Husky Energy

PROCEDURE

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1.0 Introduction

1.1 Husky Operational Integrity Management System (HOIMS)

Husky's Operational Integrity Management System (HOIMS) covers all of Husky's businesses, with particular emphasis on projects and operations, and manages Operational Integrity through the life-cycle of the assets. HOIMS includes 14 elements, with each element containing well defined aims and a clear set of expectations. These expectations guide Husky employees in effectively managing the risks associated with our business and creating a safe and secure place to work. The 14 elements of HOIMS are listed in Table 1-1 below.

Table 1-1: Husky Operational Integrity Management System Elements

1	Leadership, Commitment & Accountability	2	Safe Operations
3	Risk Assessment & Management	4	Emergency Preparedness
5	Reliability & Integrity	6	Personnel Competency & Training
7	Incident Management	8	Environmental Stewardship
9	Management of Change	10	Information, Documentation & Effective Communication
11	Compliance Assurance & Regulatory Advocacy	12	Design, Construction, Commissioning, Operating & Decommissioning
13	Contracted Services & Materials	14	Performance Assessment & Continuous Improvement

Management is responsible for ensuring effective systems and procedures are implemented and adequate resources are made available to meet the HOIMS expectations. Business Units, Operating Districts, Facilities and Functional Areas will implement HOIMS. The resources applied will be consistent with the evaluated Operational Integrity risk.

Achieving conformance to HOIMS expectations requires commitment and sustained efforts over many years. Strong leadership and commitment at all levels of our organization and clearly established responsibilities and accountabilities are key to the success of HOIMS.

Resources will be applied and dedicated to the implementation of HOIMS, and progress will be tracked and monitored at the business units, operating districts, facility, functional areas and corporate levels. Periodic reviews and audits will be undertaken to ensure that HOIMS is effectively integrated in our daily operations and to continuously improve our performance.

Husky's Environmental Management System has its basis in HOIMS. More specifically, Element 8 titled "Environmental Stewardship" sets a clear aim to: "Operate responsibly to minimize the environmental impact of how we conduct business" and "Leave a positive legacy behind us when we leave". A clear set of expectations details how Husky Energy intends to meet this aim. They are the following:

8.1 A process is implemented to assess the risks and potential impacts to the environment associated with our operations. Such assessments are subject to periodic review and, where appropriate, a Life Cycle Value Assessment is carried out.

8.2 Management systems are established and specific measures are implemented to eliminate, minimize, prevent, detect, control and mitigate environmental threats. Our first priority is prevention.

8.3 Environmental impact is monitored and reported to demonstrate compliance with relevant local, national and international regulations and to ensure that any commitments are honored. Local sites metrics and targets are set to drive continual improvement in managing waste, emissions and discharges and energy efficiency.

8.4 A process is implemented to evaluate and manage the specific risks and liabilities associated with decommissioning and reclamation.

Environmental management of Husky's East Coast operations is achieved using a compilation of tools to manage the environmental component of its business. Systems, plans and procedures are in place to manage Husky's environmental commitments, regulatory obligations and stakeholder expectations, as well as areas of risk. All plans and procedures are responsive to applicable legislation and undergo periodic reviews to ensure compliance with legislation.

As a key part of these expectations, all of Husky's East Coast environmental assessments undergo annual reviews. These reviews are to assist Husky Energy in fulfilling its responsibilities under the *Canadian Environmental Assessment Act* by ensuring that the scope of the assessment(s) and the mitigations committed to therein remain valid.

1.2 Purpose of Environmental Protection Plan

The Environmental Protection Plan (EPP) is an important component of the overall project planning and implementation of construction projects. EPPs are often required as part of a project approval by governments following an environmental assessment, before construction occurs. EPPs provide a practical way in which a proponent can demonstrate its understanding of environmental regulations, practices and procedures required to reduce or eliminate the potential environmental effects of the project.

Husky Energy has committed to the development and implementation of a comprehensive EPP to help ensure a high level of environmental protection throughout its work areas and activities associated with the construction of the Concrete Gravity Structure (CGS) in Argentia, NL. An EPP is a working document for use in the field for project personnel and contractors, as well as at the corporate level for ensuring commitments made in policy statements are implemented and monitored. EPPs provide a quick reference for project personnel and regulators to monitor compliance and to make suggestions for improvements.

This EPP for Construction provides the general protection procedures for the routine activities associated with construction activities anticipated for the Project and identifies applicable permits, authorizations and approvals, as well as key site-specific conditions of approvals, as appropriate.

The specific purposes of the EPP are to:

- Provide a reference document to ensure that commitments to minimize environmental effects will be met;
- Document environmental concerns and appropriate protection measures;
- Provide concise and clear instructions to project personnel regarding procedures for protecting the environment and minimizing environmental effects;
- Provide a reference document for personnel when planning and/or conducting specific activities and working in specific areas.
- Provide a training aid during implementation efforts;
- Communicate changes in the program through the revision process; and
- Provide a reference to applicable legislative requirements and guidelines.

1.3 Organization of the Environmental Protection Plan

This EPP provides instructions to ensure Project personnel understand and implement environmental protection procedures for both routine activities and unplanned events and activities associated with the construction of the Project for Husky Energy.

The style and format of the EPP is intended to enhance its use by Project personnel in the field and to provide an important support document between the overall approach to environmental protection planning and the specific requirements in various permits, approvals and authorizations issued for specific Project components and activities.

The EPP comprises the following sections:

- **Section 1** provides an introduction to the EPP. It outlines the EPP purpose, organization, development and implementation, site-specific approach to EPP development, environmental orientation and the Husky Energy Project Overview.
- **Section 2** provides the scope of the EPP.
- **Section 3** provides the responsibilities and accountabilities of key personnel.
- **Section 4** provides an overview of the environmental concerns and general environmental protection procedures for planned Project activities.
- **Section 5** contains the site-specific EPPs for the principle work areas for the construction.

- **Section 6** provides the contingency plans for potential unplanned and accidental events and the key Project and regulatory personnel and emergency contact information.

- **Section 7** lists the permits, approvals and authorization required during construction.

1.4 Development and Implementation of the Environmental Protection Plan

The focus of this EPP is for the construction of the CGS at the Argentia site. The EPP will be revised and expanded as required to meet the requirements of the Project, and to meet the Terms and Conditions of environmental approvals.

EPPs typically undergo continuous revision to reflect new and site-specific construction sequences and work methods and environmental protection requirements and responsibilities. This EPP is structured to allow for updates and revisions as work continues.

1.5 Environmental Orientation and Training

Providing targeted assistance to employees and Contractors is essential to ensuring that they understand how to work in a safe and environmentally responsible manner. To that end, both Husky Energy and its Contractors will provide appropriately targeted orientation, training programs and materials to assist personnel with fulfilling their responsibility to work in a safe and environmentally responsible manner consistent with our policies.

As appropriate, Husky and its Contractors provide job specific technical, health, safety and environmental training and orientations. Husky Energy's formal and in-house training program considers the level of training required for the position and responsibilities of the personnel involved. The aim of the training programs is to provide an understanding of the procedures, equipment, risks and potential hazards that may occur.

All personnel working on the Project will be familiar with the EPP and the environmental protection procedures described herein. Husky Energy will ensure that all contractor employees receive a site-specific orientation to this EPP. The following will be included in the training program:

- Communication on Husky Energy Health, Safety and Environment (HSE) commitment and obligations to the EPP;

- Work description with discussion of the individual activities and the particular environmental concerns associated with each activity;

- Instruction on the specific environmental protection procedures for the work, including applicable documentation;

- Communication procedures to report any unplanned events requiring emergency response;

- Maintenance of the EPP; and
- Enforcement of the EPP.

