ANNEX 'A'

SUMMARY OF RECOMMENDED MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

FISHERIES AND OCEANS CANADA

SMALL CRAFT HARBOURS BRANCH

HARBOUR DEVELOPMENT

MARYS HARBOUR, NL

PROJECT # R.051975.006

- Project activities should only be carried out during periods when wind, wave and tide conditions minimize the dispersion of silt and sediment from the work site. The proponent is advised to monitor turbidity plumes to ensure that the extent and duration of sedimentation are within acceptable limits.

- The in-water use of heavy equipment is not permitted. The operation of such equipment should be from dry/stable shoreline areas.

- All vehicles and equipment should be clean and in good repair, free of mud, fuel and oil or other harmful substances that could impair water quality.

- All drainage and wash water from concrete production should be properly contained and should not drain into the marine environment.

- The proponent should be aware of the CCME "Canadian Environmental Quality Guidelines (1999) that recommend that for the protection of marine waters, human activities should not cause suspended solids levels to increase by more than 10% of the natural conditions expected at the time. The guidelines also recommend that no solid debris, including floating or drifting materials or settleable matter, be introduced into marine waters.

- Disruption to areas outside the target dredge area should be avoided where possible.

- Work should be properly timed to avoid potential interference with commercial, recreational, and/or aboriginal fisheries.

- Appropriate sedimentation control measures (e.g. silt curtains, booms, etc), should be deployed where required.

- Armourstone should be clean, non-acid generating and free of fine materials.

- Armourstone is to be placed progressively to minimize shoreline erosion and prevent the loss of infill material.

- The proponent should be aware that under the *Migratory Birds Regulations*, "no person shall deposit or permit to be deposited oil, oil wastes, or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds."

- Dredge spoils may be re-used on-site on DFO SCH property only, above L.N.T., or must otherwise be transported to a provincially approved waste disposal site.

The project is covered under Service NL Dredge Spoil Disposal Approval, NL Department of Environment and Conservation Permit To Alter A Body Of Water and Transport Canada, Navigable Waters Protection Act Part 1, Section 5 approval. The NL Department of Environment and Conservation, Environmental Assessment Division has indicated that a provincial assessment is not required. Fisheries and Oceans Canada, Habitat Protection Division determined that the project would likely not result in the Harmful Alteration, Disruption or Destruction (HADD) of fish habitat and prescribed several mitigation measures to help mitigate potential environmental impacts (included above). Environment Canada has also issued expert advice containing several mitigations and best management practices.

The proponent should ensure that copies of all regulatory approvals are available on-site during project activities.

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The proponent should ensure that copies of all regulatory approvals are available on-site during project activities.

CONTRACTOR'S COPY

OF

REGULATORY APPROVALS/RESPONSES

FISHERIES AND OCEANS CANADA

SMALL CRAFT HARBOURS BRANCH

HARBOUR DEVELOPMENT

MARYS HARBOUR, NL

PROJECT # R.051975.006

Federal Coordination Regulations
SECTION 6
RECORD OF DETERMINATION

Project Title:

Harbour development, Marys Harbour, NL – Project # R.051975.006

Federal Authority FISHERIES & OCEANS

Name & Title KATHLEEN SIMMS, AREA HABITAT BIOLOGIST

Signature _____ Date May 8/12

In accordance with the Federal Coordination Regulations (Section 6), under the Canadian Environmental Assessment Act (CEAA), is your department/Agency

☐ **Likely** to be a Responsible Authority (RA), and thus require an environmental assessment under Section 5 of CEAA.

OR

☒ **Not likely** to be a Responsible Authority (RA).

AND

☒ In possession of expert and specialist information that is necessary to conduct an environmental assessment of this project.

OR

Does your Department/Agency

☐ Require additional information (below) to determine if likely to be an RA.
(The regulations require that additional information be requested within 10 days after making this determination)

PLEASE FAX OR EMAIL THE ORIGINAL SIGNED COPY TO
PWGSC ENVIRONMENTAL SERVICES
FAX NUMBER (709) 637-4566
EMAIL: mark.mcneil@pwgsc.gc.ca

Mark McNeil

From: O'Rourke, John [John.ORourke@dfo-mpo.gc.ca]
Sent: May-28-13 3:47 PM
To: Branton, Sharon D
Cc: Mark McNeil; Kelly, Jason
Subject: Harbour Development - Mary's Harbour, NL

Dear Ms. Branton:

Subject: Harbour Development – Mary's Harbour, NL. This proposal as described is not likely to result in impacts to fish and fish habitat.

Fisheries and Oceans Canada – Fisheries Protection Program (DFO) received your (revised) proposal on April 29, 2013. Please refer to the file number and title below:

DFO File No.: **12-HNFL-NA5-00017**

Title: **Harbour Development – Mary's Harbour**

Your proposal has been reviewed to determine whether it is likely to result in impacts to fish and fish habitat which are prohibited by the habitat protection provisions of the Fisheries Act or those prohibitions of the *Species at Risk Act* that apply to aquatic species.*

Our review consisted of:

- *Assessor knowledge of the area*
- *Google Earth imagery*
- *Project description and associated documentation*

We understand that you propose to:

- Develop harbour infrastructure located at Mary's Harbour, NL consisting of four components which will be completed in several phases.

Component 1 will include the construction of a new 6.1 metre wide by 79.3 metre long marginal wharf. The marginal wharf will be constructed of treated timber cribbing scribed to bedrock. Clean rock fill will be utilized as ballast. To properly seat the cribwork and ensure adequate vessel draft, approximately 1200 cubic metres of Class A material (bedrock and boulders) will be removed from the wharf footprint. Blasting and heavy machinery working from the shoreline or a floating barge will be required for dredging. The total new benthic footprint of the wharf will measure approximately 484 square metres. The marginal wharf will be constructed

in Phases; Phase 1 will include constructing 61 metres of wharf. The remaining 18.3 metres of wharf will be constructed in later Phases.

Component 2 will include the construction of new concrete boat launch. The new boat launch, measuring 4.8 metres wide by 30.5 metres long, will be constructed of concrete slab on grade (above the high-water mark) and rock filled cribs (below the high-water mark). Riprap protection consisting of 1 tonne rock will be placed on both sides of the boat launch. The completed boat launch will be constructed directly north of the new marginal wharf. The total new benthic footprint of the boat launch will measure approximately 60 square metres. The boat launch will be constructed in Phase 1 of the project.

Component 3 will include the construction of a finger pier wharf extension. The new extension, measuring approximately 7.62 metres wide by 48 metres long, will be constructed at the end of an existing finger pier wharf. The extension will be constructed of treated timber cribbing placed atop a rock mattress. Clean rock fill will be utilized as wharf ballast. The rock mattress will be installed directly on the existing seabed. Crushed quarry run rock ranging in weight from 45 kg to 400 kg will be used as the base layer. The side slopes of the rock mattress will be protected with approximately 2000 cubic metres of 1 tonne scour protection. The total new benthic footprint of the rock mattress will measure approximately1860 square metres. The finger pier extension and rock mattress will be constructed in later Phases of the project.

Component 4 will include dredging Class A material (bedrock and boulder) from the berthage area and approach to the new marginal wharf. Approximately 3800 cubic metres of Class A material will be dredged from an approximately 1750 square metre area. It is anticipated that approximately 525 cubic metres of Class B overburden (mud, sand, pebble, and cobble) will also be removed from the dredge area. Blasting and heavy machinery working from the shoreline or a floating barge will likely be required for dredging (alternatively, a temporary access road may be constructed utilizing dredged material to adequately reach dredge limits; the road will be removed as the excavator works its way back to shore). Dredged material will be re-used on-site where possible, or otherwise transported to a provincially approved waste disposal location. Dredged material will not be placed below the high-water mark for the purpose of waste disposal. Dredging will be completed in Phases; Phase 1 will include dredging an area measuring approximately 1100 square metres. The remaining 650 squares metres will be dredged in later Phases.

An additional component consists of gravel infill service area and gravel boat launch constructed approximately 500 meters northwest of the main project site. The gravel infill service area will measure approximately 35m X 41m with the boat launch measuring approximately 5m X 34m.

To reduce potential impacts to fish and fish habitat we are recommending the following mitigation measures be included into your plans:

- *Please refer to applicable FACTSHEETS at the following link for suggested mitigation techniques: http://www.nfl.dfo-mpo.gc.ca/e0005361*

- *Efforts should be made to limit silt arising as a result of any dredging/infilling to the work area(s). Work should be completed at low (or falling) tide.*

- *There should be no silt and/or sediment, concrete, or any other substance deleterious to fish or fish habitat released to watercourses and/or water bodies as a result of these works. This could be accomplished as per the mitigations outlined in FACTSHEETS referenced above or by other means as appropriate to the site conditions.*

- *This provision of advice will remain in effect until December 31, 2013.*

- *Local fishermen in the area should be advised of the project and starting date.*

- *The rock fill (if required) must be obtained from an approved quarry site should be clean, free of fine materials and of sufficient size to resist displacement during peak flood events. Any additional material should not be removed directly from the water or shoreline below the high water mark.*

- *Shoreline disturbance should be restricted to the immediate work area.*

- *The use of heavy equipment in bodies of water is not permitted. The operation of such equipment (if required) must be confined to dry stable areas.*

- *Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks. All vehicles and equipment must be clean and in good repair, free of mud and oil, or other harmful substances that could impair water quality.*

- *Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.*

- *Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.*

· *The Fisheries office at Goosebay should be notified in advance [telephone (709) 896-8419] of the startup of this work.*

· *A copy of this letter should be provided to the successful contractor who should maintain the copy at the work site.*

· *It will be the responsibility of both parties to this work to ensure that proper fish habitat mitigation measures as may be necessary are put in place.*

Provided that the additional mitigation measures described above are incorporated into your plans, DFO has concluded that your proposal is not likely to result in impacts to fish and fish habitat. You will not need to obtain a formal approval from DFO in order to proceed with your proposal. It remains your responsibility, however, to meet the requirements of any other federal, provincial and municipal agencies.

If your plans have changed or if the description of your proposal is incomplete you should consult our website to determine if a DFO review is required, and if so contact this office to determine if the advice in this letter still applies.

Please be advised that any impacts to fish and fish habitat which result from a failure to implement this proposal as described or incorporate the additional mitigation measures included in this letter could lead to corrective action such as enforcement. In addition, under the *Fisheries Act*, there is a requirement to notify DFO of any harmful alteration or disruption, or any destruction of fish habitat that has not been authorized. Such notifications should be directed to Jason Kelly, Senior Fisheries Protection Biologist at (709)772-8889 or email: jason.kelly@dfo-mpo.gc.ca

If you have any questions please contact me by phone at (709)772-8889, by fax at (709)772-5562, or email: jason.kelly@dfo-mpo.gc.ca

Yours sincerely,

John O'Rourke

A/Senior Habitat Biologist

John M. O'Rourke, B.Sc.
Fisheries Protection Program Biologist

P.O. Box 5667 St. John's, NL A1C 5X1

Telephone: (709) 772-2508
Fax: (709) 772-5562
Cell: (709) 687-1662
Email: John.O'Rourke@dfo-mpo.gc.ca

Environment Canada | Environnement Canada

Environmental Stewardship Branch
6 Bruce Street
Mount Pearl, NL A1N 4T3

19 April 2012

Mark McNeil
Environmental Services
Public Works and Government Services Canada
Suite 204, 1 Regent Square, Corner Brook, NL A2H 7K6

Dear Mr. McNeil:

RE: Harbour Development, Mary's Harbour, NL **EAS 2012-053**

As requested in your email of 13 March 2012, Environment Canada (EC) has reviewed the project description for the above-noted project to identify the department's interests in accordance with the *Federal Coordination Regulations* under the *Canadian Environmental Assessment Act* (CEAA). It is understood that the Small Craft Harbours Branch (SCH) – Central Area, of the Department of Fisheries and Oceans (DFO) has already confirmed its responsibilities for ensuring an environmental assessment of the project is conducted in accordance with the Act.

The proponent proposes to construct the following coastal infrastructure at DFO-SCH facility in Mary's Harbour, southern Labrador:

- a new 6.1 m wide by 79.3 m long marginal wharf;
- a new 4.8 m wide by 60 m long concrete boat launch; and
- a new 7.62 m wide by 48 m long finger pier wharf extension.

