

**REMEDICATION OF THE TAR PONDS AND COKE
OVEN SITES
DESIGN AND CONSTRUCTION OVERSIGHT
SERVICES
ENVIRONMENTAL MONITORING
SUMMARY REPORT
October 2011 MONTHLY REPORT
97918-MONTHLY-REP-N-045**

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Acronyms used in Report

Agency	Sydney Tar Ponds Agency
All-Tech	All Tech Environmental Services Limited
AQMC	Air Quality Monitoring Consultant
BPDS	Batter Point dissipation structure
CBRM	Cape Breton Regional Municipality
DE	Design Engineer
EIL	Environmental Inspection Log
EM	Environmental Monitor
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
MBJV	Marine-Beaver Joint Venture
MSDS	Material Safety Data Sheet
NCR	Non-Conformance Report
NDS	Narrows dissipation structure
NSE	Nova Scotia Environment
PM	Particulate matter
RFA	Request for Action
SI	Supplemental Instruction
S/S	Stabilization/Solidification
SSP	Steel Sheet Piles
TP6B	Solidification, Stabilization and Channel Construction
TP6A	Flow Diversion
TP7	Tar Ponds Surface Cap

VOC Volatile organic compound
WHMIS Workplace Hazardous Materials Information System

Units used in Report

dBa decibels
L liters
L_{eq} equivalent sound
m meters
mm millimeters
NTU nephelometric turbidity units
ppm parts per million
µg/m³ micrometer per cubic meter

1. INTRODUCTION

The Government of Canada and Province of Nova Scotia are committed to remediate the Sydney Tar Ponds and Coke Ovens Sites, a project that is managed and implemented by the Sydney Tar Ponds Agency (the Agency). The Agency awarded AECOM and CBCL the bid for Design Engineer (DE) and to implement Construction Oversight. The project's goals are to reduce the health and ecological risks to area residents and the environment from existing soil, sediment and water contamination as well as to enhance the development potential of the land to drive economic investment in the Cape Breton Regional Municipality (CBRM). The [Project Environmental Protection Plan](#) (EPP) and the [Environmental Management Plan](#) (EMP) are the governing documents of the environmental aspects of the remediation work, and are available for public viewing on the Agency's website www.tarpondscleanup.ca. An EPP is also designed specific to each of the construction elements and these are available at the Agency's library located at 1 Inglis Street in Sydney, Nova Scotia. One (1) of the EPP requirements is for the Design Engineer to provide a monthly summary of environmental activities on Site, which this report fulfills.

1.1. Overview of Active Elements

Construction activities continued throughout October 2011 on the Flow Diversion (TP6A), Solidification and Stabilization (S/S) and channel construction of the Tar Ponds (TP6B), and Tar Ponds Surface Cap (TP7).

The activities on these three (3) active elements followed protocols outlined in the EPP and EMP. In general, the Contractors agree to monitor their construction activities for potential environmental impacts to determine whether the mitigation measures developed for the activity are effective. The Contractors designate an Environmental Monitor (EM) to ensure that work being carried out on Site is being performed in compliance with the EPP and EMP and that sources of contaminants are identified before they impact the receiving environment.

As set out by the EPP, the Contractors' EMs are required to conduct environmental inspections every four (4) hours during active construction: at TP6A by MB2-Beaver Marine Joint Venture's (MBJV), at TP6B by Nordly's and at TP7 by Hazco's. The EM uses the Environmental Inspection Logs (EILs) as a guide and as a log to record observations while inspecting the work activities and environmental protection measures such as silt fences, oil absorbent booms, hazardous materials containment, etc. and in addition, sampling sheets may be attached to the EILs if relevant. Field representatives from the DE check the EILs on a daily basis to ensure that field observations match those recorded by the EM in the logs. In the

event that environmental protection measures are not being followed or are not effective, the EM directs the Site Supervisor to take corrective action and notifies the Design Engineer's Environmental Coordinator or field representative. In the event that the EPP is not being adhered to and the issue is not resolved in the field, the DE may issue a Request for Action (RFA) or Non-Conformance Report (NCR) to the Contractor requesting improvement. A summary table of the NCRs, RFAs and Supplemental Instructions (Sis) are highlighted in Section 5.

This Environmental Monitor Summary Report covers the key areas addressed in the EILs throughout October, 2011 and will report environmental concerns, if any, that developed from remediation activities at TP6A, TP6B and TP7 including how those issues were resolved. Past [Environmental Monitoring Summary Reports](#) are also available on the Agency's website, and at the Agency's library.

1.2. Environmental Reporting by Others

Other publicly available environmental reports are prepared by various parties involved with the Project. These reports are available either on the Agency's website, www.tarpondscleanup.ca, or from the Agency's library located at 1 Inglis Street in Sydney, Nova Scotia.

Construction monitoring of surface water and noise levels are captured in the Contractor Quality Control Monthly Reports, which are completed by Contractors for each active work element. These reports contain detailed testing results from surface water and noise monitoring, and can be found at the Agency's library.

Air monitoring reports, completed by All-Tech, the Air Quality Monitoring Consultant (AQMC), can be accessed on-line at the Agency's website. The Real-time Air Monitoring Program (results discussed below in Sections 2.6, 3.6 and 4.6) monitors air emissions at the Project fence line associated to each active element and the [Air Monitoring Reports](#) contain data from these monitoring activities. The Ambient Air Monitoring Program monitors the ambient air at monitoring stations throughout the community. The [Preliminary Event Reports](#) contain invalidated, preliminary data. The data is then compiled, validated and comprises the monthly [Ambient Air Monitoring Monthly Reports](#). The Preliminary Event Reports are removed from the website once the associated monthly report has been produced and uploaded. Also available on the Agency's website is the [Question and Answer for Odour Concerns Reporting Program](#) which discusses frequently asked questions regarding Project odour issues.

The Project is also subject to extensive environmental effects monitoring for air, surface water, groundwater and marine water quality. The Project's Independent Environmental Consultant (IEC), Dillon

Consulting, was retained to undertake environmental effects monitoring and to collect data during Project remediation activities. This data is used to detect environmental impacts resulting from the Project, as well as to determine long-term trends. Environmental effects reports are available on the Agency's website and at the Agency's library. For surface water monitoring, data is collected regularly and [Monthly Compliance Reports](#) are prepared and submitted to the Agency. For groundwater quality and quantity information, data is collected and [Quarterly Groundwater Reports](#) are prepared and submitted to the Agency. For activities in the marine environment, data is collected according to a required schedule and an [Annual Marine Report](#) is prepared and submitted to the Agency. Sydney Harbour is monitored for changes in sediment chemistry, crab and bi-valve tissue chemistry and species diversity. A Biodiversity Study Report is currently its second draft revision and will be available to the public once complete.

2. TP6A – FLOW DIVERSION

The TP6A element provides the flow diversion necessary to conduct Stabilization/Solidification (S/S) work within the isolated sections of the North and South Tar Ponds. TP6A also includes the construction of energy dissipation outlet structures that are utilized during dewatering of the Tar Ponds under TP6B, as well as provisions for temporary bridges and water well decommissioning. As this element deals directly with diverting bodies of water, namely Wash Brook, Coke Ovens Brook, CBRM storm drains and the Tar Ponds, the most important environmental concerns relate to water. Surface water monitoring, sediment control structures and aquatic life protection are of particular interest for this element. Silt curtains, oil absorbent booms and fish screens are the most commonly deployed environmental control measures at TP6A.