In addition to the environmental orientation, the following opportunities will be implemented prior to and during the construction process:

- A detailed review with the Husky Energy and the Contractor Construction Managers will be completed prior to commencement of construction operations. The HSEQ Lead (or designate) will meet with the above referenced Construction Managers, the associated contractor supervisors, and the HSE Advisor to review in detail the requirements of this plan and ensure adequate preparations have been made.
- The Contractor Construction Manager will hold a Project kick-off meeting with the main supervisory personnel for all contractors to review this plan, the key elements, and the roles and responsibilities therein, at every critical phase of Project construction.
- Contractors will hold tool box meetings prior to commencement of each shift. Tool box meetings will be held by supervisors working at the site and all workers will attend. It will be held to discuss any health, safety and environmental issues that have arisen or are expected to arise that day.
- Environmental monitoring at the project site is an essential component that supports commitment for environmental protection. Environmental monitoring of construction activities will occur on a daily basis by representatives from Husky Energy HSE personnel, as well as the engineering management contractor and its construction sub-contractors. Every aspect of the operation is subject to environmental inspections. The basis for environmental monitoring rests with the principles, procedures and guidelines presented in the EPP. As a supplement to this, conditions of regulatory permit approvals also assist in establishing a foundation for which to conduct environmental monitoring activities. Non-conformance items noted during environmental inspections shall be documented and addressed. Target dates will be identified and required responsibilities assigned to the appropriate personnel. Corrective actions for non-conformance items will be communicated in the daily meetings and all actions shall be to the satisfaction of Husky Energy HSE advisor. If serious non-conformance items are noted that require immediate attention, appropriate personnel shall be contacted and mitigative measures implemented immediately.
- For each new job task that has potential for environmental impact an in-depth analysis will be conducted on each step in the job procedure prior to the work commencing. Environmental risk will be incorporated into the Job Safety Analysis. The intent of this is to identify all potential environmental hazards, and provide appropriate mitigative measures as provided in Section 4.0 and other applicable sections of this EPP. The initial development of the assessment will be the responsibility of the contractor performing the work. A formal review will be conducted with participants to include Husky Energy HSE advisor, front line supervisors and project design/field engineers.

1.6 Husky Energy Project Overview

As part of the Wellhead Platform (WHP) development, Husky Energy is constructing a CGS in a purpose-built graving dock at Argentia, Newfoundland & Labrador. The WHP will consist of a CGS with topsides consisting of drilling facilities, wellheads and support services such as accommodations, utilities, flare boom and a helideck. Argentia is situated on a peninsula located on the eastern shore of Placentia Bay. It is accessed via Hwy 100 approximately 43km south west of the Trans-Canada Highway 1 and 130 km from the City of St. John's.

The CGS construction site is located at the northeast portion of the Northside Peninsula, bordering Argentia Harbour. The overall construction site area will be approximately 20 hectares. Land clearing or watercourse diversion will not be required for the CGS graving dock construction. General excavating and grading activities will be required.

The CGS will be constructed in the dry, meaning all concrete construction will be completed in a de-watered graving dock. Upon completion of the CGS, the CGS structure will be floated to one of two potential deep-water sites in Placentia Bay, where it will be mated with the topsides structure. The WHP will then be towed to and installed in the western portion of the White Rose Field and tied back to the existing *SeaRose FPSO* flowlines.

The proposed construction site will consist of the following infrastructure:

- Graving Dock - The graving dock will be excavated behind the natural coastal berm to a depth of approximately -18 m Chart Datum (CD). An excavated cement bentonite cut-off wall, approximately 900 mm thick with a permeability of 10^{-8} m/s, will be constructed. The cut-off wall will extend to a depth of -28 m CD along the sea bund side and continued for 120 m along the sides of the graving dock. The cut-off wall will be removed as part of the bund removal and float out channel dredging activities after flooding of the graving dock prior to the float out of the CGS.

- Support facilities - include offices, a mess hall, a medical clinic, temporary sheds, sewage treatment facility, lay down areas, storage areas, and other facilities associated with large civil engineering construction sites. The construction site will be fully fenced with a security-controlled entrance. All buildings will be temporary and set on concrete or wooden sleepers or trailers above ground.

- Existing roads, water supply infrastructure, and power supply infrastructure will be used. If required, existing infrastructure will be extended into the site in a manner compatible with the final site layout.

- Settling Pond - A settling pond shall be provided through which all water removed from the graving dock will pass before discharge to the sea. The settling pond shall be sized to allow sufficient residence time for suspended solids to settle. The settling pond will be located outside of any cut off wall provided and will have an impermeable liner. The dewatering volumes and surface water drainage will be mixed. In addition, any concrete batch water will be directed toward the settling pond before discharge.

- Fuel Storage - Fuel storage (if required) will be provided on site in suitably segregated and bunded storage and distribution areas located close to the emergency generators Fuel will be delivered to site by tanker.

- Concrete Production - Two 60 m^3/hr concrete batch plant(s) will be provided covering an area of 14,000 m^2.

2.0 SCOPE

The Argentia EPP describes environmental protection procedures and contingency plans, designed to protect the local/regional terrestrial, freshwater and marine environments of the Argentia site, as well as the nearby communities and commercial fishers. These procedures and plans will be implemented during the onshore and near shore construction phase of the Project at the Argentia site.

Note that all activities associated with tow-out of the completed WHP from the deep-water site in Placentia Bay to the offshore location are beyond the scope of this EPP.

3.0 RESPONSIBILITIES AND ACCOUNTABILITIES

This section outlines the roles and responsibilities of all Project personnel, including Husky Energy company personnel and contractor personnel, with respect to environmental management of this Project.

3.1 Husky Energy Project Manager

The Husky Energy Project Manager is the primary person responsible for all aspects of the Project, including environmental, health and safety performance. Specific environmental responsibilities of the Project Manager include:

- Ensuring adequate plans and resources are in place to achieve Company commitments to minimize environmental impacts;
- Ensuring compliance with relevant regulations, authorizations, permits and protocols;
- Reviewing incident reports as they are submitted and ensuring the proper course of action is taken to manage unexpected environmental conditions or events;
- Ensuring ongoing communication with appropriate regulatory agencies and other interested parties on behalf of the Company; and
- Ensuring that revisions are updated and incorporated to this EPP.

3.2 Husky Energy Health, Safety, Environment & Quality (HSEQ) Manager

The HSEQ Manager will be primarily responsible for the overall health and safety of workers and protection of the environment during Project construction and commissioning. Specific responsibilities of the HSEQ Manager include:

- Development of the EPP;
- Maintenance of the EPP;
- Providing, along with the Construction Manager, information about emergencies and potential consequences to Company employees, contractors and the public;
- Ensuring implementation of training and orientation of all contractors on site; and
- Conducting audits to ensure compliance with this procedure.

3.3 Husky Construction Manager

The Husky Construction Manager will oversee all construction operations at the site. In regard to health, safety and environment (HSE), the Construction Manager will be responsible for:

- Promoting and demonstrating commitment to HSE;

- Ensuring adherence with the Husky Energy and Contractor HSE policy, standards and procedures;
- Ensuring all personnel at the site are competent and adequately oriented;
- Being familiar with the elements of this EPP;
- Ensuring the elements of this EPP are enacted;
- Communicating any new revisions to the EPP at the daily toolbox meetings; and
- Implementing any necessary corrective actions.

3.4 Health, Safety and Environment Advisor

The HSE Advisor will report to the HSEQ Manager and will provide advice and input as to the means necessary to meet the expectations of this EPP and the relative success thereof. The HSE Advisor has the authority to stop an operation if determined there are unacceptable risks to health, safety and the environment, in consultation with the HSEQ Manager, Construction Manager, Site Safety Supervisor or their designates. The HSE Advisor will be responsible for:

- Acting as the initial contact person for any releases or spills of substances (emergencies);
- Receiving, along with the Contractor, reports of all spills of fuel and hazardous materials immediately after the event. Any spill to the marine environment and spills of 70 L or more on land will be reported immediately;
- Ensuring an Incident Report is completed and submitted to all relevant personnel and regulatory bodies (if required).
- Monitor on-site Project activities, evaluate the contractors' environmental performance, and assess and interpret environmental protection procedures as set down in this EPP.
- Interact with other members of the Project Team on environmental procedures and requirements, participate in Project meetings, conduct environmental reviews of drawings, and help to revise and update this EPP.
- Ensuring compliance with all applicable permits, contract documents, Husky Energy and Contractor HSE policies and commitments made during the planning and application process;
- Assisting in the preparation and delivery of environmental orientation presentations to Company and Contractor staff;
- Suspending work in the event of non-compliance with the recommendations of this EPP, permit or authorization conditions or as standard procedure to prevent unacceptable risks to health, safety and environment;

- Advising on the proper course of action to be taken to manage unexpected environmental conditions or events;
- Monitoring work site activities and conditions on a daily basis to identify problem areas;
- Ensuring that monitoring and follow-up studies are conducted as necessary;
- Assisting with the implementation of emergency plans;
- Liaising with appropriate regulatory agencies during onsite inspections or visits and other interested parties;
- Organizing on-site meetings as required to address site specific issues; and
- Review and approve all relevant contingency plans submitted by the Contractor.