The proponent also proposes to dredge approximately 3800 m^3 of material (Class A) from a 1750 m^2 area located within the main boat basin of Mary's Harbour. Dredging will be completed from the shoreline and a floating barge (or possibly a temporary access road) and will likely require underwater blasting. It is anticipated that approximately 525 m^3 of Class B overburden (mud, sand, pebble, cobble) will also be removed from the dredge area. Dredged material will be re-used on-site where possible, or otherwise transported to a provincially approved waste disposal location. Dredged material will not be placed below the highwater mark for the purpose of waste disposal. Minor uplands work will also be completed as part of this project.

The proposed wharf structures will be constructed of treated timber cribbing while the proposed boat launch will be constructed of concrete and rock filled cribs. The marginal wharf will be scribed directly to bedrock. The finger pier wharf will be constructed atop a rock mattress. The proposed project will be completed in phases. Phase 1 will include construction of a portion of the marginal wharf, construction of the entire boat launch, and partial dredging. The remaining portion of the marginal wharf, dredge area and construction of the finger pier wharf (including rock mattress) will be completed in a later Phase(s).

EC is responsible for administering several statutes including the *Department of Environment Act*, *Fisheries Act* (Section 36) , *Canadian Environmental Protection Act*, *Canada Water Act*,

Canada Wildlife Act and the *Migratory Birds Convention Act*, which are focused on promoting sustainable development, protecting the environment, conserving certain renewable resources and reporting on environmental conditions. EC is also the lead federal department in promoting a variety of federal policies and programs including, *A Wildlife Policy for Canada*, the *Toxic Substances Management Policy*, and *Pollution Prevention - A federal strategy for action*. Stemming from these responsibilities, EC possesses expertise relevant to this proposal that should be considered by any Responsible Authority, in conducting the environmental assessment. Our comments are below for your consideration in the screening of this project.

REVIEW COMMENTS

Regulatory Requirements

Fisheries Act

Pollution prevention and control provisions of the Fisheries Act are administered and enforced by EC. The proponent should be aware of the general applicability of Section 36(3) of the *Fisheries Act* which states: "no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substances or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water". Environmental protection and mitigation measures should reflect the need to comply with Section 36(3) of the *Fisheries Act*. For example, measures should be taken to prevent substances such as lubricating fluids, fuels, etc. from being deposited into water frequented by fish, and drainage from construction and operational drainage must not be harmful to fish.

As stated in the project description, the dredging activity may involve a floating barge or a temporary extraction road in order to access the area to be dredged. The temporary access road will be constructed from dredge material from within the target dredge area. The temporary road will be removed as the excavator works its way back to shore. It is also understood that there will be no redistribution or disposal of material or debris on the bottom after dredging.

Sediment sampling data provided on 11 April 2012 indicates that a portion of the dredged material is contaminated with PAHs (exceeds DAS chemical screening criteria). As indicated above, EC administers sub-section 36(3) of the Fisheries Act which prohibits the deposit of a deleterious substance in waters frequented by fish. Use of dredged material for the purpose of temporary access road construction, should the material be contaminated, could be considered the deposit of a deleterious substance.

Migratory Birds Convention Act

Migratory birds, their eggs, nests, and young are protected under the *Migratory Birds Convention Act* (MBCA). Migratory birds protected by the MBCA generally include all seabirds except cormorants and pelicans, all waterfowl, all shorebirds, and most landbirds (birds with principally terrestrial life cycles). Most of these birds are specifically named in the Environment Canada (EC) publication, *Birds Protected in Canada under the Migratory Birds Convention Act*, Canadian Wildlife Service Occasional Paper No. 1.

Under Section 6 of the Migratory Birds Regulations (MBR), it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird, or its carcass, skin, nest or egg, except under authority of a permit. It is important to note that under the current MBR, no permits can be issued for the incidental take of migratory birds caused by development projects or other economic activities.

Furthermore, subsection 5.1 of the MBCA describes prohibitions related to deposit of substances harmful to migratory birds:

(1) No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

(2) No person or vessel shall deposit a substance or permit a substance to be deposited in any place if the substance, in combination with one or more substances, results in a substance — in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area — that is harmful to migratory birds.

It is the responsibility of the proponent to ensure that activities are managed so as to ensure compliance with the MBCA and associated regulations.

Species at Risk Act

The Responsible Authority should be reminded that the Species at Risk Act (SARA) amends the definition of "environmental effect" in subsection 2(1) of the Canadian Environmental Assessment Act (CEAA) to clarify, for greater certainty, that environmental assessments must always consider impacts on a listed wildlife species, its critical habitat or the residences of individuals of that species.

SARA also requires that the person responsible for a federal environmental assessment must, without delay, notify the competent minister(s) in writing if the project being assessed is likely to affect a listed wildlife species or its critical habitat. Notification is required for all effects, including adverse and beneficial effects, and the requirement to notify is independent of the significance of the likely effect. The person must also identify adverse effects of the project on listed species and their critical habitat. And if the project is implemented, the person must ensure that measures are taken to avoid or lessen adverse effects and that effects are monitored. Mitigation measures must be consistent with recovery strategies and action plans for the species.

The complete text of SARA, including prohibitions, is available at www.sararegistry.gc.ca. For guidance on SARA and Environmental Assessments, the proponent may wish to make use of the *Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada* available at: http://www.sararegistry.gc.ca/virtual_sara/files/policies/EA%20Best%20Practices%202004.pdf

Canadian Environmental Protection Act

The proponent should also be aware of the potential applicability of the *Canadian Environmental Protection Act* (CEPA). The *Canadian Environmental Protection Act* enables protection of the environment, and human life and health, through the establishment of environmental quality objectives, guidelines and codes of practice, and the regulation of toxic substances, emissions and discharges from federal facilities, international air pollution, and disposal at sea.

Disposal at Sea Provisions of the *Canadian Environmental Protection Act*

If at any point project activities will include the placement or disposal of dredged or excavated materials into seawater or brackish waters (waters with salinity levels above 0.5 ppt measured under conditions of high tide, low flow), the proponent is advised to contact EC, to verify applicability of Part 7 Division 3 of the *Canadian Environmental Protection Act* (contact Ms. Jayne Roma at 902-426-3649 or Jayne.Roma@ec.gc.ca). Identification of such activities will assist EC in determining if it will be a Responsible Authority (RA) for the proposed project, is in

possession of specialist knowledge that is necessary to conduct the environmental assessment (EA) of an at sea placement activity, or has other project-related EA obligations. Further information regarding the Disposal at Sea (DAS) Program can be accessed at: http://www.ec.gc.ca/iem-das/default.asp?lang=En&n=3C819E48-1.

Migratory Birds

The Canadian Wildlife Service of Environment Canada (EC-CWS) has reviewed the above project. The EC-CWS has no site-specific concerns, but provides the following recommendations:

- Project staff should not approach concentrations of seabirds, sea ducks or shorebirds;
- Project staff should use the main navigation channels to get to and from the site; and should have well muffled vessels and machinery;
- Project staff should undertake any measures that may minimize or eliminate discharge of oily waste into the marine environment.
- Food scraps and other garbage left on beaches and other coastal habitats can artificially enhance the populations of avian and mammalian predators of eggs and chicks. The proponent should ensure that no litter (including food wastes) is left in coastal areas by their staff and/or contractors.
- The proposed project will likely result in an increase in vessel traffic in the area, leading to an increase in the probability of oil spill events. These can occur during vessel fueling, through other accidentals events, and through illegal bilge pumping. The harmful effects of chronic oil pollution on seabirds are well documented. If there is any noticeable change in seabird numbers or distribution at the location during operations, EC-CWS should be notified.

Dredging

The project description does not definitively state where the dredge material will be placed before ultimately being disposed of. If beach placement is being considered, the proponent should be aware that EC-CWS has concerns about the disposal of dredge material on beaches.

Should the proponent decide to proceed with beach placement, it would be preferable for the dredging to happen outside of the shorebird breeding period, which is **May 1st to July 15th** in this area. If this is not possible, then prior to commencing project activities, it should be determined if there are any nests or fledglings of migratory birds in areas where dredge material would be deposited on beaches. This should be determined by a professional ornithologist or a skilled birder. If any birds are found to be nesting or rearing chicks in the vicinity of the proposed dredge spoil disposal area, then EC-CWS should be contacted for further instructions before commencing with the project.

The proponent should be advised that old dredge spoils have been known to attract migratory birds such as Piping Plovers and other species of ground nesting birds such as terns or Killdeer.

Blasting

Certain avian species (e.g. seabird colonies, Piping Plovers) are very susceptible to disturbance, and a large buffer area around the blasting site would be preferable if these species are discovered to be within the area. For example, a buffer of 300 m would be recommended from Piping Plover critical habitat from mid-March until the end of August. And

while a similar 300 m general buffer would be recommended for heronries, a larger buffer (1 km) is recommended for high disturbance activities (e.g. blasting, drilling).

Fuel

EC-CWS recommends best practices with regard to fuelling and servicing equipment, using biodegradable fluids, fuel spills and spill contingency plans, to protect migratory birds and their habitats (described in more detail under **Management of Hazardous Materials and Waste**). Furthermore, the proponent should ensure that contractors are aware that under the *Migratory Birds Regulations*, "no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds."

Suspension of Sediments

The disturbance of substrate during dredging increases sediment concentrations and turbidity in the water column. This disturbance may alter light penetration, temperature and water chemistry regimes, and may affect photosynthesis. Special attention is required if the bottom substrate contains a high percentage of fine particles (smaller than 0.075 mm), such as those found in fine sands, silt and clay, since this characteristic enhances the potential for disturbed sediment to remain in suspension. The CCME (Canadian Council of Ministers of the Environment) *Canadian Environmental Quality Guidelines* (1999) recommend that, for protection of marine waters, human activities should not cause suspended solids levels to increase by more than 10% of the natural conditions expected at the time. The guidelines also recommend that no solid debris, including floating or drifting materials or settleable matter, be introduced into marine and estuarine waters.

A sedimentation control strategy should be developed for the project. Note that for small projects, like the one under consideration, control of total suspended solids (TSS) is often best achieved by way of careful handling procedures. It is also recommended that the proponent identify nearby resources at risk to help minimize the impact of dredging on important ecological and economic habitats. The identification of critical areas which may be affected will help to define a desired maximum zone of impact. If no resources have been identified, a maximum zone of impacts should be defined using best judgment (e.g., two or three hundred meters). The proponent should then verify conditions regularly during dredging to ensure required handling practices are being employed and water quality does not fall below standards outside the designated zone of impact. The size of this zone may be adjusted during dredging activity depending on whether complaints are received or problems detected.

On-land Disposal and Site Disturbance

The dredge materials will be will be transported in watertight trucks and disposed at an approved municipal landfill. The on-land disposal method should ensure that the demolished materials and dredge material will not be re-deposited in the ocean through environmental factors, such as heavy precipitation, storm surge, and/or significant wave action.

In general, impacts related to onshore disturbance should be designed so as to:

- place a priority on pollution prevention;
- facilitate compliance with the general prohibition against the deposit of a deleterious substance into waters frequented by fish (Section 36 of the *Fisheries Act*); and
- respect applicable Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines.

In terms of site disturbance the following 'best practices' should be reflected in efforts to manage impacts so as to respect the above-noted objectives:

- install siltation control structures (e.g. silt curtains, cofferdams, sediment fences) prior to beginning any activities involving disturbance of the site and work along the shoreline;
- design and install siltation control structures to enclose an area from the water surface to the bottom;
- schedule work to avoid periods of heavy precipitation;
- maintain a vegetated buffer zone, as appropriate and where possible, to protect surface waters;
- immediately stabilize any disturbed areas along the shoreline to prevent erosion;
- monitor the integrity and effectiveness of the siltation control structures daily for the duration of the project; and
- upon completion of the project, only remove silt control structures when suspended sediment concentrations within any contained water have returned to background conditions.