2.1. Summary of Construction Activities

During October, 2011 the TP6A Contractor operated pumps at Wash Brook and Coke Ovens Brook pumping structures as part of Phase II of the pump around and monitored the discharge and control structures at the Narrows Dissipation Structure (NDS). Activities completed by the TP6A Contractor during October 2011 consisted primarily of constructing a crane pad at Battery Point, constructing the Battery Point dissipation structure (BPDS) which including decanting water from the dissipation cells, and maintaining and monitoring pumps and environmental controls at Coke Oven Brook and Wash Brook.

2.2. Dewatering

As part of Phase II of the Pump Around, Coke Ovens Brook, Wash Brook and the Phase I CBRM storm outfalls are diverted around the South and North Tar Pond and discharged at the NDS. The pumps involved in this task operated every day during October 2011. Sump pumps between the steel sheet pile (SSP) and stop-logs at the NDS were used to mitigate water re-entering the North Tar Pond as required.

As they continued work on the BPDS, the Contractor commenced dewatering tidal water inflow from the discharge cells on October 18, 2011. The Contractor decanted water onto armour stone in the northeast corner of Phase III pond, where they had previously installed a double row of silt curtains and an oil absorbent boom (see Photo 2-1). This activity continued as required throughout October 2011 and did not encounter any erosion or turbid water issues.



Photo 2-1: Decanting BPDS Cell into Northeast Corner of Phase III

2.3. Sediment Control Structures, Stabilization Areas, Silt Curtain and Oil-Absorbent Booms

The TP6A Contractor has silt curtains and oil absorbent booms in place north of the NDS as a contingency measure in the event of a potential sediment or product release entering the Phase III North Tar Pond and migrating towards Battery Point. During October 2011, the TP6A Contractor monitored and maintained these structures on a daily basis to assure their continued effectiveness. Due to inclement weather on October 5, 2011, the oil absorbent boom let go of its anchors. It was replaced as soon as it was safe to do so, on October 7, 2011.

On October 18, 2011 in preparation for pumping tidal water out of the BPDS a double row of silt curtains and an oil absorbent boom were installed on the southeast side of Battery Point. The Contractor also installed a single silt curtain and an oil absorbent boom on the west side of Battery Point in preparation for constructing a crane pad on that side (see Photo 2-2). Wayne Williams, the Contractor's fish specialist, supervised the installation of the silt curtains to verify they were installed in from the shoreline outwards to devoid the area within the silt curtain of fish. These silt curtains and oil absorbent booms were monitored and maintained throughout October 2011.



Photo 2-2: Silt Curtain Installation on West Side of Battery Point

2.4. Surface Water Monitoring

Turbidity samples are taken by boat within the Tar Ponds every four (4) hours and during Phase II this occurs north of the Narrows silt curtains. At times, taking turbidity samples in the Tar Ponds by boat is not possible due to low tides causing the boat to agitate bottom sediments skewing turbidity results or if high winds make it unsafe to use a boat. The EILs from October 2011 report occasions where it was more appropriate to collect water samples from the shoreline or the Narrows catwalk rather than from the boat due to environmental concerns, such as low tides, health and safety concerns such as high winds and extremely high water flow. In these cases a thirteen (13) metre pole is used to collect samples far from the water's edge. Reasons for collecting from the shoreline were detailed in each occurrence's respective EIL. Turbidity monitoring also took place at Batter Point while work was being conducted in the area, and when turbidity at the Narrows was elevated to monitor off-site migration of impacted water.

On October 5, 2011 after heavy precipitation in the area, high turbidity was observed in the North Tar Pond north of the NDS and at Battery Point. The Contractor performed turbidity testing upstream along Coke Ovens Brook and Wash Brook as upstream samples and it was noted that those upstream sources had elevated turbidity levels and therefore the cause was an off-site source (see Photo 2-3). The Contractor also identified highly turbid water from the outfalls that discharge into the main Channel near Wash Brook (see Photo 2-4). The Contractor increased the frequency of testing throughout that day and the next.



Photo 2-3: High Turbidity in Wash Brook Upstream of Site



Photo 2-4: Turbid Water Discharging into the Main Channel via Outfall near Wash Brook

Throughout the day turbidity levels and flow rates in both Brooks dropped, followed by turbidity levels in the North Tar Pond. More time was required for turbidity levels to drop at the NDS and Battery Point than in Coke Ovens Brook and Wash Brook as these areas are influenced by incoming tides and on shore winds. In particular, the Contractor observed strong north winds causing turbulence and turbidity at the

North Tar Pond on October 6, 2011. By October 7, 2011 the storm surge had passed and turbidity levels dropped well below criteria.

On October 15, 2011 and again on October 30, 2011 after heavy precipitation events, elevated turbidity levels were observed in the North Tar Pond. Again, the Contractor performed turbidity testing upstream in Coke Ovens Brook and Wash Brook and found that the increased turbidity was migrating from off-site in both instances. Turbidity levels dropped below criteria before the end of the work day on October 15, 2011. On October 30, 2011 the Contractor observed a lag between the time the Brooks cleared up and the North Tar Pond. They noted a storm surge and continued disturbance in the North Tar Pond factors in the lag time.

A release of turbid water was observed in the morning of October 26, 2011 while the Contractor was backfilling the crane pad on the west side of Battery Point. On the EIL, the Contractor noted that the release was due to a storm surge pushing the silt curtain up into the work area, causing disruption and turbidity. As a response, they halted infilling work for the remainder of the day. Turbid water stayed within the confines of the silt curtain, and turbidity levels at Battery Point were well below criteria during and after the incident.

2.5. Access Roads

Primary access roads were watered by the Agency during October 2011. No TP6A Contractor related concerns were raised regarding TP6A Secondary site access roads during October 2011.

2.6. Air Monitoring and Particulate Matter Control Measures

All-Tech, the Air Quality Monitoring Consultant (AQMC), did not report high particulate or high volatile organic compound (VOC) concentrations associated with TP6A activities in October 2011.

2.7. Product Storage, Fueling and Waste Disposal

All products and fuel were stored on site according to the protocols outlined in the TP6A EPP. Spent environmental controls were placed in appropriate waste storage bins for removal by a professional disposal service.

On October 23, 24 and 27 2011 slow radiator leaks were identified on three (3) pumps at Coke Ovens Brook and Wash Brook pumping structures. Leaked product was contained on the pump and cleaned by labourers upon discovery. The Contractor placed oil absorbent pads below the leaks to catch dripping

product. These pads were monitored and replaced as required. The Contractor’s service company was notified and radiator replacements were scheduled for the beginning of November 2011.