3.5 Contractor Representatives

All Contractors working at the site will be oriented to the Husky Energy HSE expectations and this EPP. All workers are required to:

- Protect themselves, others and the environment by identifying hazards and implementing appropriate solutions;
- Comply with all regulations, this EPP, and the Husky Energy HSE policy, contractor safety policies and/or procedures that pertain to the operations; and
- Notify the Construction Manager or immediate supervisor of any incident that results in (or could have the potential to result in) injury to personnel, property or the environment.

3.6 All Company and Contractor Personnel

All persons working on the Project have the authority and responsibility to:

- Familiarize themselves with the EPP and any revisions that may be made during construction;
- Adhere to the EPP and comply with applicable Husky Energy HSE policies, regulations, permits and authorizations;
- Initiate EPP revision requests, if required, to improve the quality of the EPP; and
- Shutdown an operation if they believe there are risks to health, safety and environment.

4.0 ENVIRONMENTAL PROTECTION PROCEDURES

4.1 Surveying

Any required site surveying activities for construction shall be conducted primarily on previously disturbed land with negligible environmental effect expected from these activities. Since the site is on previously disturbed land clearing of vegetation is not a concern. The surveying activities that may be required include traversing and establishing of permanent benchmarks.

4.1.1 Environmental Concerns

Surveying activities may disturb vegetation, wildlife, and historic resources.

4.1.2 Environmental Protection Procedures

Traversing

- No attempt to harass or disturb wildlife will be made by any person.
- Vehicles will yield the right-of-way to wildlife.
- Archaeological sites and features will not be disturbed during survey work. Any historic resource discoveries will be reported as per Section 6.3.
- All-terrain vehicles (ATVs) will not be allowed off the right-of-way except as approved by the HSE Advisor.

Establishing Targets, Permanent Benchmarks and Transponder Locations

- A driven T-bar, well embedded to readily identify each benchmark location will be used.
- No attempt to harass or disturb wildlife will be made by any person.
- Standard iron bars and sledge hammers are to be used to establish benchmarks.
- Survey crews must have a briefing on the recognition of historic resources prior to commencing work.

4.2 Clearing of Vegetation

Due to the nature of the site (previously developed), vegetation clearing will not be required and as such will not be discussed as part of this EPP.

4.3 Quarrying and Aggregate Removal

4.3.1 Environmental Concerns

The principal concerns for quarry development and associated aggregate removal include the potential for sedimentation of marine and freshwater systems, loss of terrestrial habitat and historic resources, noise, dust and quarry development/ reclamation plans.

4.3.2 Environmental Protection Procedures

All quarried material will be obtained from an existing quarry which holds a valid Quarry Permit obtained from the NL Department of Natural Resources. Husky Energy will ensure that all quarried materials are obtained in compliance with the quarry permit and applicable regulatory requirements.

4.4 Erosion Prevention

4.4.1 Environmental Concerns

The potential for erosion and resulting effects to water quality, fish and fish habitat is a key environmental concern associated with construction activities.

4.4.2 Environmental Protection Procedures

Erosion prevention practices shall be applied throughout work areas on exposed or erodible materials. The application of erosion control measures is found throughout Section 4.0 but reiterated here to provide a more thorough evaluation of site-specific activities by project personnel.

General

Primary means of erosion control are the avoidance of activities contributing to erosion. All areas of exposed erodible soils are to be stabilized by back-blading or grading to meet engineered slope requirements. Where erosion along exposed erodible slopes is a potential concern and a natural vegetation buffer of less than 30 m from the high water mark exists between erodible areas and water bodies, a silt fence shall be constructed to control sediment runoff.

Engineering requirements will vary depending on the locations of the silt fence and will take such factors into consideration as drainage/surface area of exposed soils and time of year the silt fence is employed.

Erosion and sedimentation control measures have been designed for construction to minimize the effects of construction activities on the environment. They include: site drainage ditching system, including culverts and risers; installation of sedimentation control ponds; temporary run-off interceptor ditches; and check sediment dam traps which will provide both energy dissipation and sedimentation control. However, regardless of these protection measures, if an environmental inspection reveals that sediment is entering a watercourse, further mitigative measures shall be implemented.

4.5 Excavations, Embankment and Grading

Excavation, embankment and grading of common rock and other materials may be required at various locations within the Project.

4.5.1 Environmental Concerns

The principal environmental concerns associated with excavation, embankment and grading are potential effects on water quality, fish and fish habitat, and terrestrial habitat due to ground disturbance.

4.5.2 Environmental Protection Procedures

All work shall be conducted in a manner which controls potential sedimentation of watercourses and bodies of water in or adjacent to the work areas as outlined in the following procedures:

- Excavation, embankment and grading in the vicinity of water bodies shall be done in a manner that ensures erosion and sedimentation of watercourses and bodies of water is minimized.
- A buffer zone of undisturbed vegetation shall be maintained between construction areas and all watercourses, bodies of water and ecologically sensitive areas.
- Excavated soil will be disposed as per the requirements of all applicable permits.

4.6 Dust Control

4.6.1 Environmental Concerns

The environmental concerns associated with dust include human health effects and potential effects on aquatic ecosystems, waterfowl and vegetation.

4.6.2 Environmental Protection Procedures

The following measures will be taken to mitigate potential effects of dust:

- Dust from construction activities shall be controlled where possible by the frequent applications of water and/or use of calcium chloride;
- Any application of calcium chloride will be in accordance with guidelines available from the NL Department of Transportation and Works.
- All dust control agents will be stored in areas away from water bodies.
- Efforts to be made to minimize fugitive dust emissions; specific types and frequency of dust control measures to be determined by site conditions.
- Locations where water is to be applied, the amount of water to be applied and the times at which it will be applied will be determined by the Construction Manager.

- Water will not be applied in situations where surface water could freeze and create a potential traffic hazard.

- Water will be applied by means of a pressure type distributor equipped with a spray system of nozzles that will ensure a uniform application of water. Minimal amounts of water required to control dust will be applied such that potential for surface runoff of sediment is minimized.

- Waste oil, or other petroleum products, will not be used for dust control under any circumstances.

- Fine-grained soils and granular materials will be transported in covered trailers or trucks to reduce air-borne particulates.

4.7 Trenching

4.7.1 Environmental Concerns

Where excavation for the construction of water lines or any other infrastructure is undertaken, potential runoff of sediment-laden water could result in effects on marine or freshwater fish and fish habitat, water quality and historic resources.

4.7.2 Environmental Protection Procedures

The following measures will be implemented to minimize the potential effects of trenching.

- Where possible, topsoil will be stored for later use during rehabilitation.

- Excess overburden and excavated bedrock material will be disposed of as per the requirements of the applicable permits.

- Dewatering of trenches will make use of measures to minimize and control the release of sediment laden water through the use of filtration, erosion control devices, settling ponds, straw bales, geotextiles or other devices.

4.8 Pumps and Generators

4.8.1 Environmental Concerns

A variety of water pumps, hoses and generators will be in frequent use in many areas of the construction site. Environmental concerns are associated with any accidental spills or chronic leaks contaminating bodies of water.

4.8.2 Environmental Protection Procedures

- Oils, grease, gasoline, diesel, or other fuels shall be stored at least 100 m from any surface water.

- Drip pans shall be placed underneath pumps and generators. Absorbent material will be kept at all sites where pumps and generators are in use.

- Hoses and connections on equipment located near bodies of water shall be inspected routinely for leaks and drips.

- All leaks shall be reported immediately to the HSE Advisor. Upon detection of a leak, the equipment (i.e., pump, generator, etc.) should be shut down immediately and corrective action taken to repair the leak and clean up any contaminated soil and/or water.