Management of Hazardous Materials and Waste

Provisions for the management of hazardous materials (e.g. fuels, lubricants) and wastes (e.g. contaminated soil, sediments, waste oil) should be identified and implemented in order to ensure compliance with Section 36 (3) of the *Fisheries Act*, and with CEPA and the *Migratory Birds Convention Act* and their Regulations. The following mitigation recommendations are made with respect to the transport, storage, use and disposal of petroleum products and toxic substances which, when employed, may minimize the risk of chronic and accidental releases and impacts to the environment:

- It is recommended that all necessary precautions (including those specified below) be undertaken to prevent a fuel spill from occurring, as even small spills can have deleterious effects.
- Fuelling and servicing of equipment should not take place within 30 meters of environmentally sensitive areas, including shorelines and wetlands. Waste oil should be disposed of in an approved manner.
- Biodegradable alternatives to petroleum-based hydraulic fluid for heavy machinery are commonly available from major manufacturers. Such biodegradable fluids should be considered for use in place of petroleum products whenever possible, as a standard for best practices.
- Drums of petroleum products or chemicals should be tightly sealed against corrosion and rust and surrounded by an impermeable barrier in a dry, water-tight building or shed with an impermeable floor.
- In order to ensure that a quick and effective response to a spill event is possible, spill response equipment should be readily available on-site. Response equipment, such as adsorbents and open-ended barrels for collection of cleanup debris, should be stored in an accessible location on-site. Personnel working on the project should be knowledgeable about response procedures. The proponent should consider developing a contingency plan specific to the proposed undertaking to enable a quick and effective response to a spill event. The proponent should indicate how the contingency plans will

be prepared, and response measures implemented, to reflect site-specific conditions and sensitivities. In developing a contingency plan, it is recommended that the Canadian Standards Association publication Emergency Planning for Industry CAN/CSA-Z731-03, be consulted as a useful reference.

- The proponent should report any spills of petroleum or other hazardous materials to the Environmental Emergencies 24 Hour Report Line (St. John's 709-772-2083; other areas 1-800-563-9089).

General Guidance

The proponent should consult the below EC general guidance that could be applicable to any coastal infrastructure project such as the construction, modification or decommissioning of wharves, docks, breakwaters, port facilities, sea walls, boardwalks, trails, etc.:

Environment Canada Guidance Related to the Environmental Assessment of Coastal Infrastructure Projects in the Atlantic Provinces (February 2011)

The proponent should also consult the below EC general guidance that is applicable to any dredging project involving onland disposal.

Environment Canada Guidance Related to the Environmental Assessment of Dredging and On-land Disposal Activities in the Atlantic Provinces (March 2011)

The attached guidance documents provide discussions of potential impacts, and are useful in identifying additional EA information considerations and EC expertise for the EA of dredging and coastal infrastructure proposals.

I trust that this information will be of assistance in your review of this project. If you wish to discuss these comments or have further questions, please do not hesitate to contact me at 709-772-2126 or via email at jerry.pulchan@ec.gc.ca.

Yours truly,

Jerry Pulchan

Jerry Pulchan
Environmental Assessment Analyst
Environmental Protection Operations Directorate- Atlantic

Attachment

Cc: J. Corkum
M. Hingston

Environment Canada / Environnement Canada

Federal Coordination Regulations
Environment Canada Section 6 Response

Project Title: Harbour Development, Mary's Harbour, NL

Location/Province: Mary's Harbour, NL

Proponent: Small Craft Harbours - Southern Area, Fisheries and Oceans Canada

Notification Date: 13 March 2012 **EAS #** 2012-053

In accordance with the Federal Coordination Regulations (Section 6), under the Canadian Environmental Assessment Act (CEAA), Environment Canada (EC) has reviewed the project description, and wishes to advise you of the following:

☐ EC is likely to be a Responsible Authority (RA), and thus require an environmental assessment under Section 5 of CEAA.

Trigger Type: ☐ Proponent ☐ Land Transfer ☐ Funding ☐ Law List

Law List Item :

OR

☒ EC is NOT likely to be a Responsible Authority (RA).

OR

☐ Additional information (below) is required to determine if EC is likely to be an RA.

☒ EC is in possession of expert and specialist information that is necessary to conduct an environmental assessment of this project.

Original signed by Jerry Pulchan	(709) 772-2126	19 April 2012
Reviewer, Environment Canada (Atlantic Region)	Telephone	Date

Newfoundland Labrador

Government of Newfoundland and Labrador
Service NL

November 15, 2012

Mr. Mark McNeil
Environmental Assessment Officer, Environmental Services
Public Works and Government Services Canada
Suite 204 Regent Square
Corner Brook, NL
A2H 7K6

Disposal of 525 cubic metres of Class B overburden material (mud, sand, pebble, cobble) produced as a result of harbour development and dredging, Mary's Harbour, NL. P/N R.051975.006

The Government Service Centre has received and reviewed your request of May 23, 2012, regarding the above mentioned project. Based on the results of chemical analyses provided, the Government Service Centre has no objections to the disposal of 525m^3 of dredged material at an approved waste disposal site with prior permission from the owner/operator.

Should you have any questions regarding this matter, please contact me at 709.896.5473.

Regards,

Andrew Moss
Environmental Protection Officer - Labrador

P.O. Box 3014, Stn B Happy Valley-Goose Bay, NL, Canada A0P 1E0 Phone: 709-896-5473; Fax: 709- 896-7940

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Environment and Conservation

File Ref No. *200.18.0115:0487*

March 26, 2012

Mr. Mark McNeil
PWGSC Environmental Services
Suite 204, 1 Regent Square
Corner Brook, NL
A2H 7K6

For: Harbour Development
At: Mary's Harbour, Labrador
From: Fisheries and Oceans Canada

Dear Mr. McNeil :

This application was referred to the Environmental Assessment Division and it has been determined that registration is NOT required under Section 47 of the Environmental Protection Act, SNL 2002, cE-14.2.

Please be aware that this Department must be notified of any significant changes to the undertaking. All proponents are required to comply with all relevant legislation including permits and approvals from this Department and any other municipal, provincial or federal regulatory authorities.

If you have any questions regarding this matter please contact Paul Rideout at (709)729-0834, toll free at 1-800-563-6181 or email paulrideout@gov.nl.ca.

Sincerely,

Bas Cleary
Director
Environmental Assessment Division

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Environment and Conservation
Water Resources Management Division

PERMIT TO ALTER A BODY OF WATER

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, Section(s) 48

Date: **APRIL 30, 2012**

File No: **532-02**
Permit No: **ALT6343-2012**

Proponent: **Department of Fisheries and Oceans (Grand Falls)**
Small Craft Harbours Branch
4A Bayley Street
Grand Falls-Windsor NL A2A 2T5

Attention: **Wayne Bungay**

Re: **DFO-SCH (Mary's Harbour) - Dredging**

Permission is hereby given for: **the removal of approximately 3800 cubic meters of material from an area in Mary's Harbour to ensure proper seating of wharf cribbing on bedrock and adequate draft of vessels for facility access and berthing as outlined in the application dated March 20, 2012**

- This permit does not release the proponent from the obligation to obtain appropriate approvals from other concerned provincial, federal and municipal agencies.

- The proponent must obtain the approval of the Crown Lands Division of the Department of Environment and Conservation if the project is being carried out on Crown Land.

- This permit is subject to the terms and conditions indicated in Appendix A (attached).

- It should be noted that prior to any significant changes in the design or installation of the proposed works, or in event of changes in ownership or management of the project, an amendment to this permit must be obtained from the Department of Environment and Conservation under Section 49 of the *Water Resources Act*.

- Failure to comply with the terms and conditions will render this permit null and void, place the proponent and their agent(s) in violation of the *Water Resources Act* and make the proponent responsible for taking any remedial measures as may be prescribed by this Department.

MINISTER

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Environment and Conservation

Permit No: ALT6343-2012

APPENDIX A

Terms and Conditions for Environmental Permit

DFO-SCH (Mary's Harbour) - Dredging

Dredging

1. Alteration of the natural minimum streamflow is not permitted in order to preserve aquatic life.

2. The natural course of any stream must not be altered.

3. Dredging activity must only be carried out during periods when wind, wave and tide conditions minimize the dispersion of silt and sediment from the work site.

4. Dredged material must be disposed of in accordance with the regional Government Service Centre of the Department of Government Services. The Department of Government Services may require samples to be submitted for testing and analysis.

5. The area to be dredged must be enclosed and isolated from the rest of the body of water through the use of a filter fabric curtain or similar method.

6. This Permit is valid for five (5) years from the date of issue. If required, an application for Permit renewal must be submitted prior to the expiry date.

General Alterations

7. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.

8. Water pumped from excavations or work areas, or any runoff or effluent directed out of work sites, must have silt and turbidity removed by settling ponds, filtration, or other suitable treatment before discharging to a body of water. Effluent discharged into receiving waters must comply with the *Environmental Control Water and Sewage Regulations, 2003.*

9. All operations must be carried out in a manner that prevents damage to land, vegetation, and watercourses, and which prevents pollution of bodies of water.

10. The use of heavy equipment in streams or bodies of water is not permitted. The operation of heavy equipment must be confined to dry stable areas.

11. All vehicles and equipment must be clean and in good repair, free of mud and oil, or other harmful substances that could impair water quality.

12. Wood preservatives such as penta, CCA or other such chemicals must not be applied to timber near a body of water. All treated wood or timber must be thoroughly dry before being brought to any work site and installed.

13. Any areas adversely affected by this project must be restored to a state that resembles local natural conditions. Further remedial measures to mitigate environmental impacts on water resources can and will be specified, if considered necessary in the opinion of the Department.

14. The bed, banks and floodplains of watercourses, or other vulnerable areas affected by this project, must be adequately protected from erosion by seeding, sodding or placing of rip-rap.

15. Periodic maintenance such as painting, resurfacing, clearing of debris, or minor repairs, must be carried out without causing any physical disruption of any watercourse. Care must be taken to prevent spillage of pollutants into the water.

16. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.

17. Sediment and erosion control measures must be installed before starting work. All control measures must be inspected regularly and any necessary repairs made if damage is discovered.

18. The attached Completion Report (Appendix B) for Permit No. 6343 must be completed and returned to this Department upon completion of the approved works.

19. The location of the work is highlighted on the Location Map for this Permit attached as Appendix C.

20. All work must be carried out within the proponent's legal property boundaries.

21. Pictures must be submitted along with the completion report, showing the project site prior to and after development.

cc: File Copy for Binder

cc: Mr. Clyde McLean, P. Eng.
Manager, Water Investigations Section
Water Resources Management Division
Department of Environment and Conservation

cc: Mr. Ken Russell (Labrador)
Manager of Operations
Department of Service NL
PO Box 3014, Stn. B
Happy Valley-Goose Bay NL A0P 1E0

cc: Town of Mary's Harbour
Ms. Glenys Rumbolt
PO Box 134
Mary's Harbour, NL A0K 3P0

cc: Mr. Mark McNeil
Public Works and Government Services Canada, ES
1 Regent Square, Suite 204,
Corner Brook NL A2H 7K6

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Environment and Conservation
Water Resources Management Division

Appendix B - Completion Report

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, Section(s) 48

Date: **APRIL 30, 2012**

File No: **532-02**
Permit No: **ALT6343-2012**

Proponent: **Department of Fisheries and Oceans (Grand Falls)**
Small Craft Harbours Branch
4A Bayley Street
Grand Falls-Windsor NL A2A 2T5

Attention: **Wayne Bungay**

Re: **DFO-SCH (Mary's Harbour) - Dredging**

Permission was given for: **the removal of approximately 3800 cubic meters of material from an area in Mary's Harbour to ensure proper seating of wharf cribbing on bedrock and adequate draft of vessels for facility access and berthing as outlined in the application dated March 20, 2012**

I (the proponent named above or agent authorized to represent the proponent) do hereby certify that the project described above was completed in accordance with the plans and specifications submitted to the Department of Environment and Conservation and that the work was carried out in strict compliance with the terms and conditions of the Permit issued for this project.

Date: _____ Signature: _____

This completion report must be completed and forwarded to the following address upon completion of the approved work.