Table 2-1: Summary of TP6A Spills during October 2011

Date (dd/mm/yy)	Nature of Spill	Quantity	Location	Release to Env?	Contractor Response
23/10/2011	Radiator fluid	Slow drip	Pump #81032 at Coke Ovens Brook pumping station	No	Labourers cleaned up fluid from the pump, placed oil absorbent pads beneath the trip to catch product. Radiator replacement scheduled for early November 2011.
24/10/2011	Radiator fluid	Slow drip	Pump #81033 at Wash Brook pumping station	No	Labourers cleaned up fluid from the pump, placed oil absorbent pads beneath the trip to catch product. Radiator replacement scheduled for early November 2011.
27/10/2011	Radiator fluid	Slow drip	Pump #81019 at Wash Brook pumping station	No	Labourers cleaned up fluid from the pump, placed oil absorbent pads beneath the trip to catch product. Radiator replacement scheduled for early November 2011.

2.8. Noise Control Measures

Noise monitoring was conducted four (4) times in October 2011 at three (3) perimeter locations for two (2) hour averages to determine if the noise levels on site are under the EPP requirement of 65_{Leq} (dBA). The Quest 2900 was used to perform sound monitoring at the TP6A Site.

Noise monitoring took place on October 4, 11, 20 and 27, 2011. On October 27, 2011 there was an exceedance of 65.6_{Leq} (dBA) at the Battery Point sampling location. The TP6A Contractor attributed the Narrows noise exceedance to traffic and strong winds in the area. All other noise monitoring conducted during October 2011 returned results under the EPP criteria.

2.9. Miscellaneous Environmental Monitoring Activities

Fish nets and fish screens are in place at Coke Oven Brook and in front of the Wash Brook pumps to provide fish protection from the pump intake. The fish screens were cleaned on a regular basis during October 2011. As mentioned above, a number of inclement weather events cause higher than normal flow rates in both Coke Ovens Book and Wash Book during October 2011. During such incidents, the Contractor often raises the fish screens at Wash Brook to reduce the risk of upstream flooding. Fish nets remain in place while fish screens are lifted at Wash Brook. No fish kills were observed on site during October 2011.

A storm surge occurred on October 5, 2011 forcing the Contractor to raise the fish screens at Wash Brook, and causing the fish screen at Coke Ovens Brook to dislodge from the culvert and breach (see Photo 2-5). After high flows subsided, on October 7, 2011 both fish screens were put back into place. On October 12, 2011 the Contractor's fish specialist performed fish removal activities in Coke Ovens Brook; he captured 18 fish and relocated them upstream of the fish screens.



Photo 2-5: Fish Screens Breached in Coke Ovens Brook

On October 20, 2011 a large amount of debris floated in from off-site at the Wash Brook pumping structure. The fish screens quickly became clogged, forcing the Contractor to lift them by approximately one (1) foot. The following day elevated flow caused a breach at the fish screen at Coke Ovens Brook. That afternoon the fish screens were lowered at Wash Brook, and both were cleaned on the morning of October 22, 2011. On October 27, 2011 the Contractor's fish specialist performed fish removal activities in Coke Ovens Brook; he captured 11 fish and relocated them upstream of the fish screens.

On October 30 and 31, 2011 another storm event caused elevated water levels in both brooks forcing the Contractor to raise the fish screens at Wash Brook and causing the fish screen at Coke Ovens Brook to breach. The Contractor intended to replace fish screens and implement fish removal activities as soon as possible following the storm.

2.10. Summary of Environmental Monitoring Activities

The TP6A Contractor continued to operate the pumping stations at Wash Brook and Coke Ovens Brook as part of Phase II of the pump around of the South and North Tar Pond. Inclement weather throughout the month caused elevated turbidity readings, damage to silt curtains and oil absorbent booms, and breaching of fish screens. The Contractor was attentive to monitoring and maintaining all environmental controls throughout the month, and especially during these storm events. Their fish specialist was on site twice to supervise the installation of silt curtains at Battery Point, and to conduct fish removal activities. The DE did not issue any environmental RFAs or NCRs to the TP6A Contractor during October 2011.

3. TP6B – SOLIDIFICATION AND STABILIZATION (S/S)

The TP6B element involves the remediation of contaminated soils and sediments and construction of channels for the flow of Coke Oven Brook and Wash Brook to Sydney harbor, the construction of pressure relief wells that will provide pathways through the remediated sediments for groundwater. Cement is imported to the Site and mixed with the contaminated soils and sediments in order to encapsulate them in concrete.

3.1. Summary of Construction Activities

Construction activities during October, 2011 comprised of solidification and stabilization (S/S) in the North Tar Pond Phase II area, installing manholes, managing construction water, suppressing dust and odours, constructing the main Channel, and drilling channel pressure relief wells.

3.2. Dewatering

To facilitate S/S work, and to prevent release of impacted water into the surrounding environment, the TP6B Contractor utilized a series of pumps to relocate impacted water from several Phase II work areas during October 2011. Water from the Ferry Street sump and southwest settling sump was decanted to the northeast settling sump adjacent to the Narrows. From the northeast sump, water flows through a rock check dam, and is decanted to the Narrows infiltration pit located northeast of the Narrows sump. The Ferry Street and southwest pumps tie into a pipe that extends from Ferry Street and along the west access road pump around. The Contractor controls discharge with a valve, which directs flow into either a filter bag in the Narrows infiltration pit, or when the water appears visually turbid, to the northeast settling sump. To further protect the receiving environment against turbid water, the Narrows infiltration pit discharge passes through coarse stone before releasing into the North Tar Pond Phase III area. Also, one (1) silt curtain and two (2) oil absorbent booms surround the discharge point of the infiltration pit, also referred to as the Phase III release area.

The TP6B Contractor continued to implement a pumping system which closely adheres to their proposed Water Management Plan. The Contractor intermittently utilized the northeast settling sump area when North Tar Pond construction water was deemed too turbid for direct discharge into the Narrows infiltration pit.

As part of the completion of Phase II S/S and channel work, the Contractor retired a portion of the northeast sump. As the majority of the site was S/S'd and mostly completed the Contractor did not require as much water settling capacity. The northeast sump was used to S/S impacted sediments

collected from manhole excavations and Coke Oven Brook tie in excavation. On September 23, 2011 the DE issued RFA-TP6B-061 requesting clarification on these activities. The Contractor responded on October 11, 2011 stating that only the southern section of the sump would be used for placement of untreated sediments. A clay berm was built to isolate the sediments from the northern section, which was still to be used for water management.

On October 12, 2011 the Contractor placed untreated material into the southern section of the northeast sump and breached the clay berm, pushing the material into the standing water in the northern section of the sump (see Photo 3-1). This activity contradicted the response given to RFA-TP6B-061. The RFA was reissued to the Contractor on October 14, 2011 requesting further explanation of these activities and a solution. The Contractor removed the untreated sediment and restored the clay berm in this sump on October 17, 2011. On October 24, 2011 the Contractor responded to the revised RFA outlining the corrective actions taken.