4.9 Precasting

4.9.1 Environmental Concerns

Both wooden and metal formwork will be constructed. With regards to wooden formwork, the active faces may be treated with form oils. During precasting activity, both metal and wooden formwork will be prepared prior to each concrete pour with form oil (a hydrocarbon-based product). Many of these substances are known to be toxic or possibly pose occupational hazards. The implementation of a Workplace Hazardous Materials Information System (WHMIS) program is directly applicable to the use of these materials in precasting activities.

The major concern regarding the use of these substances is their release to the environment through spillage and use. Precasted units are often subjected to high and/ or low pressure washing after removal from formwork for curing or cleaning purposes. This washwater may contain cement, concrete additives, and form oil.

Cement is very alkaline and washwater from cleaning or curing precast units will probably breach the upper acceptable limit (pH 9.0) under the NL *Environmental Control Water and Sewage Regulations, 2003*. Washwater may also contain concrete additives and agents, and form oil, many of which are toxic to aquatic species. Aggregates, particularly the finer sand fractions can be expected to be washed from precast units in the washwater. Such washwater, chemicals and sediments can affect aquatic life and aquatic habitat.

4.9.2 Environmental Protection Procedures

The following protection procedures are intended to minimize the potential impact of the discharge of these substances in association with precasting activities.

Storage and use of Epoxies, Paints and Form Oil

- All form oil which is stored in bulk will be contained in above-ground, double-walled tanks or smaller containers inside dyked secure areas.

- All epoxies, paints and form oils which are stored in drums and smaller containers will be stored in an enclosed area protected from contact with vehicles and stored in compliance with WHMIS protocols.

- The application of form oil to formwork will be done in a manner which minimizes the amount used and ensures that incidental or accidental release to the environment is minimized.

Washwater and Runoff Control

Runoff from the precast area and washwater from the cleaning and curing of precast units, will be directed to the settling pond.

- Settling pond effluent will be tested routinely (at least monthly or as directed by the Environmental Team) for parameters related to concrete additives to be used in the production of concrete, or form oil. The settling pond effluent discharge will meet contaminant levels specified in Schedule A of the NL *Environmental Control Water and Sewage Regulations, 2003.*

- The settling pond will be cleaned as directed by the HSE Advisor to ensure that the retention capacity is maintained at all times.

4.10 Equipment Operations

A variety of equipment will be used on-site during construction, which are potential sources of noise, air emissions and potential leaks or spills.

4.10.1 Environmental Concerns

Noises associated with construction activity may negatively affect wildlife. Air emissions may have air quality implications. Accidental leaks or spills of fuel or other hazardous materials may affect soils, water, fish, vegetation and wildlife.

4.10.2 Environmental Protection Procedures

- All approvals, authorizations and permits for Project activities will be followed.

- Noise control procedures will be put in place during construction.

- All equipment will have exhaust systems regularly inspected and mufflers will be operating properly.

- All equipment (e.g., diesel generators, etc.) will meet the requirements of the provincial Sections 16 and 20 of the *Air Pollution Control Regulations* under the NL *Environmental Protection Act*.

- All equipment use during construction will follow the environmental protection procedures outlined in this EPP. In the case of an accidental event resulting from the use of equipment (e.g., a fuel spill), the appropriate contingency plan will be implemented.

- Regular maintenance inspections for leaks will be made on all equipment. If problems are identified the equipment will be taken out of service and mitigated to prevent release of hydrocarbons into the environment (drip tray, spill pan, absorbent material, etc.).

- Use of environmentally friendly hydraulic fluids in equipment operating within 100 m of a water body will be investigated.

4.11 Dewatering – Work Areas

4.11.1 Environmental Concerns

The major concerns associated with dewatering are sedimentation and direct fish mortality and/or habitat destruction for freshwater and marine fish species.

4.11.2 Environmental Protection Procedures

- Water pumped from excavations or work areas, or any runoff or effluent directed out of the project site will have silt removed via a settling pond, filtration or other suitable treatment before discharging to a body of water. Effluent discharge will comply with the NL *Environmental Control Water and Sewage Regulations, 2003* under the NL *Environmental Protection Act*.

- Where possible, clean water will be discharged to vegetated areas to further reduce any potential effects on watercourses.

- The size of sedimentation pond will be designed to accommodate the anticipated volume of collected water and to meet discharge criteria engineered for water quality.

- Discharged water will be encouraged to follow natural surface drainage patterns.

- Contingency measures will be implemented to deal with storm events and high run-off in order to minimize adverse environmental effects from these events. Erosion prevention and sediment containment materials such as silt fence material, rip rap, straw bales, filter fabric and designated equipment will be available to address contingency/emergency situations.

- Site drainage will be directed toward the settling pond.

4.12 Marine Vessels

This section of the EPP is intended to provide general guidance for Project supervision and environmental staff to prevent or minimize potential effects in the biophysical environment.

4.12.1 Environmental Concerns

Project vessel traffic may interfere with local fishing boats and other vessel traffic. The potential exists for vessels to collide, run aground and/or sink. Such events may lead to the accidental release of fuel and other hazardous materials to the marine environment. The release of ballast or bilge water could introduce non-indigenous species or deleterious substances into Placentia Bay.

4.12.2 Environmental Protection Procedures

- All vessel activities will be governed in accordance the *Canada Shipping Act, 2001* and all associated regulations including the *Vessel Pollution and Dangerous Chemicals Regulations*.

- Construction Safety Zones (CSZs) will be established at the deep-water mating site in Placentia Bay. Husky Energy will establish an overall Project agreement with commercial fishers using the Placentia Bay area that addresses safe operations and compensation.

- For the safety of the work crews and commercial fishers in the area, fishing inside the CSZ will be restricted during construction activities.

- To minimize interference with other marine traffic, Notices to Shipping/Mariners will be issued by the Canadian Coast Guard (CCG) regarding Project vessel traffic.

- Marine traffic associated with Project construction will use designated routes.

- Husky Energy will consult with the area fish harvesters to discuss and agree on an appropriate Vessel Traffic Management Plan for the safe and efficient operation of Project marine traffic and fishing vessel operations in the Project area.

- Communications will be maintained directly at sea by Project vessels via marine radio to facilitate information exchange. Relevant information about marine operations occurring outside the CSZs will also be publicized, when appropriate, using established communications mechanisms, such as Notices to Shipping (Continuous Marine Broadcast and NavTex) and CBC Radio's (Newfoundland and Labrador) Fisheries Broadcast.

- Project vessel masters will observe the following basic rules:

    - Demonstrate they have appropriate safety and emergency procedures on board;

    - Advise the Argentia authorities of their time of departure from their port of origin and their estimated time of arrival;

    - Travel at the recommended speed within the traffic lanes,

    - Notify the Argentia authorities of their progress at sea or, if stopping at other ports enroute, update their estimated time of arrival;

    - Relevant Canadian Hydrographic Charts or electronic charting systems must be on board prior to leaving their port of origin; these charts must be kept on board at all times;

    - Implement best management practices designed to achieve zero discharge of oily waste while at the site and along the Project shipping route;

    - All Project-related vessels shall have onboard adequate oil spill response equipment to handle an accidental release of product into the environment; and

    - Notify the CCG and the Argentia site office of any releases or spills of substances (emergencies) immediately and identify the location.

- No Project-related vessels will discharge wastes or bilge water into surrounding waters. The discharge of garbage from ships into Canadian waters and the waters of the Fishing Zones of Canada is prohibited.

- All crewmembers will be familiar with emergency procedures for both life threatening and potentially polluting situations.

- All stationary hazards, such as moored platforms or vessels, will be clearly marked according to the *Navigable Waters Protection A*ct approvals and/or the *Collision Regulations* under the *Canadian Shipping Act, 2001*.

- All vessels will comply with the *Canadian Shipping Act, 2001 Ballast Water Control and Management Regulations*;

- All vessels must comply with the Argentia Project Waste Management Plan.

4.13 Noise Control

4.13.1 Environmental Concerns

A variety of noises associated with construction and operation activity can negatively affect wildlife distribution and abundance. Noises associated with blasting are temporary in nature and noises associated with drilling are considered long-term, but localized.

4.13.2 Environmental Protection Procedures

Measures will be implemented wherever possible to minimize potential effects arising from a variety of noise sources, including:

- Adherence to all applicable permits and approvals.

- All equipment will have exhaust systems regularly inspected and mufflers will be operating properly.