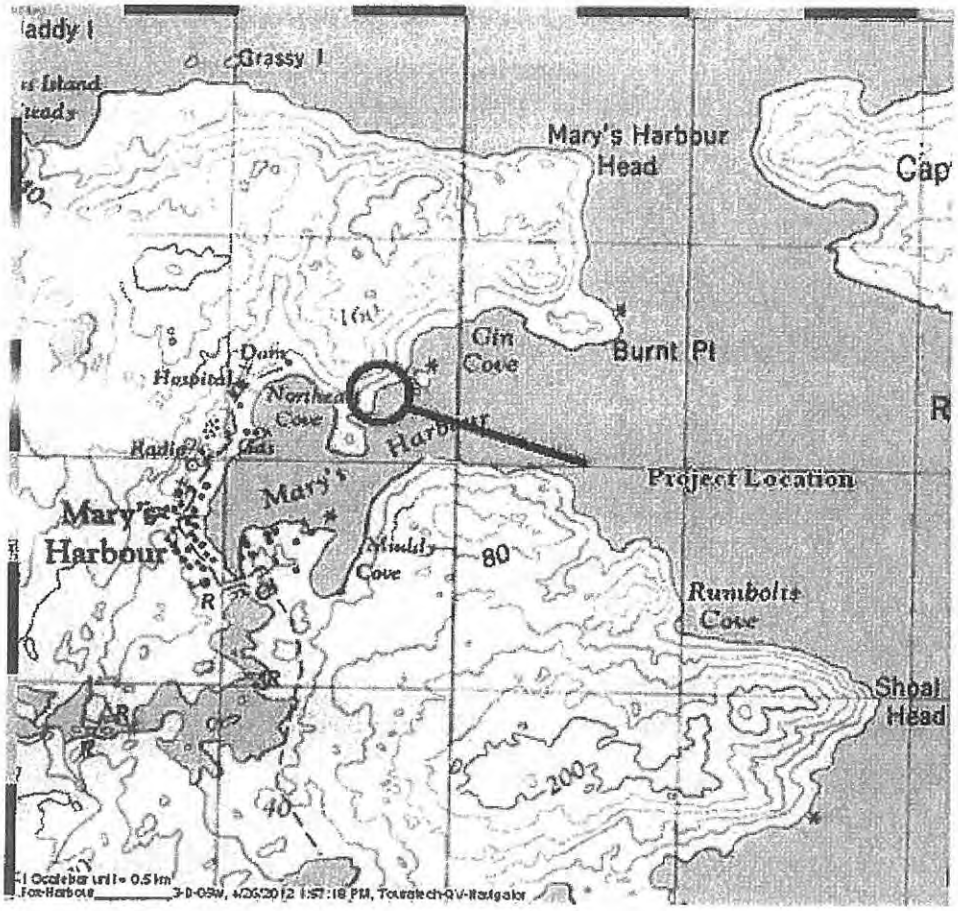
Department of Environment and Conservation
Water Resources Management Division
PO Box 8700
St. John's NL A1B 4J6

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Environment and Conservation

Permit No: ALT6343-2012

APPENDIX C

Location Map for Environmental Permit



Transport Canada Transports Canada

Navigable Waters Protection Program
P.O. Box 1013
Dartmouth, NS B2Y 4K2

COPY

Your file Votre référence

Our file Notre référence
8200-2012-700214

MAY 3 - 2013

VIA COURIER

Fisheries and Oceans Canada
Small Craft Harbours
Suite 200, 4A Bayley St
Grand Falls-Windsor, NL A2A 2T5

Attention: Wayne Bungay

RE: Application under the *Navigable Waters Protection Act* for Approval of Dredging, Launching Ramp, Pier, Wharf, located at Mary's Harbour, Labrador, in the Province of Newfoundland and Labrador.

Enclosed please find an Approval for the above-noted work signed on behalf of the Minister of Transport, Infrastructure and Communities pursuant to subsections 5(1) and (3) of the *Navigable Waters Protection Act* (NWPA).

Ensure to review your Approval in its entirety and acknowledge receipt via the contact information provided below. In particular, note that your Approval carries a validity period and therefore it will be necessary to seek Re-Approval prior to the expiry date.

Please note that you must comply with any terms and conditions in the attached Approval document as well as any other requirements under the NWPA, its regulations and other relevant legislation.

No person shall permit any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in a navigable water to remain in such water after the completion of the project.

Where a work or a portion of a work that is being constructed or maintained in a navigable water causes debris or other material to accumulate on the bed or on the surface of such water, the owner of that work or portion of that work shall cause the debris or other material to be removed to the satisfaction of the Minister.

Please note that the attached document relates only to the effect of your work on navigation under the NWPA. Other Federal and/or Provincial Acts and Regulations may apply. It is your responsibility to comply with any applicable legislation/regulation.

...2

Should you have any questions, please do not hesitate to contact our office in Dartmouth by phone at (902) 426-2726, by fax at (902) 426-7585 or by e-mail at nwpdar@tc.gc.ca.

Respectfully,

R.W. Stever
A/Manager, Navigable Waters Protection Program
Marine Safety and Security
Transport Canada
Atlantic Region

Enclosure(s)

cc: Public Works and Government Services Canada – Mark McNeil

NAVIGABLE WATERS PROTECTION ACT (R.S.C. 1985, c. N-22) as amended by Part 7 of the *Budget Implementation Act*, 2009, S.C. 2009, c. 2 (*Navigable Waters Protection Act*), PART I
Subsections 5(1) and (3) – Other Than Substantial Interference

8200-2012-700214

Approval

APPLICANT: Fisheries and Oceans Canada
Small Craft Harbours
Suite 200, 4A Bayley St
Grand Falls-Windsor, NL A2A 2T5

WORK: **Dredging, Launching Ramp, Pier, Wharf**

SITE LOCATION: Located at Approximately 52° 18' 41.00" N x 055° 49' 49.00" W, Mary's Harbour, Labrador, in the Province of Newfoundland and Labrador.

IMPORTANT NOTICE: This document approves the work in terms of its effect on marine navigation pursuant to the *Navigable Waters Protection Act*. In accordance with the *Navigable Waters Protection Act*, the work must be built, placed, maintained, operated, used and removed as per this Approval including the Terms and Conditions listed below and attached plans as well as regulations made pursuant to the *Navigable Waters Protection Act*.

It is the applicant's responsibility to obtain any other forms of approval, including building permits, under any applicable laws.

WHEREAS the above-named applicant has made application to the Minister of Transport, Infrastructure and Communities under the *Navigable Waters Protection Act* for approval of the above-referenced work at the above-described site in accordance with the attached plan(s);

WHEREAS it is considered advisable to approve the said work at the said site and plan(s) thereof for a period of 30 years pursuant to the Schedule referred to in subsection 3(1) of *the Navigable Waters Works Regulations*.

THEREFORE, the Minister of Transport, Infrastructure and Communities, pursuant to subsections 5(1) and (3) of the *Navigable Waters Protection Act*, hereby approves the said work at the said site and plan(s) thereof in accordance with the following terms and conditions:

1. The project is to be constructed or installed in accordance with the approved plans.
2. Any cables, equipment or temporary hazards resulting from the construction activities are to be clearly marked so they are visible to vessels operating in the area.
3. Construction material and debris are not to become waterborne. During construction all floating debris must be contained in the immediate area and removed from the water in a timely manner.
4. A Yellow navigation light is to be placed and maintained on the outermost corner of the wharf. This light is to have a minimum nominal range of 3 nautical miles and be mounted on a 2.14-meter pipe stand with a flash characteristic of Fl 0.5 sec; Ecl 3.5 sec.

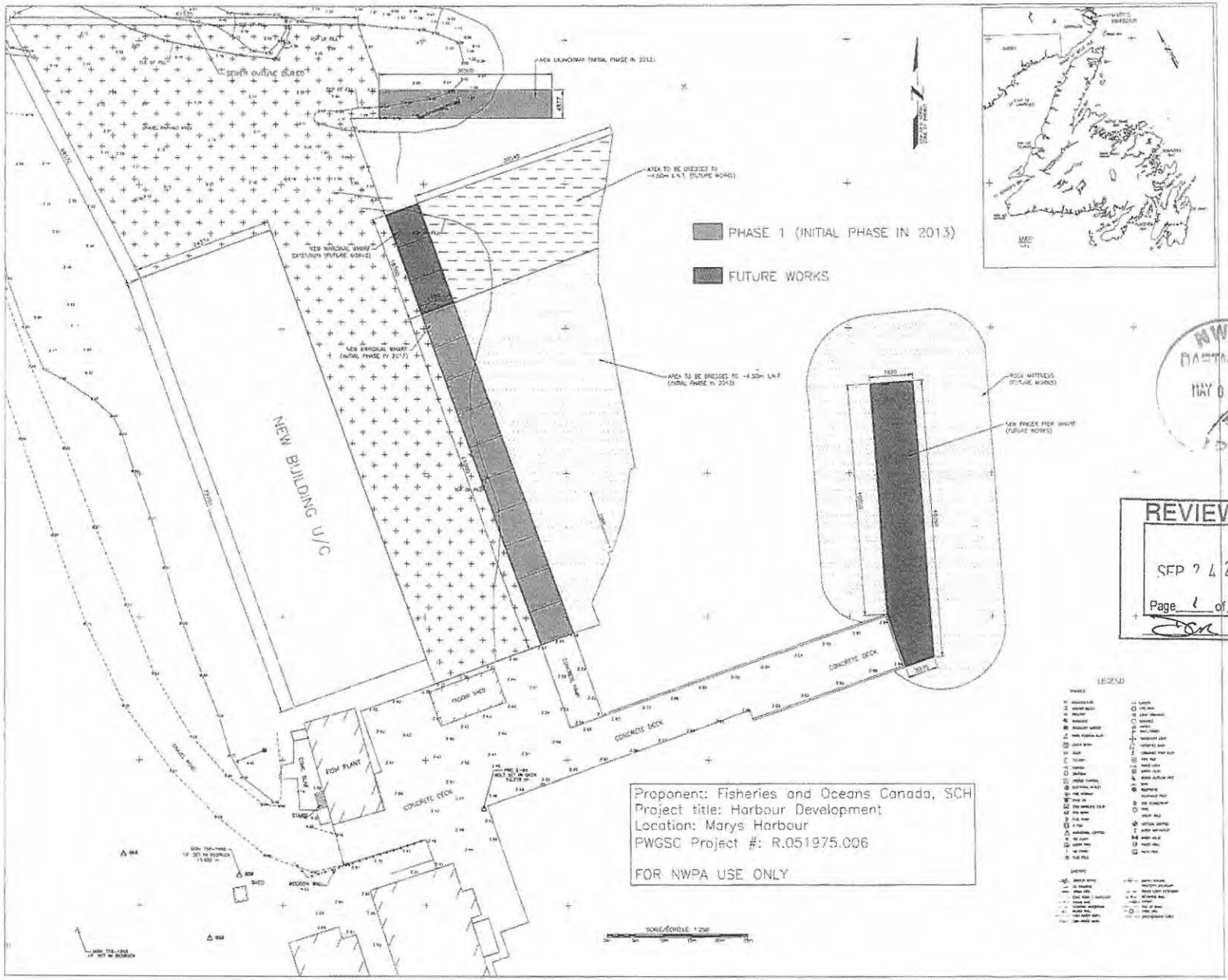
.../2

5. A "Notice to Shipping" is to be requested ten (10) days prior to the commencement of any work; or deploying or removing site markings and again upon completion of the work; or anytime its location is changed for any reason to alert vessel operators in the area. Contact the Canadian Coast Guard's Marine Communications & Traffic Services (MCTS) Centre by telephone at (709)772-5578 or email to ecaregsnf@innav.gc.ca AND notshipsnf@dfo-mpo.gc.ca to arrange this.