Photo 3-1: Dumping Impacted Material in the North Portion of the Northeast Sump

On October 5, 2011 heavy rains caused minor flooding in parts of the site. Clay laden water from TP7 activities flowed into both the Ferry Street and southwest sumps. The TP6B Contractor pumped the turbid water to the Narrows infiltration pit, instead of the northeast settling area which is designated for turbid water. This resulted in one (1) of the sediment bags in the infiltration pit rupturing and clay laden water entering the Phase III pond. This incident exposed deficiencies in the Contractor's environmental controls such as a faulty silt curtain and ruptured sediment bags, shown in the Photos 3-2 and 3-3, respectively. On October 11, 2011 the Contractor received NCR-TP6B-032 Water Management Implementation for failure to comply with their CEPP. They responded to the NCR on October 25, 2011

stating that the TP7 Contractor was responsible for the incident, as they failed to control the water running off the clay in the South Tar Pond, and in the southwest corner of the North Tar Pond. They also stated that allowing the clay-laden water to enter their northeast settling pond would jeopardize their operations, and that aperture of the filter bags in question would not filter out the much smaller clay sized particles. Regardless of these points, the Contractor did not follow the protocols stated in their work plan.



Photo 3-2: Turbid Water Flowing Through Ruptured Sediment Bags



Photo 3-3: Turbid Water Escaping Around Silt Curtain

On October 30 and 31, 2011 heavy rains coupled with a storm surge of 1.9 m resulted in flooding of the Channel (see Photo 3-4). It was deemed that the main cause was increased flow of the Coke Ovens Brook overwhelmed the pump around system. This water flowed into the Phase I Channel and breached the berm at Station 0+630. All TP6B pumps were shut off until the Contractor was given direction on how to deal with this water. NSE gave permission to pump this water directly over the Narrows to prevent further flooding (see Photo 3-5). Most of the water was drained on October 31, 2011, while the remainder of the water at Station 0+650 was pumped into the Phase I Channel at the request of the STPA.



Photo 3-4: Flooding of the Phase I Channel



Photo 3-5: Pumping Over the Narrows Structure

Throughout October 2011 turbid water was occasionally observed on a daily basis around the Phase III release point. The Contractor/DE noted that the rise in turbidity was directly influenced by tidal action. Turbidity would increase as the tide became low and decrease shortly after starting to rise again. The turbidity was normally a white/grey colour, indicating that water was removing fines from the slag and rock in the Narrows road (see Photo 3-6). This cycle was monitored daily throughout October 2011.



Photo 3-6: Low Tide Turbidity at the Phase III Release Point

On Friday October 28, 2011 tidally influenced groundwater began flowing into the channel near the Narrows structure. This water resulted in erosion of untreated material under the TP6A crane pad and caused a surface collapse as the sediments were deposited into the channel (see Photo 3-7). The Narrows pump was immediately shut off and the channel began to flood with black water. Water was pumped from the Channel into the northeast sump to reduce the impact of the flooding. An area around the collapse was excavated and concrete plug was poured with the intention of reducing the amount of water that would enter the Channel during high tide. Slag was also placed in the hole that entered the Channel to act as a plug. Oil absorbent booms were installed in the Channel to reduce the impacts of migrating oily water. Extra oil absorbent booms were also installed in the northeast sump. Environmental monitors were onsite during each high tide event over the course of the weekend. The Contractor also had personnel onsite to monitor and maintain pumping.



Photo 3-7: Seawater Intrusion and Collapse

On the night of October 28, 2011 during high tide, water began to flow into the Channel again at a rate equivalent to that observed earlier in the day. The concrete plug was unsuccessful at stopping the water. In addition to this, a portion of the slag placed in the Channel to hold back the water had eroded away and slid around the pump used to manage the water. Labourers installed additional pumps to substitute for the lost pump while it was under repair.

The following morning the Contractor was onsite before high tide and used an excavator to remove slag and sediments from around the pumps. A rock check dam was built around the pumps to prevent material from building up around the pumps again (see Photo 3-8).



Photo 3-8: Rock Dams Constructed around Pumps at the Narrows

3.3. Sediment & Erosion Controls and Oil Absorbent Booms

The Contractor conducted a regular site inspection every four (4) hours (three times a day) to check the quality of their environmental controls. This inspection included monitoring all oil absorbent materials, and sediment and erosion control structures.

To protect against release of oily construction water, oil absorbent booms are in place in all construction water collection points: the southwest, northeast and Narrows sumps and north of the North Tar Pond Phase III infiltration pit discharge point. The Contractor maintained and replaced oil absorbent booms as required. No issues were raised regarding release of oily water into the receiving environment during October 2011.

As mentioned in Section 1.2 the TP6B Contractor utilized the northeast settling sump as a means of sediment control in October 2011. North Tar Pond Phase II construction water deemed too turbid for discharge directly into the Narrows infiltration pit was decanted into northeast sump intermittently

throughout the month. Turbid water was pumped into the sump, where sediment is given time to settle before passing through a rock dam and being pumped into a filter bag in the Narrows infiltration pit. On occasions of high rain an extra pump was added in the northwest corner of the sump to manage water levels.

3.4. Surface Water Monitoring

Visual monitoring of all dewatering activities continued throughout October 2011 as outlined in the TP6B EPP Section 3.2.4.2. Throughout October, 2011 several pumps were operating to facilitate construction activities (see Section 3.2. Dewatering). Pump intakes and outlets were visually monitored by the Contractor's EM. Water relocation primarily involved outfalls along the North Tar Pond (southwest sump and Ferry Street sump), channel excavation and Phase II S/S activities. When high turbidity was identified the contractor was responsive in changing dewatering activities to manage the turbid water. As mentioned, turbid water was normally redirected to the northeast settling sump. In other cases the contractor was compliant in turning pumps off.

3.5. Access Roads

Access roads were dry and dusty on some days in October 2011. On these days, the Contractor deployed a water truck on the TP6B working area. This truck along with the Agency water truck kept the roads wet to mitigate dust concerns. The Contractor also utilized a front end loader to scrape potentially impacted sediments from site roads throughout October 2011 as required.

3.6. Air Monitoring and Particulate Matter Control Measures

Off site air monitoring is conducted by All-Tech at the perimeter fence and measures particulate matter (PM) and volatile organic compounds (VOC) with action levels of 155 $\mu\text{g}/\text{m}^3$ and 0.66 parts per million (ppm), respectively. No exceedances were recorded during October, 2011. The Contractor continued Ferry Street concrete form construction, Phase II S/S work and channel excavation throughout the month. The Contractor applied dust and odour control measures during these and other intrusive activities.

The Contractor used Con Cover 180, Bio Solve and short term foam to suppress odours throughout the month. No odour complaints were received by the Agency or NSE from the public in October 2011.

3.7. Product Storage, Fueling and Waste Disposal

The Contractor continued product storage, fueling and waste disposal practices according to the TP6B EPP in October 2011. The TP6B Contractor utilizes the area adjacent to the Hackett building as their

product and equipment lay down area. No leaks related to product storage or fueling were reported or observed during October 2011.

In the afternoon of October 25, 2011, a hydraulic hose broke on an excavator while removing previously S/S'd material and shaping the berm at Stn 0+650 (see Photo 3-9). Approximately 40 litres of fluid was released. When the spill occurred the equipment was shut down and the Contractor placed oil absorbent pads on and around the affected area. Once the excavator was repaired, the impacted material was removed and incorporated into future S/S cells. The Contractor submitted a spill report to the DE summarizing the incident.