4.14 Historic Resources

4.14.1 Environmental Concerns

There are no known archaeological sites located in the project area. However, potential exist that activities such as dredging of the tow-out channel may uncover historic resources.

4.14.2 Contingency Procedures

If suspected historic resources are identified the Discovery of Historic Resources contingency plan as per Section 6.3 will be enacted.

4.15 Concrete Production

4.15.1 Environmental Concerns

The major concern relating to concrete production activities is the effects of washwater released to the environment. Liquid wastes may contain hazardous materials such as cement, concrete additives and form oil.

Cement is very alkaline and washwater from spoiled concrete or from the cleaning of the batch plant mixers and mixer trucks, conveyors and pipe delivery systems can be expected to have very high pH, which may exceed the acceptable limit, as determined by the provincial regulation of discharges to a body of water. Similarly, spoiled concrete or washwater would contain concrete additives and agents, some of which are toxic to aquatic species. Aggregates, particularly the finer sand fractions, can be expected to be washed from spoiled concrete or discharged in washwater. Uncontrolled release of such washwater, chemicals and sediments could adversely affect aquatic life and aquatic habitat.

4.15.2 Environmental Protection Procedures

- Washwater from the cleaning of mixers, mixer trucks and concrete delivery systems shall be directed to a closed system rinsing/settling pit.

- In the event that water from the closed settling system is to be released, it shall be tested prior to release, for parameters related to any concrete additives used in the production of concrete (e.g., total hydrocarbons, sodium hydroxide), pH, and total suspended solids. The water to be released shall also meet the limits specified in Schedule A of the NL *Environmental Control Water and Sewage Regulations, 2003* and shall adhere to those portions of the *Fisheries Act* that relate to fish habitat protection and pollution prevention. Release shall be via runoff control procedures.

- If water to be released does not meet discharge criteria, it will be further treated until these discharge criteria have been met.

- The settling pit shall be cleaned on an as required basis to ensure that the retention capacity is maintained at all times.

- An onsite interim holding/processing area for off-spec or excess concrete will be designated and approved. Final disposal will be at an approved facility.

- Any chemicals that are kept on site must be stored in accordance with the National Fire Code and *Occupational Health and Safety Regulations*. Chemicals kept on site will be stored in a secure area. Liquid chemicals will be placed inside a dyked area.

- Installation of dust control equipment in the concrete batch plant.

- The Environmental Code of Practice for Concrete Batch Plant and Rock Washing Operations will be adhered to during concrete production activities.

- All drainage from an aggregate storage area will be directed to a drainage control device such as a settling pond.

4.16 Linear Developments

4.16.1 Environmental Concerns

Linear developments encompass a diverse range of standard construction-related activities, such as ditching, right-of-way clearing and grubbing, roads, pipelines and transmission line construction. Environmental concerns associated with linear developments include potential sedimentation/erosion, the loss of vegetation, fish/wildlife habitat and historic resources.

4.16.2 Environmental Protection Procedures

Road Construction

- Aggregate (fill) materials for road construction will not be removed from any stream.
- Siltation control measures such as sediment traps and check dams will be installed where required. Solids that accumulate in a settling pond or behind a sediment trap will be removed on a regular basis to ensure such devices remain effective.
- Work will not be undertaken on easily erodible materials, during or immediately following heavy rainfalls.
- Buffer zones will be flagged prior to any disturbance activities.
- Any historic resource discoveries will be reported to the Provincial Archaeological Office.
- Natural vegetation will be left in place where possible.
- Drainage from areas of exposed fill will be controlled by grading or ditching and directed away from watercourses. Surface water will be directed away from work areas by ditching. Runoff from these areas will have silt removed by filtration or other suitable methods.
- The requirements of ditch blocks/check dams or sediment traps to intercept runoff will be determined in the field in consultation with the HSE Advisor and Contractor.
- Check dams will be used as required to reduce runoff from work areas with exposed soil.
- In areas where natural vegetation must be removed, the vegetation layer will be stored for possible use as erosion control material on exposed slopes.
- Temporary erosion control will be applied on exposed slopes in sensitive areas immediately following exposure of a slope.
- The cutting and filling phase of road construction, and the development of other work areas, will be conducted in a manner that ensures minimum disturbance and controls potential sedimentation of watercourses and water bodies in or adjacent to the roads, as outlined in the following procedures:

- Cutting and filling will be done only upon completion of grubbing. Where engineering requirements do not require grubbing, filling will occur without any disturbance of the vegetation mat or the upper soil horizons;

- Road fill will be dry and ice-free. On areas of sensitive terrain, the fill will be end-dumped from the established road bed.

- Culverts will be installed to maintain natural cross-drainage and to prevent ponding.

Transmission Line Development

Wood, pressure-treated with pentachlorophenol (PCP) or ammonical copper arsenate (ACA), shall not be used. Alternatives to wood will be preferred, or where necessary wood treated with either ACQ (amine) or Copper Azole.

Pipeline Development

Pipelines such as those for sedimentation pond discharge shall be constructed above ground and follow the access roads. All exterior surface pipelines with the potential to freeze shall be gravity self-draining to containment or employ other protection measures to prevent spillage to the environment. The environmental protection procedures for road construction as outlined above shall be used for pipeline construction where applicable.

Drainage

Drainage discharge locations will be determined in consultation with the HSE Advisor.

- Roads will be adequately ditched so as to allow for good drainage.

- Roadside ditches will discharge onto vegetated areas, never directly into a watercourse.

- Wherever possible, ditches will be kept at the same gradient as the road.

- The location of all culverts will be marked with a post so they can be located during snow removal operations or if they become covered from debris accumulation.

4.17 Vehicular Traffic

4.17.1 Environmental Concerns

Direct physical disturbances from vehicular movements can adversely affect both terrestrial and aquatic environments. During any construction-related operation, the level of activity involving equipment movement, types of equipment and supply, requires various infrastructures such as roads, to conduct the work efficiently and in an environmentally acceptable manner. Typically, vehicles ranging in size from ATVs to heavy equipment, all of which can result in ground disturbance, may be used during access road construction. Husky Energy is committed to the proper development of access roads in order to minimize environmental damage resulting from equipment movement and supply of operations.

4.17.2 Environmental Protection Procedures

- ATVs will not be allowed on the site except as required by the Contractor in the performance of the work.
- Where possible, the use of ATVs will be restricted to designated trails, thus minimizing ground disturbance.
- Vehicle movements will be restricted to developed areas such as access roads.
- Appropriate speed limits and road signage will be established and enforced to minimize environmental disturbance and accidents.
- During winter when the ground is covered with snow, snowmachines and track-heavy equipment (dozers), whether equipped with low-impact tread or not, will not be used for equipment movement and supply outside of established roadways, pathways or trailways. Where possible, this equipment will use established pathways, also minimizing disturbances to vegetation.
- Equipment and vehicles will yield the right-of–way to wildlife. Any attempt to interfere with the natural movement of wildlife will be considered harassment and dealt with accordingly.
- All Project vehicles, including ATVs, will be properly inspected and maintained in good working order including all exhaust systems, mufflers and any other pollution control devices.

4.18 Storage Handling and Transfer of Fuel and Other Hazardous Substances

A variety of fuels and potentially hazardous materials will be used during Project construction activities. Gasoline, diesel fuel, grease, motor oil and hydraulic fluids are all needed for equipment. Other potentially hazardous materials that may be used routinely include:

- Propane;
- Acetylene;
- Paints;
- Epoxies;
- Concrete additives;
- Antifreeze; and
- Cleaners and solvents.

4.18.1 Environmental Concerns

When transporting, storing, handling, transferring, or using petroleum products or other hazardous materials, the uncontrolled release to the environment through spills and leaks is of utmost concern. This may result in contamination of air, soil, marine, and/or freshwater (both surface and ground water). Adverse effects on human health and safety, terrestrial, aquatic and marine habitat and species may occur as a consequence of air, soil, and water quality degradation.

Transport of Petroleum Products and Other Hazardous Materials

The transport of fuel and other hazardous materials will be undertaken in compliance with the *Transportation of Dangerous Goods Act* and associated regulations. All goods entering the site will be inspected to ensure that the appropriate placards or labels and manifest are in place and the security of the product is assured. All persons handling dangerous goods must show proof of certification of training in the transportation of dangerous goods as required under the Act. Security staff and the HSE Advisor will be trained in the requirements of the Act.

