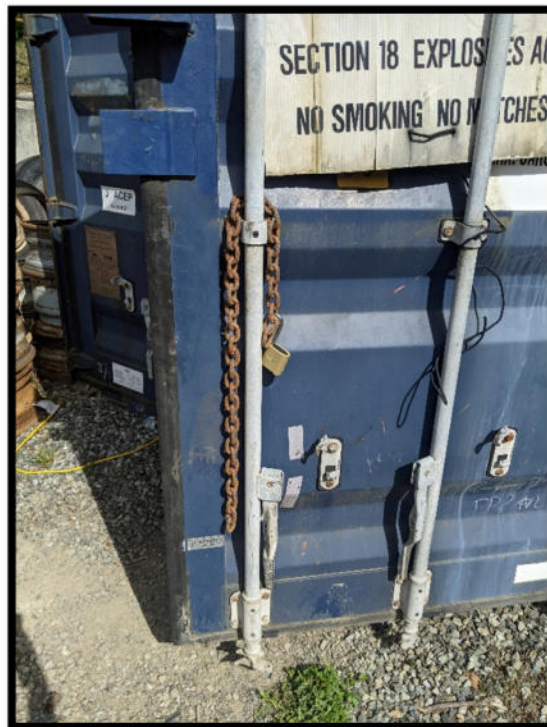


Photo 10 – Hydrocarbon storage container is locked daily. Also note signage indicating “No smoking, ignition permitted in area”.



Photo 11 – Drums used to store oily rags, used spill equipment, etc.



Photo 12 – Mobile spill kits located in active vehicles onsite.



Photo 13 – Empty jerry cans stored within lockable container onsite.



Photo 14 – Drip trays were noted under most stationary vehicles at time of inspection.



Photo 15 – Concrete trucks with drip trays beneath engine components.



Photo 16 – Drip trays beneath concrete truck in batch plant bay.



Photo 17 – Spill kit within hydrocarbon storage area.



Photo 18 – Spill kit within batch plant area.



Photo 19 – Tidy tank found within Site Supervisors truck, used for fueling equipment onsite when required.



Photo 20 – Water tank used for concrete batching and overflow hose to newly constructed overflow basin / loc-bloc forming area.



Photo 21 – Lined basin to capture overflow from batch plant water tank and as an area for the forming of concrete loc-blocs. Basin drains to batch plant water retention area.



Photo 22 – Solids from concrete truck washout and plant cleaning are deposited within this lined basin to the east of the batching area where they can dry enough to be collected. Basin drains to batch plant water retention area.



Photo 23 – Covered stockpile of excess concrete and dried sludge, to be re-used for loc-bloc production or as structural fill.



Photo 24 – Uncovered aggregate stockpiles.



Photo 25 – Silt fencing in place parallel to Site ditching and access road appears to have been functioning well over the rainy season.



Photo 26 – Silt fencing and hay bales in place at ditch crossing.



Photo 27 – Upper reservoir pond, looking towards Bedwell Harbour Road. Average field pH measurement within pond was 7.9 at time of inspection.



Photo 28 – Lower reservoir pond, looking towards Bedwell Harbour Road. Average field pH measurement within pond was 8.0 at time of inspection.



Photo 29 – Silt fencing placed within swale that acts as overflow discharge for reservoirs. Fencing showed little to no evidence of siltation occurring as a result of stormwater discharge to ditching.



Photo 30 – Looking south along Bedwell Harbour Road at Site Access 'B'. Average pH measurements within ditching were 7.9 at the time of inspection.



Photo 31 – Equipment stored outside of designated TUP area.



Photo 32 – Waste water retention area. Steel tanks were full of concrete solids at the time of inspection, so the lined secondary containment area, seen here, was in use to store waste waters.

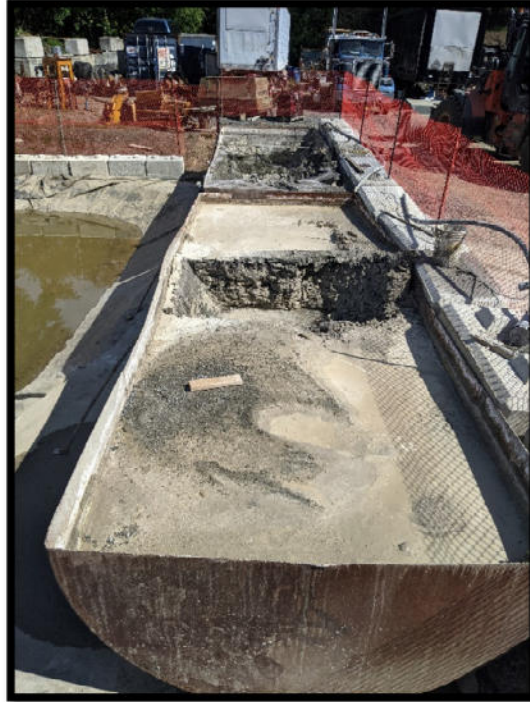


Photo 33 – Primary waste water holding tanks, full at time of inspection. Solids are chipped / removed from tanks and reused for concrete loc-blocs or sold as structural fill.



Photo 34 – Waters from within the batching area are directed to the waste water management area through this inlet.



Photo 35 – View of batching area. Generally housekeeping could be improved to prevent dust and potential transport of sediments from the area.