Photo 3-9: Hydraulic Oil Spill

Table 3-1: Summary of TP6B Spills in October, 2011

Date (dd/mm/yy)	Nature of Spill	Quantity	Location	Release to Env?	Contractor Response
25/10/2011	Hydraulic fluid; leaked from broken hydraulic hose on excavator.	40 l	South of Ferry Street adjacent to pressure relief well #31	Yes	The operator and labourers immediately put oil absorbent pads down in an effort to contain as much of the spill as possible. The hydraulic hose was replaced on the same day. The impacted sediments were gathered up and placed in the exclusion zone to be included in a stabilized cell.

3.8. Noise Control Measures

The Contractor's EM completed noise monitoring four (4) times in October 2011; each event was comprised of three (3) two (2) hour readings. On October 03, 12, 17 and 24, 2011 noise monitoring was conducted at the west side of the Narrows, the West Gate and the east Hilltop. The 65_{Leq} dBA action level for noise monitoring conducted in October 2011 was exceeded eight (8) out of the twelve (12) recordings.

Table 3-2: Summary of Noise exceedances in October 2011

Date (dd/mm/yy)	Location	Exceedance	Comments on Exceedance
03/10/2011	Narrows West	67.46dBA	Exceedance due to tandem traffic and excavator working in close proximity to monitor.
03/10/2011	West Gate	65.40dBA	Exceedance due to excavator working in close proximity to the monitor. TP7 is hauling clay to receiving pit.
12/10/2011	Narrows West	68.50dBA	Exceedance due to tandem traffic and excavator working in close proximity to monitor.
12/10/2011	West Gate	65.93dBA	Exceedance due to excavator working in close proximity to the monitor. TP7 is hauling clay to receiving pit.
17/10/2011	Narrows West	67.67dBA	Exceedance due to tandem traffic working in close proximity to monitor.
17/10/2011	West Gate	70.28dBA	Exceedance due to excavator working in close proximity to the monitor. Train activity noted.
7/10/2011	East Hilltop	70.46dBA	Exceedance due to high winds.
24/10/2011	West Gate	65.92dBA	Exceedance due to tandem traffic in close proximity to the monitor.

3.9. Miscellaneous Environmental Monitoring Activities

There were no miscellaneous environmental issues to report.

3.10. Summary of Environmental Monitoring Activities

The building of concrete forms at Ferry Street, Phase II S/S, installation of manholes and sewer lines and channel excavation were the principal construction activities performed by the TP6B Contractor during October 2011. One (1) hydraulic fluid spill occurred and no odour complaints were filed by external

sources. The DE issued two (2) environmental RFAs and one (1) environmental NCR during October 2011. The RFAs related to the future plans for the northeast sump and the NCR related to implementation of the water management and sediment control strategy. The Contractor responded to a number of dewatering incidents and managed odours, dust and erosion control measures throughout the October 2011.

4. TP7 – TAR PONDS SURFACE CAP

The scope of the TP7 Contractor involves constructing a multi-layered cap over the S/S'ed Tar Ponds monolith. The Contractor places large quantities of exposed cohesive soil followed by topsoil adjacent to constructed and natural water courses and therefore erosion and sediment control measures are an important aspects of the TP7 contract.

4.1. Summary of Construction Activities

Construction activities at TP7 during October 2011 consisted primarily of Phase II channel berm construction, cohesive soil importing and placement over Phase I and Phase II S/S cells, Phase I geoperm application, Phase II cohesive soil stockpiling, and Phase I topsoil application.

4.2. Dewatering

The TP7 Contractor decanted settled water contained that had collected from precipitation on the TP7 cap behind the berm near the Phase I access ramp onto riprap of the Phase I channel on October 19 and 20, 2011 to divert it from breaching the berm and entering the TP6B work area.

On October 21, 2011 the Contractor decanted highly turbid pooled rain water from the Phase II clay stockpile area onto Phase II channel riprap (see Photo 4-1). The DE notified the Contractor that this was not an appropriate course of action. The Contractor shut off the pumps upon notification from the DE. The following day, the TP7 Contractor completed decanting this water by directing the discharge through filter bags prior to discharging onto rip rap. As a response to the October 21, 2011 pumping activities, the DE issued NCR-TP7-010 Water Management and Erosion Control, stating that during pumping activities there were no environmental controls and no one monitoring the discharge. The DE also pointed out that while no water was flowing in the channel at the time of pumping, in the future water will flow down this Channel and the impact of TP7 pumping sediments into the channel will affect its performance in the future. The Contractor did not respond to this RFA prior to the end of the reporting period.



Photo 4-1: Hose Discharging Turbid Pooled Phase II Rain Water into Un-Finished Channel

From October 25 to 29, 2011 the TP7 Contractor continued to decant collected precipitation water that had collected on the clay cap from behind the berm near the Phase I access ramp and from the Phase II clay stockpile. Water was discharged onto the slag near the Phase II east access road. No issues were raised regarding these dewatering activities.

4.3. Sediment Control Structures, Stabilization Areas, Silt Curtain and Oil-Absorbent Booms

The TP7 Contractor made repairs to the east perimeter ditch silt fencing on several occasions in October 2011. On October 25, 2011 the Contractor replaced damaged silt fencing in this area.

There are filter bags in the catch basins along Ferry and Inglis Street to capture any material left by truck traffic exiting the site. These filter bags were inspected and cleaned on a regular basis in October 2011.

As part of their Sediment and Erosion Control Plan, the TP7 Contractor applies Geoperm, a bonded fibre matrix, to the surface of the clay and topsoil layers to manage erosion shortly after placing materials. During the start of October 2011 Geoperm was not applied to clay surfaces in a timely manner. Widespread soil erosion occurred as a result of heavy rainfall and lack of erosion control on October 5, 2011 (see Photo 4-2). The primary water bodies affected by soil erosion were the east perimeter ditch, the sump near the base of the Phase I access ramp, the Phase I channel, and the Phase II southwest sump. On October 11, 2011 the DE issued RFA-TP7-Sediment Control, stating that the delayed completion of TP7 hydroseeding and/or seed and mulch application, and a lack of proper sediment controls as per the EPP and site drawings, contributed to the soil erosion. The Contractor did not respond to this RFA before the end of the reporting period.



Photo 4-2: Clay-laden Surface Runoff Water Entering the Phase I Channel During Heavy Rainfall

Prior to October 2011 the TP7 Contractor commenced work in Phase II of the Tar Ponds without a submitted Erosion and Sediment Control Plan. On October 19, 2011 the DE issued RFA-TP7-011 Erosion and Sediment Control Plan requesting that the TP7 Contractor submit these plans for Phase II work, including preparations for winter 2011. The Contractor did not respond to this RFA before the end of the reporting period.

On October 20, 2011 during heavy a rainfall, the DE notified the Contractor that a significant volume of clay-laden turbid water was observed to be draining from the area immediately north of the Phase I clay stockpile (see Photo 4-3). The DE requested that the TP7 Contractor extend their clay stockpile silt fencing so that it extends further north as to provide sediment control during future heavy rainfall events. On October 25, 2011 the Contractor extended this silt fencing. This area did not prove problematic for the remainder of the month.



Photo 4-3: Phase I Clay Stockpile Silt Fencing Prior to Extension

4.4. Surface Water Monitoring

No surface water monitoring was conducted by the TP7 Contractor during October, 2011 as no construction activities took place near active watercourses. Preparations were underway to conduct turbidity monitoring in November if the channel opens.