Storage of Fuel and Other Hazardous Materials

All bulk storage of fuel products and other hazardous materials on land will be stored in above-ground, self-dyked tanks in compliance with the *Storage and Handling of Gasoline and Associated Products Regulations.*

The following conditions shall apply to the storage of fuels and other hazardous materials.

- Before installing fuel storage tanks, the necessary approvals under the *Storage and Handling of Gasoline and Associated Products Regulations* shall be obtained from the Services NL.

- Fuels and other hazardous materials shall only be handled by persons who are trained and qualified in handling these materials. The WHMIS will be implemented to ensure proper handling and storage are achieved.

- Petroleum products and other hazardous materials shall be stored on level terrain at least 100 m from any surface body of water unless otherwise approved by the Husky HSEQ Manager.

- Fuels shall be stored inside dykes or self-dyked units and will be clearly marked to ensure they are not damaged by moving vehicles. The markers will be visible under all weather conditions.

- Storage areas will be equipped with suitable fire fighting equipment.

- Any above-ground fuel tank shall be positioned over an impervious mat and shall be surrounded by an impervious dyke of sufficient height (minimum height 0.6 m) to contain:

  - Where a dyked area contains only one storage tank, the dyked area shall retain not less than 110% of the capacity of the tank.

  - Where a dyked area contains more than one storage tank, the dyked area shall retain not less than 110% of the capacity of the largest tank or 100% of the capacity of the largest tank plus 10% of the aggregate capacity of all the other tanks, whichever is greater. Otherwise approved self-dyked storage tanks shall be used where required.

  - Dyked areas are to be dewatered on an as needed basis. The water shall be decontaminated prior to release into the environment.

- Any dykes of earthwork construction shall have a flat top not less than 0.6 m wide, and be constructed and maintained to be liquid tight to a permeability of 25 L/m²/day. The distance between a storage tank shell and the center line of a dyke shall be at least one half the tank height. Dykes shall be fenced.

- Fuel storage areas and non-portable transfer lines shall be clearly marked or barricaded to ensure that they are not damaged by moving vehicles. The markers will be visible under all weather conditions. Barriers will be constructed in compliance with the provincial *Storage and Handling of Gasoline and Associated Product Regulations*.

- Waste oils, lubricants, and other used oil shall be reused, recycled or disposed of at an approved, licensed waste management facility in accordance with the NL *Used Oil Control Regulations*.

- All storage tank systems shall be inspected on a regular basis as per Sections 20 and 21 of the *Storage and Handling of Gasoline and Associated Products Regulations*. This involves, but is not limited to, gauging or dipping and the keeping of reconciliation records for the duration of the program.

- Contracted suppliers of petroleum products and other hazardous materials shall comply with provisions of this EPP. Also, before transporting or positioning fuel at the site, have a Fuel and Hazardous Material Spills Contingency Plan which has been accepted by Husky Energy.

- Smoking shall be prohibited within 10 m of a fuel storage area.

- Hot Work Permits shall be required before undertaking welding or torch cutting at a fuel storage area.

- Refueling or servicing of mobile equipment on land shall not be allowed within 100 m of a watercourse except at a specifically designated refueling site where conditions will allow for containment of accidentally spilled fuel (i.e., secondary containment).

- Within 30 days of known decommissioning of a storage tank system, empty the system of all products, remove the tank and associated piping from the ground, remove any contaminated soil, clean the area and restore the site.

- Any soil contaminated by small leaks of fuel, oil or grease from equipment shall be disposed of in accordance with the NL *Environmental Protection Act* and *Used Oil Control Regulation*. The *Used Oil Control Regulation* will be used as a guideline to the NL Department of Environment and Conservation requirements for such disposal.

- A fuel and other hazardous materials spill contingency plan, and appropriate emergency spill equipment shall be in place on site.

- Bulk fuel storage facilities shall be dipped on a weekly basis in order to accurately gauge fuel consumption. These consumption rates shall allow for visually undetectable sources of contamination to be identified and corrected.

- Outdoor storage of gasoline or diesel in portable containers is acceptable only in designated areas for that purpose.

- Drums of petroleum products or chemicals will be tightly sealed against corrosion and rust and surrounded by barrier and contains secondary containment.

- For storage of waste oils, other waste petroleum products, and spent hazardous materials, the requirements of the Waste Management Plan will be followed.

- Petroleum products and other hazardous materials shall only be handled by persons who are trained and qualified in handling these materials, as per the WHMIS. WHMIS regulations shall be implemented to ensure proper handling and storage is achieved.

- Tanks that are decommissioned will be purged of all hydrocarbons and vapours by a certified contractor, verified gas free by a gas detection meter, rendered unfit for further use by cutting holes in it, and disposed of in a manner approved by Services NL.

- A fuel and other hazardous materials spill contingency plan, and appropriate emergency spill equipment, will be in place on site. A copy of contingency plan is to be forwarded to the Government Services Centre.

Fuel Transfer – From Tanker Truck to Storage Tanks

The following procedures shall apply to the transfer of petroleum products:

- In all cases, transfer to storage tanks will be attended by a qualified person for the duration of the operation. This person will be trained in proper fuel handling procedures to minimize the risk of an unattended spill. The attendant will be trained in the requirements of the spill contingency plan and WHMIS.

- Exposed pipelines will be protected from vehicular collision damage by the installation of guard rails.

- Regular inspections of hydraulic and fuel systems on all operating machinery shall be carried out and records kept during the duration of near shore construction. Leaks shall be repaired immediately.

Equipment Fuelling

The following procedures shall apply to the fuelling of heavy construction equipment:

- Fuelling and lubrication of equipment shall occur in such a manner as to minimize the possibility of contamination to soil or water.

- When refueling equipment, operators shall:

  - Use leak-free containers and reinforced rip and puncture-proof hoses and nozzles;

  - Be in attendance for the duration of the operation; and

  - Seal all storage container outlets except the outlet currently in use.

- Regular inspections shall be made of hydraulic and fuel systems on machinery. Leaks shall be repaired immediately.

- Refueling or servicing of mobile equipment on land shall not be allowed within 100 m of a watercourse except at a specifically designated refueling site where conditions will allow for containment of accidentally spilled fuel (i.e., secondary containment).

- Fuelling attendants shall be trained in the requirements under the spill contingency plan.

Hazardous Materials

Use of hazardous materials must comply with WHMIS and established safety practices and procedures. All materials/products that are WHMIS controlled and/or may pose a hazard to people or the environment, regardless of quantity, and that are no longer usable shall be designated as hazardous waste and is subject to the provisions of the Waste Management Plan.

The following procedures shall apply to hazardous materials other than petroleum products:

- Hazardous materials shall be used only by personnel who are trained and qualified in the handling of these materials and only in accordance with manufacturers' instructions and government regulations, as outlined in the Material Safety Data Sheets. WHMIS regulations are in force throughout the Argentia facility, as are provisions of the *Transportation of Dangerous Goods Act*. All employees involved with hazardous materials shall be appropriately trained.

- All hazardous wastes shall be managed (i.e. handled, stored, removed and disposed of) in an acceptable manner in accordance with government regulations and requirements, as discussed in the Waste Management Plan.

- Material Safety Data Sheets must be available on-site prior to receipt of any hazardous materials.

Form Oil Use

- When possible, form oils shall be applied to forms in-situ by spraying.
- If form oils must be applied to forms before they are placed then this shall be done in one designated area approved of by the HSE Advisor. If rollers must be used then oil absorbent cloths shall be placed under the forms to capture and contain excess form oil that splashes or runs off the forms during application.
- Waste or excess form oil that is not to be kept for future use shall be managed in accordance with provisions of the Waste Management Plan.

Permits and Authorizations

The permits and authorizations pertaining to storage of petroleum products and other hazardous materials will likely be required. Conditions of all permits, authorizations, licenses, etc shall be respected.