SIGNED in two copies on MAY 3 - 2013 **in Dartmouth, NS**

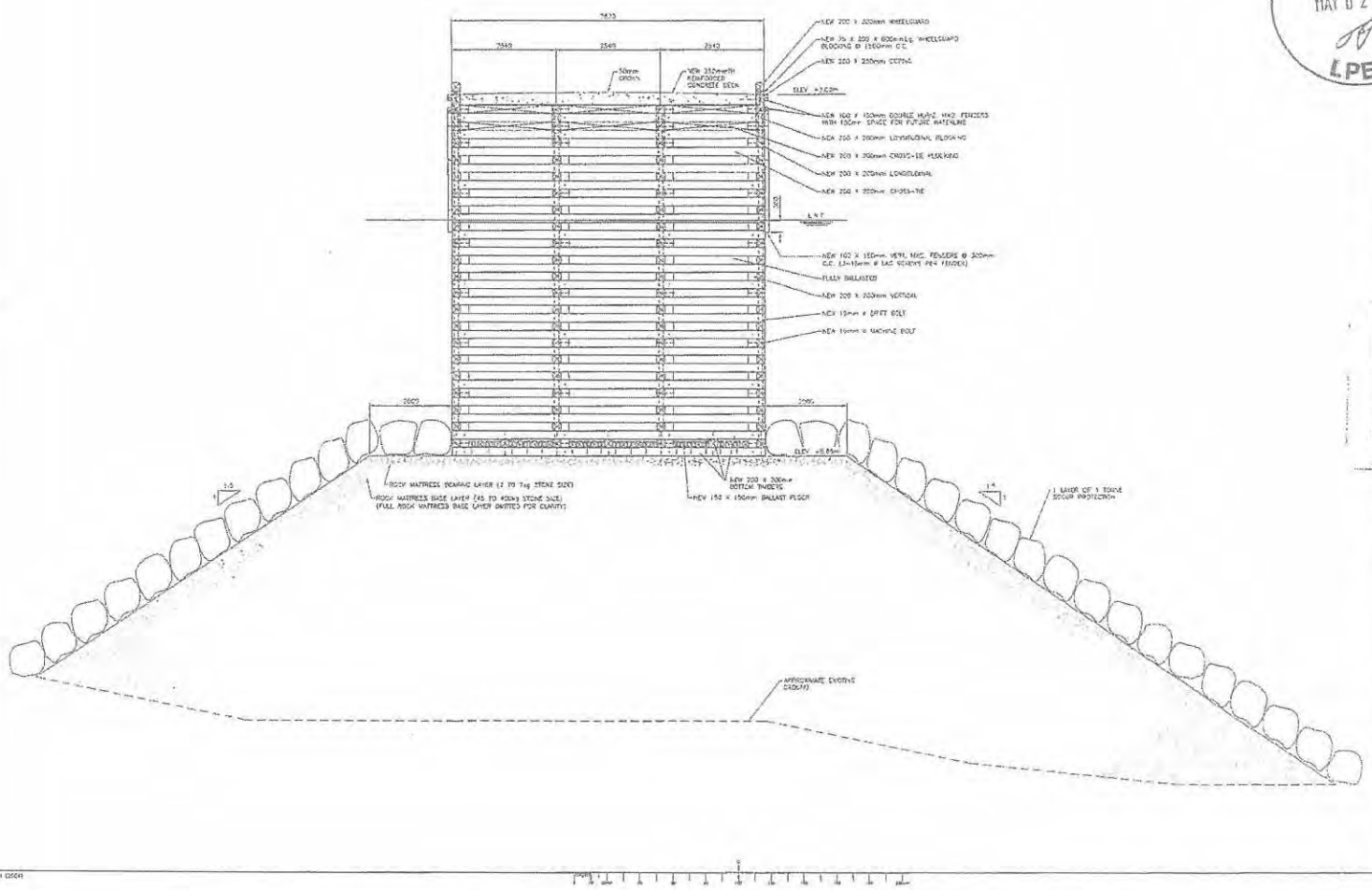
R.W. Stever
A/Manager, Navigable Waters Protection Program
Marine Safety and Security
Transport Canada
Atlantic Region

for the Minister of Transport, Infrastructure and Communities



NWPA
DARTMOUTH
MAY 0 2 2013
OPEN

REVIEWED
SEP 2 4 2012
Page 1 of 4
NWP



NWPA
DARTMOUTH
MAY 0 2 2013
LPEN

PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
Issued Pursuant to
APA ENGINEERING INC.

REVIEWED
DEC 2 4 2012
Page 2 of 4
NWP

4	ISSUED FOR 2ND REVIEW	NWPA

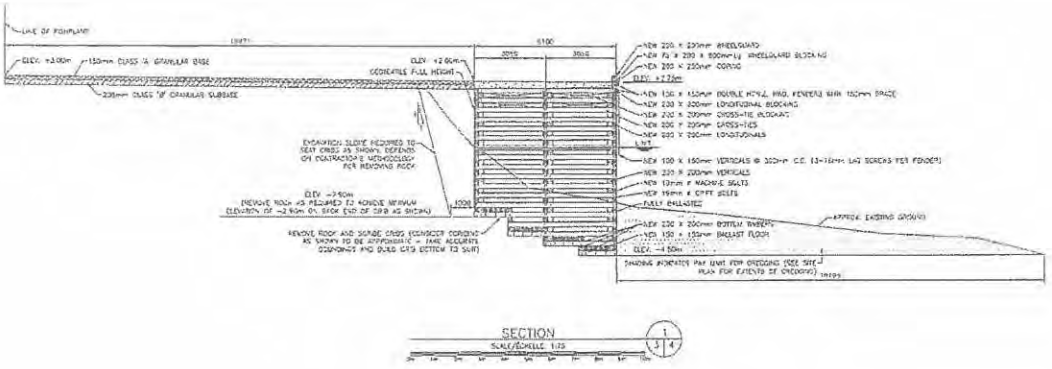
HARBOUR DEVELOPMENT
MARY'S HARBOUR
LABRADOR

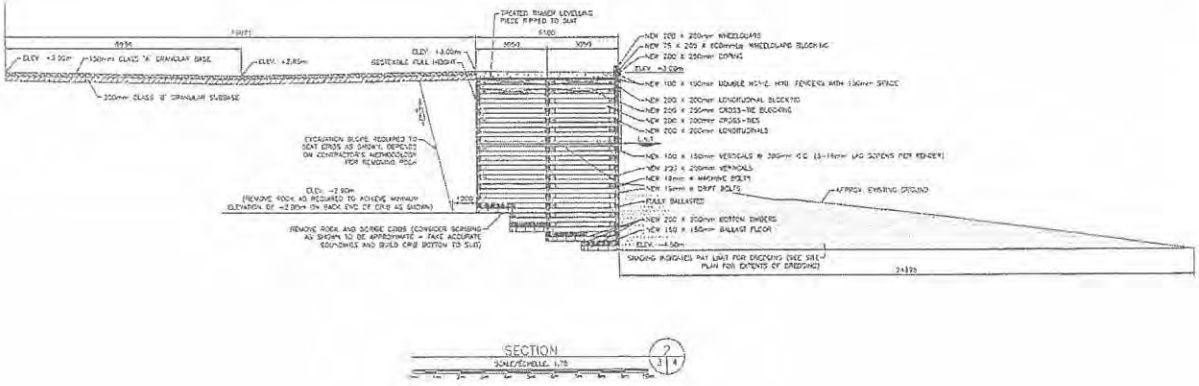
NEW FINGER PIER
WHARF LAYOUT

DESIGNED N.H. — JANUARY 15, 2013
DRAWN D.M. — JANUARY 15, 2013
PROJECT NUMBER R.051975.006
DRAWING No. C7 OF X

DESIGN NOTES:

1. MINIMUM CONCRETE STRENGTH 35 MPa @ 28 DAYS
2. REINFORCING STEEL YIELD STRENGTH 400 MPa
3. REINFORCING STEEL BARDES SHALL CONFORM TO A23.3-94.
4. ALL REBAR MAT. WAS COVER OF 75mm UNLESS OTHERWISE NOTED
5. ALL LAG SCREWS 19mm DIAMETER #10 COUNTERSUNK (GALVANIZED) UNLESS OTHERWISE NOTED
6. ALL MACHINE BOLTS 19mm DIAMETER (GALVANIZED)
7. ALL DRIFT BOLTS TO BE 19mm DIAMETER (GALVANIZED)
8. ALL TIMBER TO BE TREATED TO CSA 080 SERIES – 97 (2002)
9. DECK DESIGN LOAD CL625 AND ASSOCIATED LANE LOAD
10. WELDING TO CONFORM TO CSA G164-M92





PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
This Permit Allows
APH ENGINEERING INC.
Protection Fundamental Earthwork in Newfoundland and Labrador Permit No as issued by APHEIL 2012, which is valid for one year.

A	ISSUED FOR 2ND REVIEW	SEP/12

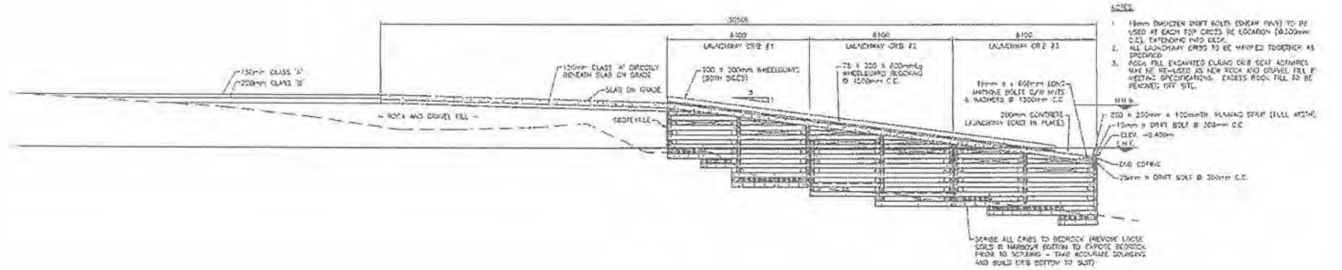
HARBOUR DEVELOPMENT
MARY'S HARBOUR, NL

ELEVATION AND SECTIONS

DRAWN: J.H. CHKD:
DATE: JANUARY 15, 2012
DESIGN: D.H. APPD:
DATE: JANUARY 15, 2012

PROJECT NUMBER: R.051975.006

DRAWING NO: C4 OF X



NEW LAUNCHWAY
SCALE 1:50
2
8 | 8

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER

A | ISSUED FOR 335 REVIEW

HARBOUR DEVELOPMENT
MARY'S HARBOUR, NL

NEW LAUNCHWAY

JANUARY 15, 2012
JANUARY 15, 2012

R.051975.006

C5 OF X

Appendix D
Marine Sediment Analysis

Maxxam

Success Through Science

Your P.O. #: CALL UP#008
Your Project #: R.051795.006
Site Location: MARYS HARBOUR
Your C.O.C. #: 21018

Attention: Mark McNeil
Public Works and Government Services
1 Regent Square, Suite 204
Corner Brook, NL
CANADA A2H7K6

Report Date: 2012/01/25

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B206728
Received: 2012/01/17, 8:30

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
TEH in Soil (PIRI) (1,3)	5	2012/01/23	2012/01/24	ATL SOP-00197	Based on Atl. PIRI
TEH in Soil (PIRI) (1,3)	2	2012/01/23	2012/01/25	ATL SOP-00197	Based on Atl. PIRI
Metals Solid Avail. Unified MS - Nper (2)	7	2012/01/19	2012/01/19	ATL SOP 00024	Based on EPA6020A
Moisture	7	N/A	2012/01/23	ATL SOP-00196	MOE Handbook 1983
PAH in sediment by GC/MS (Low Level) (2)	4	2012/01/19	2012/01/20	ATL SOP 00102	based on EPA8270C
PAH in sediment by GC/MS (Low Level) (2)	3	2012/01/19	2012/01/23	ATL SOP 00102	based on EPA8270C
PCBs in soil by GC/ECD (2,3)	7	2012/01/18	2012/01/20	ATL SOP 00106	Based on EPA8082
pH (5:1 DI Water Extract) (2)	7	2012/01/20	2012/01/23	ATL SOP 00003	Based on SM4500H+B
VPH in Soil (PIRI) (1)	7	2012/01/23	2012/01/23	ATL SOP 00199	Based on Atl. PIRI
Total Oil and Grease - Soil (2)	7	2012/01/19	2012/01/25	ATL SOP 00100	Based on EPA9071B
ModTPH (T1) Calc. for Soil	5	2012/01/17	2012/01/24		Based on Atl. PIRI
ModTPH (T1) Calc. for Soil	2	2012/01/17	2012/01/25		Based on Atl. PIRI

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Reported on a dry weight basis.
(2) This test was performed by Bedford
(3) Soils are reported on a dry weight basis unless otherwise specified.