4.5. Access Roads

During October 2011 the TP7 Contractor maintained a clean haul strategy as the areas that they were working in had already been remediated. During the month of October 2011 the Contractor maintained clean roads by managing dust.

The TP7 Contractor also assured that public roads used by Contractor hauling trucks were swept clean as required. The TP7 Contractor utilized a water truck and street sweeper every work day during October, 2011 (see Photo 4-4). As mentioned in Section 4.3, the Contractor also utilizes filter bags in the catch basins along Inglis street in an effort to capture any TP7 related sediment which may be swept into the basins during street sweeping.



Photo 4-4: TP7 Water Truck Watering Ferry Street Access Road

4.6. Air Monitoring and Particulate Matter Control Measures

Air monitoring is conducted by All-Tech at the perimeter fence and measures particulate matter (PM) and volatile organic carbon (VOC) with action levels of $155 \mu\text{g}/\text{m}^3$ and 0.66 parts per million (ppm), respectively. All-Tech did not report any TP7 related air monitoring exceedances in October, 2011. The Contractor deployed the water truck on site in order to mitigate high levels of dust during October, 2011. Dust control was in place throughout the month while dust was being generated on site.

4.7. Product Storage, Fueling and Waste Disposal

There were no spills reported by the TP7 Contractor on site during October 2011.

4.8. Noise Control Measures

The Contractor's EM completed noise monitoring four (4) times in October 2011. The 65_{Leq} dBA action level was not exceeded during this testing period. Noise monitoring occurred on October 4, 11, 18 and 29, 2011. Details are provided in the Contractor's EILs.

4.9. Miscellaneous Environmental Monitoring Activities

There are no miscellaneous issues to report.

4.10. Summary of Environmental Monitoring Activities

During October 2011, the Contractor maintained filter bags on the catch basins on the public roads, repaired and replaced silt fences as required and decanted water from behind the berm near the Phase I access ramp and the Phase II clay stockpile. Erosion and sedimentation proved problematic for the TP7 Contractor during October, 2011, and as such the DE issued two (2) environmental RFAs and one (1) environmental NCR. In each of these reports, the DE requested an Erosion and Sediment Control Plan, which the Contractor had not submitted prior to the end of the reporting period. Due to periods of heavy rains in the month of October, there were issues sediment management issues on site related to TP7 activities.

5. CONCLUSION

The TP6A Contractor continued to operate the pumping stations at Wash Brook and Coke Ovens Brook as part of Phase II of the pump around of the South and North Tar Pond and continued to construct the Battery Point dissipation structure. Prior to dewatering the discharge cells at Battery Point, the Contractor installed environmental controls required for such an activity. The Contractor also responded to a number of storms throughout October 2011. They responded quickly to issues regarding dewatering, sedimentation and fish protection. They received no environmental NCRs or RFA during the month.

Phase II S/S, cell depth determinations and channel excavation were the principal construction activities performed by the TP6B Contractor during October 2011. Throughout the month the TP6B Contractor responded to dewatering and sedimentation issues associated with the northeast settling sump and Narrows infiltration gallery. They were issued one (1) environmental NCR and two (2) environmental RFAs. Odour control, dust suppression, water management and erosion control were conducted in a manner compliant with the EPP and EMP during October 2011.

During October 2011, the TP7 Contractor responded to erosion and sedimentation issues in the main Channel caused by breaching of the Ferry Street berm with clay laden water. The DE requested the submission of the Contractor's Phase II Erosion and Sediment Control Plan, which they had not submitted prior to the end of the reporting period. They were issued one (1) environmental NCR and two (2) environmental RFAs relating to erosion and sedimentation controls.

MBJV's, Hazco and Nordly's EMs performed routine inspections of the Sites using the EIL to ensure that remedial work activities did not cause any environmental concerns. Ongoing environmental concerns are addressed to the Contractors both verbally on site and through written NCR or RFAs. At TP6A, TP6B and TP7 AECOM personnel sign and review the EILs on a daily basis to ensure field conditions match the reporting by the EM. A summary table of the NCRs, RFAs and SIs are highlighted in below in Table 5-1.

Table 5-1: Overview of Environmental Disciplinary Reports (RFAs, NCRs)

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
NCR-TP6B-032	Water Management Implementation	Oct. 11, 2011	On October 5, 2011 turbid water from the Ferry Street and southwest sumps was pumped to the infiltration pit area and subsequently released into the Phase III area of the site. That this impacted water made its way to the Phase III pond was evidence that the TP6B Contractor was not adhering to their proposed water management plan. Nordlys reported that due to Sydney receiving over 75 mm of rain on October 5, large volumes of water entered the TP6B work area. The TP7 contractor failed to control the water running off the clay in the South Pond and in the SW corner of the	The TP7 Contractor needs to prevent the clay-laden water from entering the TP6B area.	October 25, 2011	The TP7 Contractor needs to develop a plan to handle clay-laden water before it enters the TP6B area.	Pending

Report No.	Description	Issued	Cause	Action	Respon ded To	Long Term Action	Closed Date
			<p>North Pond. The water in the SW corner was also mixed with raw sewage from the CBRM discharge. Nordlys could not allow the huge volume of clay-laden water to enter the settling pond which could jeopardize operations. The 25 micron silt bags in question could not remove clay sized particles (3-8 microns).</p>				
NCR-TP7-008	Clay Laden Water Breach	Aug. 23, 2011	<p>A heavy rain event amounting to approximately 20 mm over several hours on the morning of August 23, 2011 overwhelmed the berm designed to collect and hold run off from the clay cap at 0800 with excessive runoff from site roads and the clay cap. The breach of this berm caused clay-laden water to enter the sump</p>	<p>TP6B Contractor stopped pumping water from sump and TP7 water truck was deployed to collect and relocate clay laden water to infiltration area adjacent to South Pond look off.</p>	Sept.15, 2011	<p>Repairs were made to berm and the height was raised by approximately 600 mm. Repairs to berm were completed on 24 Aug 2011.</p>	Oct. 25, 2011

Report No.	Description	Issued	Cause	Action	Respon ded To	Long Term Action	Closed Date
			that is being operated by the TP6B Contractor.				
NCR-TP7-010	Water Management and Erosion Control	Oct. 24, 2011	On Oct. 21, 2011, the DE identified a TP7 pump relocating highly turbid water into the newly constructed channel in Phase II. During this time no environmental controls were installed and no one was monitoring the discharge. Although the channel is not currently flowing, in the future it will be and the impact of TP7 pumping sediments into the channel will affect its future performance. As per Section 3.2.1 of the TP7 EPP, the Contractor is responsible for the construction of drainage swales and installing associated erosion control	Pending	Pending	Pending	Pending