Spills of Fuel and Hazardous Materials

- All necessary precautions shall be implemented to prevent the spillage of fuels and other hazardous materials used during the construction phase.
- All spills of fuel and hazardous materials shall be reported immediately to the HSE Advisor. Any spill to the marine or freshwater environments and spills of 70 L or more on land shall be reported immediately to the CCG at 709-772-2083 or 1-800-563-9089
- Every effort shall be made to immediately control the source of the leak or spill and clean up the contaminated area.
- All material and equipment used during spill clean up must be stored properly until it can either be disposed of or cleaned to avoid further contamination. Disposal of clean up materials must be in accordance with the provisions of this EPP, the Waste Management Plan and all government regulations and requirements.
- There shall be appropriate emergency spill response equipment on site for all phases of the Project.
- A complete list of the emergency spill response equipment shall be available on site and kept up to date.
- All emergency response equipment should be kept in good working condition suitable for required use.
- Regular inspections of all spill response supplies and equipment will be conducted and documented to ensure adequate supply and condition.
- The use of chemical dispersants to treat oil slicks shall take place only under the authorization of Environment Canada, Environmental Protection Branch (Newfoundland and Labrador).

4.19 Sewage Treatment, Disposal and Compliance Testing

4.19.1 Environmental Concerns

The accidental release of untreated sewage is a concern to human health, drinking water quality, and freshwater and marine ecosystems.

4.19.2 Environmental Protection Procedures

- The sewage disposal system shall comply with the Provincial Standards, guidelines, and NL *Environmental Control Water and Sewage Regulations, 2003.*

- Development of sewage treatment facilities shall be undertaken in consultation with the relevant regulatory agencies for a temporary or permanent sewage collection system, and a Certificate of Approval shall be obtained from the Services NL and the NL Department of Environment and Conservation.

- Portable latrines used in work areas shall be routinely inspected and properly maintained. Sewage removed from the facilities shall be transported to a dumping station at the sewage treatment/disposal facility. All human fecal waste must be contained and disposed in a manner that meets all environmental and health requirements. Any concerns must be brought to the immediate attention of the HSE Advisor.

- Treated effluent will be monitored in order to determine compliance with provincial regulations. The frequency of sampling and the constituents to be sampled will be identified by the NL Department of Environment and Conservation in the sewage treatment plant certificate of approval.

- Sewage sludge, which accumulates at the bottom of the plant, must be pumped out as required and disposal of this material shall comply with provisions of the Waste Management Plan.

4.20 Waste Management

Solid waste will be generated during construction and operation of the Argentia facility. Waste streams will be identified as domestic waste, paper, cardboard, wood and scrap steel and metals. This section contains procedures for waste minimization, recycling and disposal.

4.20.1 Environmental Concerns

Solid waste, if not properly controlled and disposed of, can be unsightly and cause human safety and health concerns. Disposal of solid waste in the marine environment has potential to harm marine life. Uncontrolled hazardous waste can contaminate soils, surface and groundwater, and can be toxic to vegetation, fish and wildlife if ingested in sufficient quantities.

4.20.2 Environmental Protection Procedures

A Waste Management Plan will be in place to address waste generation, handling, disposal during construction and operation of the Argentia facility. Contractors will be responsible for developing a waste management plan which will adhere to the overall Husky Energy Waste Management Plan.

Disposal of all types of waste material into a body of water is strictly prohibited.

Upon termination of operations the site will be rehabilitated to the satisfaction of the NL Department of Environment and Conservation. All material, equipment, buildings and waste is to be removed from the site and disposed of in accordance with the legislation. The site will be vegetated by placing organic material, if necessary, and seeding as required.

Non-hazardous Waste

- Waste receptacles will be installed at all active areas for use by construction personnel.
- Waste management procedures will comply with federal, provincial and municipal waste management regulations, as well as additional municipal and disposal facility requirements.
- Waste generated will be handled, stored, transported and disposed of in accordance with all applicable acts, regulations and guidelines.
- Solid wastes will be sorted at the facility into recyclable/reusable and non-recyclable. Material not deemed acceptable for recycling/re-use will be disposed of in an acceptable manner at an approved landfill site.
- Certified contractors will be retained for safe transport of solid waste to the approved facility.
- Recyclable material will be collected and transported to a licensed recycling facility using local services authorized by Husky Energy.
- An effort will be made to minimize the amount of waste generated by application of the 4-R principals (reduce, reuse, recycle, recover) to the extent practical.
- Domestic waste will be gathered daily and stored in closed containers until disposed of at an approved waste disposal site.
- Food waste will be stored in a manner that ensures that wildlife will not be attracted.
- Waste containers will be covered to prevent the escape of windblown debris and will be clearly labelled.

Hazardous Waste

- Hazardous waste generated will be handled, stored, transported and disposed of in accordance with all applicable acts, regulations and guidelines.

- Waste oil will be collected separately and offered for recycling or stored for collection by an approved special waste collection and disposal company. Handling, storage, and disposal of waste oils and lubricants will be in compliance with the NL *Used Oil Control Regulations.*

- Greasy or oily rags or materials subject to spontaneous combustion will be deposited and kept in an appropriate receptacle. This material will be removed from the work site on a regular basis and will be disposed of in approved waste disposal facilities.

- Handling and transportation of hazardous waste will be in compliance with the *Transportation of Dangerous Goods Act* and *Regulations* and the *Hazardous Products Act* (WHMIS)

4.21 Avifauna Management

4.21.1 Environmental Concerns

Lighting, noise and project construction activities can potentially interfere with the migratory patterns of birds and the behaviour of transient or resident marine birds.

4.21.2 Environmental Protection Procedures

The following mitigative measures are designed to reduce the interference that site activities will have on birds as well as reduce the effect of site construction will have on local bird populations.

- Survey of nesting birds to be completed before any clearing or site preparation begins. If nesting bird species at risk are discovered, operations in the immediate area of the nest are to be suspended until the young have fledged.

- Directional and fully shielded light fixtures will be employed, depending on safety and navigational requirements. This type of light fixture would illuminate only the immediate working area below the lamp, with little or no diffusion of light laterally and above the lamp.

- Workers should be instructed to report any collisions of birds with structures and if collisions occur frequently, a plan to address further mitigative measures will be established.

- If work is suspended, construction lighting should be extinguished during these periods to reduce the attraction of birds.

- A combination of scaring tactics, including visual and acoustic deterrent devices may be used. If measures such as the use of firearms or aircraft are considered, a scare permit is required from the Canadian Wildlife Service (CWS). Please contact

Donna Johnson, CWS Permits Administrator at (506) 364-5017 for more information on obtaining this permit.

- If a raptor nest is observed during construction it will be reported to the Forest Resources Office at Paddy's Pond and the NL Department of Environment and Conservation Wildlife Division.

- Any migratory bird nests or colonies found on site will be "buffered" during breeding season whenever possible until young have fledged, and nests will be left intact and undisturbed in compliance with the *Migratory Birds Convention Act* and *Regulations*.

- Boat activity and human presence will be restricted near colony-nesting birds where possible.

- Project access roads to have reasonable speed limits to minimize potential mortality of bird species at risk from road kills.

- No personnel will approach, feed or harass wildlife if encountered.

- Firearms will not be permitted on or near the work site. Hunting by Project employees on site will be forbidden.

- All food waste will be properly contained and disposed of on a regular basis at an approved facility.

- The NL Department of Environment and Conservation Wildlife Division and Environment Canada's CWS should be contacted with regards to any rare or endangered wildlife species encountered. Other wildlife encounters will be reported to the Regional Conservation Officer at Paddy's Pond. Guidance as to the appropriate action to take will be given by these authorities.

- All personnel shall be advised of rare or endangered species potentially occurring in the Project area. The environmental assessment process determined limited potential for rare or endangered wildlife species in the Project area.

- Site personnel will always yield the territory to the animal.

- Site personnel will be alert to the signs of animal presence (e.g., nests.) and report to the HSEQ Manager.

4.22 Marine Construction – Removal of Shoreline Berm / Dredging

4.22.1 Environmental Concerns

Environmental concerns from dredging include noise and the disturbance to fish and fish habitat. Marine construction activities can also disturb nearshore terrestrial habitat and cause seabirds, waterfowl and marine mammals to avoid the area. As well, there may be some potential for historic resources to be disturbed.

In addition, Project vessel traffic may interfere with local fishing boats and other vessel traffic. The potential exists for vessels to collide, run aground and/or sink. Such events

may lead to the accidental release of fuel and other hazardous materials to the marine environment.