../2

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax: 709-754-8612 www.maxxam.ca

Your P.O. #: CALL UP#008
Your Project #: R.051795.006
Site Location: MARYS HARBOUR
Your C.O.C. #: 21018

Attention: Mark McNeil
Public Works and Government Services
1 Regent Square, Suite 204
Corner Brook, NL
CANADA A2H7K6

Report Date: 2012/01/25

CERTIFICATE OF ANALYSIS

Encryption Key

Rob Whelan
25 Jan 2012 15:56:13 -03:30

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ROB WHELAN, Project Manager
Email: RWhelan@maxxam.ca
Phone# (709) 754-0203

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B206728
Report Date: 2012/01/25

Public Works and Government Services
Client Project #: R.051795.006
Site Location: MARYS HARBOUR
Your P.O. #: CALL UP#008

ATLANTIC MUST IN SOIL (SOIL)

Maxxam ID		MG1698	MG1699		MG1700	MG1701		
Sampling Date		2012/01/14	2012/01/14		2012/01/14	2012/01/14		
COC Number		21018	21018		21018	21018		
	Units	**Sample #1**	**Sample #2**	**QC Batch**	**Sample #3**	**Sample #4**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	32	45	2743412	32	22	1	2743440
Petroleum Hydrocarbons								
Benzene	mg/kg	ND	ND	2743803	ND	ND	0.025	2743805
Toluene	mg/kg	ND	ND	2743803	ND	ND	0.025	2743805
Ethylbenzene	mg/kg	ND	ND	2743803	ND	ND	0.025	2743805
Xylene (Total)	mg/kg	ND	ND	2743803	ND	ND	0.050	2743805
C6 - C10 (less BTEX)	mg/kg	ND	ND	2743803	ND	ND	2.5	2743805
>C10-C16 Hydrocarbons	mg/kg	ND	ND	2743804	ND	ND	10	2743806
>C16-C21 Hydrocarbons	mg/kg	ND	ND	2743804	ND	ND	10	2743806
>C21-<C32 Hydrocarbons	mg/kg	ND	42	2743804	42	46	15	2743806
Modified TPH (Tier1)	mg/kg	ND	42	2738178	42	46	15	2738178
Reached Baseline at C32	mg/kg	Yes	No	2743804	No	No	N/A	2743806
Hydrocarbon Resemblance	mg/kg		SEECOMMENT (1)	2743804	SEECOMMENT (1)	SEECOMMENT (1)	N/A	2743806
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	101	103	2743804	98	97		2743806
n-Dotriacontane - Extractable	%	103	107	2743804	106	111		2743806
Isobutylbenzene - Volatile	%	114	110	2743803	101	117		2743805

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) No resemblance to petroleum products in lube oil range.

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Client Project #: R.051795.006
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ATLANTIC MUST IN SOIL (SOIL)

Maxxam ID		MG1702	MG1703	MG1704	MG1704		
Sampling Date		2012/01/14	2012/01/14	2012/01/14	2012/01/14		
COC Number		21018	21018	21018	21018		
	Units	**Sample #5**	**Sample #6**	**Sample #7**	**Sample #7 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	17	28	36	37	1	2743440
Petroleum Hydrocarbons							
Benzene	mg/kg	ND	ND	ND	ND	0.025	2743805
Toluene	mg/kg	ND	ND	ND	ND	0.025	2743805
Ethylbenzene	mg/kg	ND	ND	ND	ND	0.025	2743805
Xylene (Total)	mg/kg	ND	ND	ND	ND	0.050	2743805
C6 - C10 (less BTEX)	mg/kg	ND	ND	ND	ND	2.5	2743805
>C10-C16 Hydrocarbons	mg/kg	ND	ND	ND	ND	10	2743806
>C16-C21 Hydrocarbons	mg/kg	ND	ND	ND	ND	10	2743806
>C21-<C32 Hydrocarbons	mg/kg	ND	40	ND	ND	15	2743806
Modified TPH (Tier1)	mg/kg	ND	40	ND		15	2738178
Reached Baseline at C32	mg/kg	Yes	No	Yes	Yes	N/A	2743806
Hydrocarbon Resemblance	mg/kg		SEECOMMENT (1)			N/A	2743806
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	95	95	94	93		2743806
n-Dotriacontane - Extractable	%	101	105	109	108		2743806
Isobutylbenzene - Volatile	%	97	105	100	101		2743805

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) No resemblance to petroleum products in lube oil range.

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		MG1698	MG1699	MG1700	MG1701	MG1702	MG1703		
Sampling Date		2012/01/14	2012/01/14	2012/01/14	2012/01/14	2012/01/14	2012/01/14		
COC Number		21018	21018	21018	21018	21018	21018		
	Units	**Sample #1**	**Sample #2**	**Sample #3**	**Sample #4**	**Sample #5**	**Sample #6**	**RDL**	**QC Batch**
Inorganics									
Soluble (5:1) pH	pH	8.11	7.71	8.13	8.16	8.09	7.46	N/A	2743402
Petroleum Hydrocarbons									
Total Oil & Grease	mg/kg	730	220	240	530	ND	170	100	2741312

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		MG1703	MG1704		
Sampling Date		2012/01/14	2012/01/14		
COC Number		21018	21018		
	Units	**Sample #6 Lab-Dup**	**Sample #7**	**RDL**	**QC Batch**
Inorganics					
Soluble (5:1) pH	pH		8.07	N/A	2743402
Petroleum Hydrocarbons					
Total Oil & Grease	mg/kg	270	230	100	2741312

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		MG1698	MG1699	MG1700	MG1701	MG1702	MG1703		
Sampling Date		2012/01/14	2012/01/14	2012/01/14	2012/01/14	2012/01/14	2012/01/14		
COC Number		21018	21018	21018	21018	21018	21018		
	Units	**Sample #1**	**Sample #2**	**Sample #3**	**Sample #4**	**Sample #5**	**Sample #6**	**RDL**	**QC Batch**
Metals									
Available Aluminum (Al)	mg/kg	4000	5400	3600	4300	2000	3300	10	2741000
Available Antimony (Sb)	mg/kg	ND	ND	ND	2.5	ND	ND	2.0	2741000
Available Arsenic (As)	mg/kg	11	8.1	6.2	14	2.6	3.7	2.0	2741000
Available Barium (Ba)	mg/kg	34	42	35	43	20	32	5.0	2741000
Available Beryllium (Be)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	2741000
Available Boron (B)	mg/kg	18	34	20	33	6.0	11	5.0	2741000
Available Cadmium (Cd)	mg/kg	ND	ND	ND	ND	ND	ND	0.30	2741000
Available Chromium (Cr)	mg/kg	13	19	15	20	5.5	10	2.0	2741000
Available Cobalt (Co)	mg/kg	4.7	6.2	3.5	4.0	1.8	2.9	1.0	2741000
Available Copper (Cu)	mg/kg	8.2	10	9.9	18	3.7	8.6	2.0	2741000
Available Iron (Fe)	mg/kg	15000	20000	11000	14000	8300	9600	50	2741000
Available Lead (Pb)	mg/kg	3.6	7.8	10	23	7.3	7.9	0.50	2741000
Available Manganese (Mn)	mg/kg	140	170	140	180	92	150	2.0	2741000
Available Mercury (Hg)	mg/kg	ND	ND	ND	0.12	ND	ND	0.10	2741000
Available Molybdenum (Mo)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	2741000
Available Nickel (Ni)	mg/kg	15	20	13	11	5.5	7.7	2.0	2741000
Available Selenium (Se)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	2741000
Available Silver (Ag)	mg/kg	ND	ND	ND	ND	ND	ND	0.50	2741000
Available Strontium (Sr)	mg/kg	22	28	48	95	18	22	5.0	2741000
Available Thallium (Tl)	mg/kg	0.11	0.12	0.13	0.11	ND	0.11	0.10	2741000
Available Tin (Sn)	mg/kg	ND	3.3	2.5	4.1	ND	ND	2.0	2741000
Available Uranium (U)	mg/kg	1.3	1.6	1.1	4.1	0.80	1.0	0.10	2741000
Available Vanadium (V)	mg/kg	31	40	25	32	16	18	2.0	2741000
Available Zinc (Zn)	mg/kg	34	49	38	56	18	37	5.0	2741000

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		MG1704		
Sampling Date		2012/01/14		
COC Number		21018		
	Units	**Sample #7**	**RDL**	**QC Batch**
Metals				
Available Aluminum (Al)	mg/kg	2100	10	2741000
Available Antimony (Sb)	mg/kg	ND	2.0	2741000
Available Arsenic (As)	mg/kg	ND	2.0	2741000
Available Barium (Ba)	mg/kg	17	5.0	2741000
Available Beryllium (Be)	mg/kg	ND	2.0	2741000
Available Boron (B)	mg/kg	5.6	5.0	2741000
Available Cadmium (Cd)	mg/kg	ND	0.30	2741000
Available Chromium (Cr)	mg/kg	6.0	2.0	2741000
Available Cobalt (Co)	mg/kg	2.7	1.0	2741000
Available Copper (Cu)	mg/kg	11	2.0	2741000
Available Iron (Fe)	mg/kg	9900	50	2741000
Available Lead (Pb)	mg/kg	12	0.50	2741000
Available Manganese (Mn)	mg/kg	110	2.0	2741000
Available Mercury (Hg)	mg/kg	ND	0.10	2741000
Available Molybdenum (Mo)	mg/kg	ND	2.0	2741000
Available Nickel (Ni)	mg/kg	5.1	2.0	2741000
Available Selenium (Se)	mg/kg	ND	2.0	2741000
Available Silver (Ag)	mg/kg	ND	0.50	2741000
Available Strontium (Sr)	mg/kg	17	5.0	2741000
Available Thallium (Tl)	mg/kg	ND	0.10	2741000
Available Tin (Sn)	mg/kg	ND	2.0	2741000
Available Uranium (U)	mg/kg	0.67	0.10	2741000
Available Vanadium (V)	mg/kg	15	2.0	2741000
Available Zinc (Zn)	mg/kg	27	5.0	2741000

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		MG1698	MG1699		MG1700		MG1701		
Sampling Date		2012/01/14	2012/01/14		2012/01/14		2012/01/14		
COC Number		21018	21018		21018		21018		
	Units	**Sample #1**	**Sample #2**	**RDL**	**Sample #3**	**RDL**	**Sample #4**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons									
1-Methylnaphthalene	mg/kg	ND	ND	0.0050	ND	0.0050	ND	0.0050	2740672
2-Methylnaphthalene	mg/kg	ND	ND	0.0050	ND	0.0050	0.0090	0.0050	2740672
Acenaphthene	mg/kg	0.010	0.012	0.0050	ND	0.0050	0.032	0.0050	2740672
Acenaphthylene	mg/kg	ND	ND	0.0050	0.034	0.0050	0.067	0.0050	2740672
Anthracene	mg/kg	ND	0.047	0.0050	0.12	0.0050	0.53	0.0050	2740672
Benzo(a)anthracene	mg/kg	0.023	0.36	0.0050	1.1	0.050	2.1	0.050	2740672
Benzo(a)pyrene	mg/kg	0.014	0.21	0.0050	0.48	0.0050	1.2	0.050	2740672
Benzo(b)fluoranthene	mg/kg	0.015	0.20	0.0050	0.50	0.0050	1.2	0.050	2740672
Benzo(g,h,i)perylene	mg/kg	ND	0.070	0.0050	0.15	0.0050	0.22	0.0050	2740672
Benzo(j)fluoranthene	mg/kg	0.010	0.12	0.0050	0.27	0.0050	0.47	0.0050	2740672
Benzo(k)fluoranthene	mg/kg	0.0092	0.13	0.0050	0.30	0.0050	0.51	0.0050	2740672
Chrysene	mg/kg	0.017	0.23	0.0050	0.64	0.0050	1.9	0.050	2740672
Dibenz(a,h)anthracene	mg/kg	ND	0.023	0.0050	0.044	0.0050	0.072	0.0050	2740672
Fluoranthene	mg/kg	0.051	0.45	0.0050	0.88	0.0050	5.6	0.0050	2740672
Fluorene	mg/kg	ND	0.021	0.0050	0.027	0.0050	0.23	0.0050	2740672
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.076	0.0050	0.16	0.0050	0.25	0.0050	2740672
Naphthalene	mg/kg	ND	0.014	0.0050	ND	0.0050	0.0085	0.0050	2740672
Perylene	mg/kg	0.014	0.069	0.0050	0.15	0.0050	0.27	0.0050	2740672
Phenanthrene	mg/kg	0.0091	0.14	0.0050	0.15	0.0050	1.7	0.0050	2740672
Pyrene	mg/kg	0.030	0.27	0.0050	0.40	0.0050	3.3	0.0050	2740672
Surrogate Recovery (%)									
D10-Anthracene	%	90	100		85		95		2740672
D14-Terphenyl	%	101	101		97		108		2740672
D8-Acenaphthylene	%	81	83		83		84		2740672