Report No.	Description	Issued	Cause	Action	Respon ded To	Long Term Action	Closed Date
			measures. Line items 8, 17 and 20 of the TP7 specifications also address environmental protection and erosion control. RFA-TP7-010 and RFA-TP7-011 also request resolution to these issues.				
RFA-TP6B-054 R1	Flood Management Plan	Aug. 30, 2011	Excavated S/S material was left in place between stations 640 and 692 to provide access for Phase II construction activities. This was discussed in RFI-124rev1, which was received by Nordlys on 6/23/11.	The previously SS'ed sediment from station 0+640 to the Ferry St Bridge location were excavated to an elevation at or below -0.25 meters on August 26, 2011. The crane pad located at the Ferry St. Bridge abutments was also surveyed and found to be below -0.25 meters. All obstruction within the channel footprint is at or below an elevation of -0.25 meters. Contractor accepted that as the berm was	September 27, 2011	Flooding of the isolated work areas within the Tar Ponds could result from a failure of the TP6 Part A pump-around diversion activities or a storm surge in Sydney Harbour, Flooding has the potential to seriously disrupt work activities and the curing of S/S materials, endanger the safety of on-site workers, and could cause delays for clean-up activities to take place. A surge or extreme flows from upstream watersheds may also result in localized erosion of creek embankments, carrying sediment-laden water into the work area. In addition to work activities, flooding could affect aquatic systems,	Oct. 11, 2011

Report No.	Description	Issued	Cause	Action	Respon ded To	Long Term Action	Closed Date
				constructed as part of the contractors' means and methods to access the site, if other contractors are using, they should make arrangements between to cost share the reinstatement.		marine biota and habitat. All appropriate precautions will to be taken by both TP6 Part A Contractors and Nordlys to ensure that in the event of severe weather, the integrity of the project and the safety of the workers will be maintained.	
RFA-TP6B-061 R1	Water Management Sump	Oct. 14, 2011	Material had been placed in the sump in the northeast corner, North Pond intended for SS. An overall management plan including a water management plan with regards to maintaining and closure of the sump required. Revision 1 (October 14, 2011) The small amount of sediment in question was unintentionally pushed over the clay berm. The sediments	Water management activities will continue as follows for the remainder of Phase II activities: * The Narrow receiving sump will continue to be used while S/S handling and management is being accomplished. * The Narrows receiving sump is separated by a clay check berm demarcating the southern and northern halves. Sediment is currently being	October 21, 2011	None	Pending

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
			<p>were removed on Monday, October 17, 2011, as noted on the EIL at 1000. Mixing of these sediments will begin on Friday, October 21, 2011.</p>	<p>placed in the southern portion of the Narrows receiving sump. Sediments that are identified will be stockpiled in this location and later pushed into the northern half of the sump once S/S operations are complete.</p> <p>* Clear surface water in Phase II will be pumped to the channel and managed at the Narrows structure pump.</p> <p>*Black water encountered during excavation of previously S/S material or manhole activities will be pumped to the northern Narrows receiving sump to settle out prior to discharge to the</p>			

Report No.	Description	Issued	Cause	Action	Respon ded To	Long Term Action	Closed Date
				infiltration gallery. * Odours will be controlled using Biosolve and a combination of short term foam and ConCover as per normal.			
RFA-TP6B-062	Excavated SS Material Management Plan	Oct. 18, 2011	Materials management plan to handle the disposition of the SS material laid down on the monolith north of the south PCB Zone The majority of these impacted materials were excavated from the crack area in the SE corner of the North Pond. These sediments were very wet at the time of excavation and had to be stockpiled to allow them to drain. Some of this material was rolled on Oct 12 and 13 but the some sediments were still too wet to roll. On October	The sediments will be reclaimed and placed on the North Pond Materials Handling Pad by October 28, 2011. This operation began on October 26, 2011.	October 27, 2011	N/A	Pending

Report No.	Description	Issued	Cause	Action	Respon ded To	Long Term Action	Closed Date
			24, another attempt was made to roll these sediments but the sediments were still too wet and the roller got bogged down and had to be towed out.				
RFA-TP7-010	Sediment Control	Oct. 11, 2011	<p>On October 5, 2011 widespread TP7 soil erosion occurred as a result of a rainfall event. The delayed completion of TP7 hydroseeding and/or seed and mulch application and a lack of proper sediment controls contributed to the soil erosion.</p> <p>Section 3.2.1.3 item b) of the EPP states that: Hydroseeding and/or seed and mulch shall be carried out as soon as possible after completion of surface preparation. This section of the EPP also states that: Hydroseeding shall be</p>	Pending	Pending	Pending	Pending

Report No.	Description	Issued	Cause	Action	Respon ded To	Long Term Action	Closed Date
			<p>repeated as required to re-seed areas damaged by erosion and areas where growth has not occurred.</p> <p>Section 3.2.1.2 item b) of the EPP states that: Silt fence barriers are to be installed as shown on TP7-DWG-N-023 and TP7-DWG-N-024 design drawings. This requires silt fence barrier installation along the new TP6 channel, along the Coke Ovens Brook (in zones close to the work area), and along the appropriate shoreline contours of the active working areas or S/S sediments, as a temporary perimeter control to keep sheet runoff and sedimentation from entering the new TP6 channel or Sydney Harbour.</p>				

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
RFA-TP7-011	Erosion and Sediment Control Plan	Oct. 19, 2011	The Contractor has yet to submit an Erosion and Sediment Control Plan for Phase II work.	Pending	Pending	Pending	Pending

Table 5-2: Overview of Environmental Supplemental Instructions (SIs)

There were no environmental SIs issued during October, 2011.

Environmental Inspection Log

Appendix A

Remediation of the Sydney Tar Ponds and Coke Ovens Sites Environmental Inspection Log (EIL)

Design Element: _____
 Date: (D/M/Y): _____
 Time (24 hrs): _____

Weather Conditions: _____

Daily Construction Activities: _____

EIL Completed by (printed name and signature): _____ EM Name _____ EM Signature _____

EIL Reviewed by (DE name, signature, date, time): _____ DE Name _____ DE Signature _____ DD/MM/YYYY, 24:00 _____

DAILY CHECKLIST ITEM:	DESCRIPTION	ACCEPTABLE	NOT ACCEPTABLE ¹	NOT APPLICABLE	Comment # (See P.2)
1. Sediment Control Structures:					
	Hay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Silt Fences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Dissipation Measures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Silt Curtains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Oil Absorbent Boom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Stabilization Areas					
3. Noise Control Measures					
4. Dust Control Measures					
5. Air Emission Control Measures					
6. Materials, Product & Equip. Storage					
7. Fueling and Maintenance Area					
8. Waste Disposal/Debris					
9. Access Roads					
10. Dewatering					
	Hoses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
11. Decontamination Areas (ONCE DAILY)					
	Workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Equipment/Vehicles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
12. Barriers for Disposal, Storage & Work Areas (ONCE DAILY)					
13. Other Specific EM Activities:					
	Type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
14. Field Sampling:					
	Type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

¹ Criteria for Acceptable and Not Acceptable for each checklist item is given on Pages 3 to 6.

- Where a checklist item is not acceptable, comments must be provided below detailing: the nature of the concern; the extent of any environmental impacts; the remediation measures undertaken; the requirement for any further remediation measures; if notification of a regulatory body was required, and if so, the response; any recommendations for improvements/follow-up; and any other relevant information.