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		MG1702		MG1703		MG1704	MG1704		
Sampling Date		2012/01/14		2012/01/14		2012/01/14	2012/01/14		
COC Number		21018		21018		21018	21018		
	Units	**Sample #5**	**RDL**	**Sample #6**	**RDL**	**Sample #7**	**Sample #7 Lab-Dup**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons									
1-Methylnaphthalene	mg/kg	ND	0.0050	ND	0.0050	ND	ND	0.0050	2740672
2-Methylnaphthalene	mg/kg	ND	0.0050	0.0078	0.0050	ND	ND	0.0050	2740672
Acenaphthene	mg/kg	ND	0.0050	ND	0.0050	ND	0.011	0.0050	2740672
Acenaphthylene	mg/kg	0.0081	0.0050	0.021	0.0050	0.013	0.017	0.0050	2740672
Anthracene	mg/kg	0.035	0.0050	0.16	0.0050	0.042	0.058	0.0050	2740672
Benzo(a)anthracene	mg/kg	0.19	0.0050	0.79	0.050	0.37	0.27	0.0050	2740672
Benzo(a)pyrene	mg/kg	0.092	0.0050	0.32	0.0050	0.13	0.14	0.0050	2740672
Benzo(b)fluoranthene	mg/kg	0.076	0.0050	0.31	0.0050	0.15	0.14	0.0050	2740672
Benzo(g,h,i)perylene	mg/kg	0.030	0.0050	0.095	0.0050	0.039	0.046	0.0050	2740672
Benzo(j)fluoranthene	mg/kg	0.044	0.0050	0.18	0.0050	0.087	0.080	0.0050	2740672
Benzo(k)fluoranthene	mg/kg	0.054	0.0050	0.20	0.0050	0.088	0.076	0.0050	2740672
Chrysene	mg/kg	0.17	0.0050	0.52	0.0050	0.23	0.15	0.0050	2740672
Dibenz(a,h)anthracene	mg/kg	0.0092	0.0050	0.030	0.0050	0.013	0.014	0.0050	2740672
Fluoranthene	mg/kg	0.077	0.0050	1.6	0.0050	0.78	0.59	0.0050	2740672
Fluorene	mg/kg	0.0081	0.0050	0.064	0.0050	0.0098	0.022	0.0050	2740672
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.0050	0.11	0.0050	0.045	0.052	0.0050	2740672
Naphthalene	mg/kg	ND	0.0050	0.016	0.0050	ND	0.0079	0.0050	2740672
Perylene	mg/kg	0.030	0.0050	0.10	0.0050	0.041	0.043	0.0050	2740672
Phenanthrene	mg/kg	0.042	0.0050	0.58	0.0050	0.064	0.087	0.0050	2740672
Pyrene	mg/kg	0.034	0.0050	1.0	0.0050	0.41	0.27	0.0050	2740672
Surrogate Recovery (%)									
D10-Anthracene	%	93		91		91	88		2740672
D14-Terphenyl	%	97		111		105	99		2740672
D8-Acenaphthylene	%	80		87		80	87		2740672

ND = Not detected
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QC Batch = Quality Control Batch

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		MG1698	MG1699	MG1700	MG1701	MG1702	MG1703		
Sampling Date		2012/01/14	2012/01/14	2012/01/14	2012/01/14	2012/01/14	2012/01/14		
COC Number		21018	21018	21018	21018	21018	21018		
	Units	**Sample #1**	**Sample #2**	**Sample #3**	**Sample #4**	**Sample #5**	**Sample #6**	**RDL**	**QC Batch**
PCBs									
Total PCB	ug/g	ND	ND	ND	ND	ND	ND	0.050	2739747
Surrogate Recovery (%)									
Decachlorobiphenyl	%	80	83	84	83	70	83		2739747

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		MG1704		
Sampling Date		2012/01/14		
COC Number		21018		
	Units	**Sample #7**	**RDL**	**QC Batch**
PCBs				
Total PCB	ug/g	ND	0.050	2739747
Surrogate Recovery (%)				
Decachlorobiphenyl	%	83		2739747

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B206728
Report Date: 2012/01/25

Public Works and Government Services
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GENERAL COMMENTS

Results relate only to the items tested.

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Public Works and Government Services
Attention: Mark McNeil
Client Project #: R.051795.006
P.O. #: CALL UP#008
Site Location: MARYS HARBOUR

Quality Assurance Report

Maxxam Job Number: ZB206728

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2739747 KJO	Matrix Spike	Decachlorobiphenyl	2012/01/20		81	%	30 - 130
		Total PCB	2012/01/20		124	%	70 - 130
	Spiked Blank	Decachlorobiphenyl	2012/01/20		84	%	30 - 130
		Total PCB	2012/01/20		112	%	70 - 130
	Method Blank	Decachlorobiphenyl	2012/01/20		83	%	30 - 130
		Total PCB	2012/01/20	ND, RDL=0.050		ug/g	
	RPD	Total PCB	2012/01/20	NC		%	50
2740672 GTH	Matrix Spike [MG1704-01]	D10-Anthracene	2012/01/20		98	%	30 - 130
		D14-Terphenyl	2012/01/20		107	%	30 - 130
		D8-Acenaphthylene	2012/01/20		86	%	30 - 130
		1-Methylnaphthalene	2012/01/20		64	%	30 - 130
		2-Methylnaphthalene	2012/01/20		70	%	30 - 130
		Acenaphthene	2012/01/20		74	%	30 - 130
		Acenaphthylene	2012/01/20		71	%	30 - 130
		Anthracene	2012/01/20		69	%	30 - 130
		Benzo(a)anthracene	2012/01/20		NC	%	30 - 130
		Benzo(a)pyrene	2012/01/20		NC	%	30 - 130
		Benzo(b)fluoranthene	2012/01/20		NC	%	30 - 130
		Benzo(g,h,i)perylene	2012/01/20		78	%	30 - 130
		Benzo(j)fluoranthene	2012/01/20		NC	%	30 - 130
		Benzo(k)fluoranthene	2012/01/20		NC	%	30 - 130
		Chrysene	2012/01/20		NC	%	30 - 130
		Dibenz(a,h)anthracene	2012/01/20		73	%	30 - 130
		Fluoranthene	2012/01/20		NC	%	30 - 130
		Fluorene	2012/01/20		78	%	30 - 130
		Indeno(1,2,3-cd)pyrene	2012/01/20		89	%	30 - 130
		Naphthalene	2012/01/20		76	%	30 - 130
		Perylene	2012/01/20		90	%	30 - 130
		Phenanthrene	2012/01/20		NC	%	30 - 130
		Pyrene	2012/01/20		NC	%	30 - 130
	Spiked Blank	D10-Anthracene	2012/01/20		91	%	30 - 130
		D14-Terphenyl	2012/01/20		108	%	30 - 130
		D8-Acenaphthylene	2012/01/20		85	%	30 - 130
		1-Methylnaphthalene	2012/01/20		69	%	30 - 130
		2-Methylnaphthalene	2012/01/20		72	%	30 - 130
		Acenaphthene	2012/01/20		76	%	30 - 130
		Acenaphthylene	2012/01/20		75	%	30 - 130
		Anthracene	2012/01/20		79	%	30 - 130
		Benzo(a)anthracene	2012/01/20		103	%	30 - 130
		Benzo(a)pyrene	2012/01/20		80	%	30 - 130
		Benzo(b)fluoranthene	2012/01/20		68	%	30 - 130
		Benzo(g,h,i)perylene	2012/01/20		73	%	30 - 130
		Benzo(j)fluoranthene	2012/01/20		84	%	30 - 130
		Benzo(k)fluoranthene	2012/01/20		76	%	30 - 130
		Chrysene	2012/01/20		92	%	30 - 130
		Dibenz(a,h)anthracene	2012/01/20		72	%	30 - 130
		Fluoranthene	2012/01/20		82	%	30 - 130
		Fluorene	2012/01/20		80	%	30 - 130
		Indeno(1,2,3-cd)pyrene	2012/01/20		80	%	30 - 130
		Naphthalene	2012/01/20		78	%	30 - 130
		Perylene	2012/01/20		86	%	30 - 130
		Phenanthrene	2012/01/20		76	%	30 - 130
		Pyrene	2012/01/20		77	%	30 - 130
	Method Blank	D10-Anthracene	2012/01/20		85	%	30 - 130

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Public Works and Government Services
Attention: Mark McNeil
Client Project #: R.051795.006
P.O. #: CALL UP#008
Site Location: MARYS HARBOUR

Quality Assurance Report (Continued)

Maxxam Job Number: ZB206728

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2740672 GTH	Method Blank	D14-Terphenyl	2012/01/20		92	%	30 - 130
		D8-Acenaphthylene	2012/01/20		77	%	30 - 130
		1-Methylnaphthalene	2012/01/20	ND, RDL=0.0050		mg/kg	
		2-Methylnaphthalene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Acenaphthene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Acenaphthylene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Anthracene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Benzo(a)anthracene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Benzo(a)pyrene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Benzo(b)fluoranthene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Benzo(g,h,i)perylene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Benzo(j)fluoranthene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Benzo(k)fluoranthene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Chrysene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Dibenz(a,h)anthracene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Fluoranthene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Fluorene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Indeno(1,2,3-cd)pyrene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Naphthalene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Perylene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Phenanthrene	2012/01/20	ND, RDL=0.0050		mg/kg	
		Pyrene	2012/01/20	ND, RDL=0.0050		mg/kg	
	RPD [MG1704-01]	1-Methylnaphthalene	2012/01/20	NC		%	50
		2-Methylnaphthalene	2012/01/20	NC		%	50
		Acenaphthene	2012/01/20	NC		%	50
		Acenaphthylene	2012/01/20	NC		%	50
		Anthracene	2012/01/20	32.2		%	50
		Benzo(a)anthracene	2012/01/20	32.3		%	50
		Benzo(a)pyrene	2012/01/20	5.7		%	50
		Benzo(b)fluoranthene	2012/01/20	6.0		%	50
		Benzo(g,h,i)perylene	2012/01/20	17.8		%	50
		Benzo(j)fluoranthene	2012/01/20	9.3		%	50
		Benzo(k)fluoranthene	2012/01/20	13.7		%	50
		Chrysene	2012/01/20	41.6		%	50
		Dibenz(a,h)anthracene	2012/01/20	NC		%	50
		Fluoranthene	2012/01/20	27.6		%	50
		Fluorene	2012/01/20	NC		%	50
		Indeno(1,2,3-cd)pyrene	2012/01/20	14.2		%	50
		Naphthalene	2012/01/20	NC		%	50
		Perylene	2012/01/20	6.0		%	50
		Phenanthrene	2012/01/20	29.6		%	50
		Pyrene	2012/01/20	40.6		%	50
2741000 DLB	Matrix Spike	Available Antimony (Sb)	2012/01/19		NC	%	75 - 125
		Available Arsenic (As)	2012/01/19		98	%	75 - 125
		Available Barium (Ba)	2012/01/19		NC	%	75 - 125
		Available Beryllium (Be)	2012/01/19		101	%	75 - 125
		Available Boron (B)	2012/01/19		100	%	75 - 125
		Available Cadmium (Cd)	2012/01/19		100	%	75 - 125
		Available Chromium (Cr)	2012/01/19		NC	%	75 - 125
		Available Cobalt (Co)	2012/01/19		101	%	75 - 125
		Available Copper (Cu)	2012/01/19		NC	%	75 - 125
		Available Lead (Pb)	2012/01/19		NC	%	75 - 125
		Available Manganese (Mn)	2012/01/19		NC	%	75 - 125
		Available Mercury (Hg)	2012/01/19		102	%	75 - 125
		Available Molybdenum (Mo)	2012/01/19		NC	%	75 - 125