Criteria to determine if Mitigation Effectiveness is Acceptable or Non-acceptable

1. Sediment Control Structures:

- a. Acceptable: If instantaneous turbidity readings are within 8 Nephelometric Turbidity Units (NTU) above background (upstream sample location) if background concentrations are less than 80NTU. If background is greater than 80 NTU, and samples are within 10% of background levels on downstream side of the structure, the structure is deemed to be functioning as intended. During visual inspection, if the sediment control structures are intact, with no gaps, tears, slumping or weathering of the materials and no noticeable impact in the receiving water “downstream” of the sediment control structures.
- b. Not Acceptable: If instantaneous turbidity readings are greater than 8NTU if background is less than 80NTU, or if readings are greater than 10% of background levels on downstream side of the structure, the structure is deemed to be not functioning as intended. During visual inspection, if the sediment control structures are not intact, with gaps, tears, slumping or weathering of the materials and noticeable impact in the receiving water “downstream” of the sediment control structures.

2. Stabilization Areas:

- a. Acceptable: During visual inspection, if there is no apparent sloughing banks or erosional processes occurring in an area of disturbance created by the Project.
- b. Not Acceptable: During visual inspection, if there is sloughing banks or erosional processes occurring in an area of disturbance created by the Project.

3. Noise Control Measures:

- a. Acceptable: If noise measurements (based on two hour averages) are within the following limits:
 - $L_{eq,2hr} \leq 65$ dBA between 0700 to 1900 hours (Days)
 - $L_{eq,2hr} \leq 60$ dBA between 1900 to 2300 hours (Evenings)
 - $L_{eq,2hr} \leq 55$ dBA between 2300-0700 hours (Nights)
- b. Not Acceptable: If noise measurements (based on two hour averages) are not within the above limits.

4. Dust Control Measures:

- a. Acceptable: During visual inspection, dust is controlled during grading, excavation and construction activities. The exposed surfaces, stock piles or stored materials are covered with water, foam or tarps, as required. The vehicles used for excavation or transportation of materials are completely enclosed or with retractable load covers, the haul unit seals are in good working order, hoses and connections on equipment are free of leaks or drips.
- b. Not Acceptable: During visual inspection, dust is not controlled during grading, excavation and construction activities. The exposed surfaces, stock piles or stored materials are not covered with water, foam or tarps. The vehicles used for excavation or transportation of materials are not completely enclosed or with retractable load covers, the haul unit seals are not in good working order, hoses and connections on equipment have leaks or drips.

5. Air Emission Control Measures:

- a. Acceptable: If measurement by AQMC at halfway between fence line and source(s) is less than or equal to: 2ppm averaged over 15 minutes; or with the exception of benzene and naphthalene, 5 exceedences to the 15 minute averaging period over the workday averaged over 10 hours; or 2.5ppm for benzene and naphthalene (as confirmed by Draeger –Tubes or olfactory means) averaged over 1 hour.
 - b. Not Acceptable: If measurement by AQMC at halfway between fence line and source(s) is greater than: 2ppm averaged over 15 minutes; or with the exception of benzene and naphthalene, 5 exceedences to the 15 minute averaging period over the workday averaged over 10 hours; or 2.5ppm for benzene and naphthalene (as confirmed by Draeger –Tubes or olfactory means) averaged over 1 hour.
6. Product Storage:
- a. Acceptable: All potentially hazardous products are stored in a pre-designated, safe and secure product storage area at the work site in accordance with provincial legislation; all products shall be properly labeled according to WHMIS; any spilled products are contained and the area cleaned.
 - b. Not Acceptable: Any potentially hazardous products are not stored in a pre-designated, safe and secure product storage area at the work site in accordance with provincial legislation; or any products are not properly labelled according to WHMIS; or any spilled products are not contained; or the area has not been cleaned after a spill.
7. Fueling and Maintenance Area:
- a. Acceptable: Area is clean, well organized. All potentially hazardous products are stored in a pre-designated, safe and secure product storage area within the construction area, in accordance with provincial legislation. All products are properly labeled according to Workplace Hazardous Materials Information System (WHMIS). Material Safety Data Sheets (MSDS) are on site with the relevant product.
 - b. Not Acceptable: Area is not clean, unorganized and any of the above noted safeguards are missing.
8. Waste Disposal/Debris:
- a. Acceptable: Project site is free from any waste/debris whether it be benign solid waste or hazardous waste other than those waste stored in designated bins/areas.
 - b. Not Acceptable: Project site contains waste/debris whether it be benign solid waste or hazardous waste, is not destined for immediate disposal and requires appropriate disposal.
9. Dewatering:
- a. Acceptable: Fish have been removed prior to dewatering; fish screens are installed in pumps; and the dewatered cells are maintained during construction.
 - b. Not Acceptable: Fish have not been removed prior to dewatering; fish screens are not installed; or the dewatered cells are not maintained during construction.
10. Access Roads used by the Contractor(s)
- a. Acceptable: Upon visual inspection, the access roads used by the Contractor(s) are dust suppressed, free of debris or unnecessary materials with no spills. If applicable, silt fences appear to be working and are being maintained along toe of slope (along banks) and drainage ditches appear to be working to direct flow away from waterways.

- b. Non Acceptable: Upon visual inspection, the access roads used by the Contractor(s) are not dust suppressed, have debris or unnecessary materials with spills. If applicable, the silt fences appear not to be working or to not be maintained along toe of slope (along banks), and drainage ditches appear not to be working to direct flow away from waterways.

11. Other Environmental Monitoring:

Air Quality (Responsibility of the AQMC)

- a. Acceptable: Monitoring instruments are regularly calibrated. Data is collected and recorded hourly. During times periodically when there is a potential for increased emissions, real time monitoring shows compliance with previously established limits as identified above in numbers 5 and 6.
- b. Not Acceptable: Monitoring instruments are not regularly calibrated. Data is not collected or not recorded hourly. During times periodically when there is a potential for increased emissions, real time monitoring shows exceedances of limits as shown in numbers 5 and 6.

Surface water

- a. Acceptable: Monitoring instruments are regularly calibrated. Data is collected and recorded hourly. During times periodically when there is a potential for increased sediment loading (i.e. excavation), real time monitoring shows no exceedance of limits as described in Item 1.
- b. Non Acceptable: Monitoring instruments are not regularly calibrated, or data is not collected and recorded hourly. During times periodically when there is a potential for increased sediment loading (i.e. excavation), real time monitoring shows exceedance of limits as described in Item 1.

Groundwater

- a. Acceptable: If a contaminant of concern in groundwater does not have an upward trend after the fourth sample for three consecutive samples using the Mann-Kendall trend analysis; this approach will use the entire available time series of data (within the numerical constraints of the test).
- b. Not Acceptable: When an upward trend after the fourth sample for three consecutive samples using the Mann-Kendall trend analysis is identified; again, this approach will use the entire available time series of data (within the numerical constraints of the test).

12. Field sampling:

- a. Acceptable: Field sampling instruments are regularly calibrated. Field sampling Standard Operating Procedures are followed. Chain of Custody forms are completed accurately and fully, and submitted with samples for analysis. Health and Safety plans have been prepared and reviewed prior to the start of daily field sampling work.
- b. Not Acceptable: Field sampling instruments are not regularly calibrated. Field sampling Standard Operating Procedures are not followed. Chain of Custody forms are not completed, not accurate, or are not fully filled out. Chain of Custody forms are not submitted with samples for analysis. Health and Safety plans have not been prepared and/or have not been reviewed prior to the start of daily field sampling work.