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Quality Assurance Report (Continued)

Maxxam Job Number: ZB206728

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2741000 DLB	Matrix Spike	Available Nickel (Ni)	2012/01/19		NC	%	75 - 125
		Available Selenium (Se)	2012/01/19		100	%	75 - 125
		Available Silver (Ag)	2012/01/19		100	%	75 - 125
		Available Strontium (Sr)	2012/01/19		NC	%	75 - 125
		Available Thallium (Tl)	2012/01/19		96	%	75 - 125
		Available Tin (Sn)	2012/01/19		NC	%	75 - 125
		Available Uranium (U)	2012/01/19		98	%	75 - 125
		Available Vanadium (V)	2012/01/19		NC	%	75 - 125
		Available Zinc (Zn)	2012/01/19		NC	%	75 - 125
	Spiked Blank	Available Antimony (Sb)	2012/01/19		119	%	75 - 125
		Available Arsenic (As)	2012/01/19		96	%	75 - 125
		Available Barium (Ba)	2012/01/19		108	%	75 - 125
		Available Beryllium (Be)	2012/01/19		104	%	75 - 125
		Available Boron (B)	2012/01/19		106	%	75 - 125
		Available Cadmium (Cd)	2012/01/19		102	%	75 - 125
		Available Chromium (Cr)	2012/01/19		103	%	75 - 125
		Available Cobalt (Co)	2012/01/19		103	%	75 - 125
		Available Copper (Cu)	2012/01/19		102	%	75 - 125
		Available Lead (Pb)	2012/01/19		103	%	75 - 125
		Available Manganese (Mn)	2012/01/19		104	%	75 - 125
		Available Mercury (Hg)	2012/01/19		102	%	75 - 125
		Available Molybdenum (Mo)	2012/01/19		102	%	75 - 125
		Available Nickel (Ni)	2012/01/19		100	%	75 - 125
		Available Selenium (Se)	2012/01/19		99	%	75 - 125
		Available Silver (Ag)	2012/01/19		104	%	75 - 125
		Available Strontium (Sr)	2012/01/19		106	%	75 - 125
		Available Thallium (Tl)	2012/01/19		101	%	75 - 125
		Available Tin (Sn)	2012/01/19		103	%	75 - 125
		Available Uranium (U)	2012/01/19		99	%	75 - 125
		Available Vanadium (V)	2012/01/19		101	%	75 - 125
		Available Zinc (Zn)	2012/01/19		104	%	75 - 125
	Method Blank	Available Aluminum (Al)	2012/01/19	ND, RDL=10		mg/kg	
		Available Antimony (Sb)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Arsenic (As)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Barium (Ba)	2012/01/19	ND, RDL=5.0		mg/kg	
		Available Beryllium (Be)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Boron (B)	2012/01/19	ND, RDL=5.0		mg/kg	
		Available Cadmium (Cd)	2012/01/19	ND, RDL=0.30		mg/kg	
		Available Chromium (Cr)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Cobalt (Co)	2012/01/19	ND, RDL=1.0		mg/kg	
		Available Copper (Cu)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Iron (Fe)	2012/01/19	ND, RDL=50		mg/kg	
		Available Lead (Pb)	2012/01/19	ND, RDL=0.50		mg/kg	
		Available Manganese (Mn)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Mercury (Hg)	2012/01/19	ND, RDL=0.10		mg/kg	
		Available Molybdenum (Mo)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Nickel (Ni)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Selenium (Se)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Silver (Ag)	2012/01/19	ND, RDL=0.50		mg/kg	
		Available Strontium (Sr)	2012/01/19	ND, RDL=5.0		mg/kg	
		Available Thallium (Tl)	2012/01/19	ND, RDL=0.10		mg/kg	
		Available Tin (Sn)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Uranium (U)	2012/01/19	ND, RDL=0.10		mg/kg	
		Available Vanadium (V)	2012/01/19	ND, RDL=2.0		mg/kg	
		Available Zinc (Zn)	2012/01/19	ND, RDL=5.0		mg/kg	

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Public Works and Government Services
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Quality Assurance Report (Continued)

Maxxam Job Number: ZB206728

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2741000 DLB	RPD	Available Aluminum (Al)	2012/01/19	0.4		%	35
		Available Antimony (Sb)	2012/01/19	NC		%	35
		Available Arsenic (As)	2012/01/19	11.0		%	35
		Available Barium (Ba)	2012/01/19	24.8		%	35
		Available Beryllium (Be)	2012/01/19	NC		%	35
		Available Boron (B)	2012/01/19	NC		%	35
		Available Cadmium (Cd)	2012/01/19	NC		%	35
		Available Chromium (Cr)	2012/01/19	17.3		%	35
		Available Cobalt (Co)	2012/01/19	10.5		%	35
		Available Copper (Cu)	2012/01/19	26.0		%	35
		Available Iron (Fe)	2012/01/19	3.3		%	35
		Available Lead (Pb)	2012/01/19	0.2		%	35
		Available Manganese (Mn)	2012/01/19	6.9		%	35
		Available Mercury (Hg)	2012/01/19	5.2		%	35
		Available Molybdenum (Mo)	2012/01/19	NC		%	35
		Available Nickel (Ni)	2012/01/19	9.8		%	35
		Available Selenium (Se)	2012/01/19	NC		%	35
		Available Silver (Ag)	2012/01/19	NC		%	35
		Available Strontium (Sr)	2012/01/19	10.7		%	35
		Available Thallium (Tl)	2012/01/19	NC		%	35
		Available Tin (Sn)	2012/01/19	14.5		%	35
		Available Uranium (U)	2012/01/19	13.0		%	35
		Available Vanadium (V)	2012/01/19	14.7		%	35
		Available Zinc (Zn)	2012/01/19	4.0		%	35
2741312 ASW	Matrix Spike [MG1703-01]	Total Oil & Grease	2012/01/25		59 (1)	%	30 - 130
	Spiked Blank	Total Oil & Grease	2012/01/25		82	%	30 - 130
	Method Blank	Total Oil & Grease	2012/01/25	ND, RDL=100		mg/kg	
	RPD [MG1703-01]	Total Oil & Grease	2012/01/25	NC		%	50
2743402 MJL	RPD	Soluble (5:1) pH	2012/01/23	0.4		%	N/A
2743412 JHW	RPD	Moisture	2012/01/23	4.3		%	25
2743440 JHW	RPD [MG1704-01]	Moisture	2012/01/23	0.8		%	25
2743803 SPN	Spiked Blank	Isobutylbenzene - Volatile	2012/01/23		102	%	60 - 140
		Benzene	2012/01/23		68	%	60 - 140
		Toluene	2012/01/23		68	%	60 - 140
		Ethylbenzene	2012/01/23		68	%	60 - 140
		Xylene (Total)	2012/01/23		69	%	60 - 140
	Method Blank	Isobutylbenzene - Volatile	2012/01/23		111	%	60 - 140
		Benzene	2012/01/23	ND, RDL=0.025		mg/kg	
		Toluene	2012/01/23	ND, RDL=0.025		mg/kg	
		Ethylbenzene	2012/01/23	ND, RDL=0.025		mg/kg	
		Xylene (Total)	2012/01/23	ND, RDL=0.050		mg/kg	
		C6 - C10 (less BTEX)	2012/01/23	ND, RDL=2.5		mg/kg	
	RPD	Benzene	2012/01/23	NC		%	50
		Toluene	2012/01/23	NC		%	50
		Ethylbenzene	2012/01/23	NC		%	50
		Xylene (Total)	2012/01/23	NC		%	50
		C6 - C10 (less BTEX)	2012/01/23	NC		%	50
2743804 SPI	Matrix Spike	Isobutylbenzene - Extractable	2012/01/24		98	%	30 - 130
		n-Dotriacontane - Extractable	2012/01/24		108	%	30 - 130
		>C10-C16 Hydrocarbons	2012/01/24		82	%	30 - 130
		>C16-C21 Hydrocarbons	2012/01/24		104	%	30 - 130
		>C21-<C32 Hydrocarbons	2012/01/24		101	%	30 - 130
	Spiked Blank	Isobutylbenzene - Extractable	2012/01/24		94	%	30 - 130
		n-Dotriacontane - Extractable	2012/01/24		104	%	30 - 130

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Quality Assurance Report (Continued)

Maxxam Job Number: ZB206728

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2743804 SPI	Spiked Blank	>C10-C16 Hydrocarbons	2012/01/24		77	%	30 - 130
		>C16-C21 Hydrocarbons	2012/01/24		98	%	30 - 130
		>C21-<C32 Hydrocarbons	2012/01/24		98	%	30 - 130
	Method Blank	Isobutylbenzene - Extractable	2012/01/24		97	%	30 - 130
		n-Dotriacontane - Extractable	2012/01/24		101	%	30 - 130
		>C10-C16 Hydrocarbons	2012/01/24	ND, RDL=10		mg/kg	
		>C16-C21 Hydrocarbons	2012/01/24	ND, RDL=10		mg/kg	
		>C21-<C32 Hydrocarbons	2012/01/24	ND, RDL=15		mg/kg	
	RPD	>C10-C16 Hydrocarbons	2012/01/24	NC		%	50
		>C16-C21 Hydrocarbons	2012/01/24	NC		%	50
		>C21-<C32 Hydrocarbons	2012/01/24	NC		%	50
2743805 SPN	Spiked Blank	Isobutylbenzene - Volatile	2012/01/23		97	%	60 - 140
		Benzene	2012/01/23		100	%	60 - 140
		Toluene	2012/01/23		101	%	60 - 140
		Ethylbenzene	2012/01/23		99	%	60 - 140
		Xylene (Total)	2012/01/23		102	%	60 - 140
	Method Blank	Isobutylbenzene - Volatile	2012/01/23		108	%	60 - 140
		Benzene	2012/01/23	ND, RDL=0.025		mg/kg	
		Toluene	2012/01/23	ND, RDL=0.025		mg/kg	
		Ethylbenzene	2012/01/23	ND, RDL=0.025		mg/kg	
		Xylene (Total)	2012/01/23	ND, RDL=0.050		mg/kg	
		C6 - C10 (less BTEX)	2012/01/23	ND, RDL=2.5		mg/kg	
	RPD [MG1704-01]	Benzene	2012/01/23	NC		%	50
		Toluene	2012/01/23	NC		%	50
		Ethylbenzene	2012/01/23	NC		%	50
		Xylene (Total)	2012/01/23	NC		%	50
		C6 - C10 (less BTEX)	2012/01/23	NC		%	50
2743806 SPI	Matrix Spike [MG1704-01]	Isobutylbenzene - Extractable	2012/01/24		93	%	30 - 130
		n-Dotriacontane - Extractable	2012/01/24		96	%	30 - 130
		>C10-C16 Hydrocarbons	2012/01/24		82	%	30 - 130
		>C16-C21 Hydrocarbons	2012/01/24		106	%	30 - 130
		>C21-<C32 Hydrocarbons	2012/01/24		104	%	30 - 130
	Spiked Blank	Isobutylbenzene - Extractable	2012/01/24		92	%	30 - 130
		n-Dotriacontane - Extractable	2012/01/24		111	%	30 - 130
		>C10-C16 Hydrocarbons	2012/01/24		78	%	30 - 130
		>C16-C21 Hydrocarbons	2012/01/24		99	%	30 - 130
		>C21-<C32 Hydrocarbons	2012/01/24		96	%	30 - 130
	Method Blank	Isobutylbenzene - Extractable	2012/01/24		93	%	30 - 130
		n-Dotriacontane - Extractable	2012/01/24		101	%	30 - 130
		>C10-C16 Hydrocarbons	2012/01/24	ND, RDL=10		mg/kg	
		>C16-C21 Hydrocarbons	2012/01/24	ND, RDL=10		mg/kg	
		>C21-<C32 Hydrocarbons	2012/01/24	ND, RDL=15		mg/kg	
	RPD [MG1704-01]	>C10-C16 Hydrocarbons	2012/01/24	NC		%	50
		>C16-C21 Hydrocarbons	2012/01/24	NC		%	50
		>C21-<C32 Hydrocarbons	2012/01/24	NC		%	50

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a

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reliable calculation.
(1) Matrix Spike: results are outside acceptance limit. Analysis was repeated with similar results.

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