4.22.2 Environmental Protection Procedures

- There will be no side-casting of dredged materials. Material will be removed from the marine environment and disposed in "The Pond".

- Tow out channel dredging will be completed using a trailing suction hopper dredger. A site-specific sediment suspension model (AMEC 2012) demonstrated that using a trailing suction hopper dredger, suspended sediment levels will not exceed the *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (CCME 2002).

- Cutter suction dredge or a backhoe dredger will be utilized for shoreline dredging. Earth-moving equipment will be required to lower the level of the shoreline to the minimum dredging depth of the cutter suction dredge.

- Water quality will be measured during dredging activities to ensure that total suspended solid levels and contaminant concentrations in the water column are within limits prescribed by the CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life* when considered in conjunction with existing ambient water quality and site-specific factors.

- Additional mitigative actions (e.g., turbidity curtains) will be undertaken as deemed necessary by the HSE Advisor.

- The operation of heavy equipment will be confined to dry, stable areas.

- All heavy equipment will be serviced and fuelled on land at least 100 m from the marine environment or in designated areas designed for spill containment.

- All heavy equipment must be in good condition. Regular mechanical inspections for leaks on all equipment will be made and repairs undertaken immediately.

- A Fuel and Other Hazardous Material Spill Contingency Plan will be in place and appropriate emergency spill equipment available on-site.

- Any disturbed areas along the shoreline should be immediately stabilized to prevent erosion.

- If Historic resources are discovered they will not be disturbed and will be reported to the NL Provincial Archaeology Office (PAO).

4.23 Species at Risk

A species at risk is defined as a species which is extirpated, endangered, threatened or of special concern. A number of species at risk have the potential to exist in or can migrate within project areas, and may be affected by project activities:

Fish species at risk that could occur in Placentia Bay include the following Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed species: Atlantic

cod (Newfoundland and Labrador population, Southern population); American plaice (Newfoundland and Labrador and Maritime populations); American eel; and Atlantic salmon.

Harlequin Duck (*Species at Risk Act* (SARA)-listed as Special Concern) occur in the waters off Cape St. Mary's Seabird Ecological Reserve (Section 5.1.5.1). Between 1998 and 2008, there have been incidental sightings of Red Knot rufa subspecies (COSEWIC assessed as endangered) along the Cape Shore of Placentia Bay (Garland and Thomas 2009). There are no known critical nesting, feeding, staging or over wintering areas of at risk bird and mammal species in the immediate vicinity of the nearshore area.

Marine mammals species at risk that may occur in Placentia Bay include the SARA listed blue and fin whale and the COSEWIC-assessed harbour porpoise (Northwest Atlantic population). The leatherback sea turtle is listed as a Schedule 1 species under SARA and may also be present in Placentia Bay.

4.23.1 Environmental Concerns

A significant concern regarding species at risk is that activities related to project development and operation will result in a decline in abundance or a change in distribution of an at-risk population. Natural repopulation may not occur if numbers decrease at too high a rate or avoidance of an area becomes permanent.

A significant adverse environmental effect would be one that results in an unmitigated or non-compensated loss of habitat, mating behaviour, or feeding ability (i.e. loss of food source).

4.23.2 Environmental Protection Procedures

- During the marine construction phase at the Argentia site, petroleum products and other chemicals/materials which have potential toxic effects or the potential to harm habitats will be stored and handled in accordance with the *Canada Shipping Act, 2001*.

- On land, proper storage of oils is important to inhibit leakage or seeping into the marine environment. Related regulations can be found under the *Storage and Handling of Gasoline and Associated Products Regulations*, the *Heating Oil Storage Tank Regulations*, and the *Used Oil Control Regulations* under the NL *Environmental Protection Act*.

- Use of settlement ponds and/or containment areas for concrete washwater.

- Treatment of washwater from batch plants prior to discharge/disposal.

- Use of silt curtains if required to control sedimentation into the marine environment.

- Any ATV use shall comply with *All-Terrain Vehicle Use Regulations*. Where possible, the use of ATVs and vehicles shall be restricted to designated trails, thus minimizing ground disturbance.

- All equipment will be serviced and fuelled on land at least 100 m from the marine environment or in designated areas designed for spill containment.

- All equipment will have muffled exhausts to minimize noise.

4.24 Sensitive and Special Areas

Sensitive areas of habitat within the Nearshore Study Area include the Placentia Bay Extension Ecologically and Biologically Significant Area (EBSA), eelgrass beds, capelin beaches, coastal wetlands, Important Bird Areas, and otter haul-outs. Of these, eelgrass beds are most vulnerable to project activities. Outside the areas to be dredged, a change in habitat quality due to sedimentation is not expected to have considerable adverse environmental effects since eelgrass is resilient to sedimentation in the water column. As there are multiple eelgrass beds in the Nearshore Study Area, the removal of one small eelgrass bed from near the graving dock is considered to be not significant.

4.24.1 Environmental Protection Procedures

- Marine vessels entering project area will respect traffic lanes;

- Marine vessels entering the project area will have to avoid designated CSZs, and;

- Development of spill prevention procedures and contingency plans

5.0 SITE-SPECIFIC APPROACH TO EPP DEVELOPMENT

In addition to the general environmental protection procedures provided in Section 5.0, this EPP also provides stage/site-specific EPPs in relation to primary work areas and project components associated with project construction. These site-specific EPPs provide information on: planned project components and activities; general environmental issues and concerns; potential effects, general environmental protection procedures applicable to that site/stage; site-specific environmental protection measures; and associated compliance monitoring requirements.

Project Work Scope

The key project development parameters that comprise the planned work scope are presented as follows.

- Site Preparation and Infrastructure Development;
- Graving Dock Construction
- Infilling “The Pond”
- Cement Works and CGS Construction
- Removal of Shoreline Berm and Dredging
- Tow-out to Deepwater Site and Topsides Mating

5.1 Site Preparation and Infrastructure Development

The overall construction site area will be approximately 20 hectares. Land clearing or watercourse diversion will not be required for the CGS graving dock construction. General excavating and grading activities will be required. Additional onshore surveys to support site preparation and necessary repairs or upgrades to existing infrastructure may be required.

Approximately 250,000 m^3 of this material removed from the graving dock excavation will be used to level and grade the area surrounding the graving dock site above existing grade to approximately 8 m CD.

Associated site infrastructure is as follows:

- **Road Construction, Upgrades and Parking** - The graving dock site will maximize the use of existing access roads. The road system that currently exists is within 500 m of the graving dock site. Such infrastructure will be extended into the site in a manner compatible with the final site layout. Any required repairs and construction will also be made to the existing roads to prepare them for industrial use.

- **Water Supply** - Site will maximize the use of the existing water supply. An existing source of potable, fire, and industrial water is located near the construction site. Additional water supply infrastructure will be extended into the area in a manner compatible with the final site layout.

- **Power Supply** - Site will maximize the use of the existing grid power. Although grid power will be the primary source of electricity, there will be an emergency generator on site with a capacity of approximately 750 kilowatts. This will be used in the case of a grid black-out to provide on-site power for services such as the concrete batching plant, emergency lighting around the site, and dewatering pumps. The graving dock site location is within 500 m of existing overhead power lines. These lines will be extended into the site and then fed to a site distribution system. The same will be done for communication lines.

- **Site Buildings** - Support facilities include a concrete batching plant, offices, temporary sheds, lay down areas and storage areas. The construction site will be fully fenced with a security-controlled entrance.

- **Sewage Treatment Plant** – Sanitary sewage will be treated onsite using a wastewater treatment plant. All treated effluent will meet the requirements of the NL *Environmental Control Water and Sewage Regulations, 2003* Schedule A prior to ocean disposal.

Environmental Protection Procedures

Standard Mitigation Measures

Standard Mitigation Measures relevant to Site Preparation and Infrastructure Development are listed in Table 5-1, and presented in Section 4.0.

Table 5-1: Relevant Environmental Protection Procedures

EPP Section	Relevance
4.1 Surveying	√
4.2 Clearing of Vegetation	
4.3 Quarrying and Aggregate Removal	√
4.4 Erosion Prevention	√
4.5 Excavations, Embankment and Grading	√
4.6 Dust Control	√
4.7 Trenching	√
4.8 Pumps and Generators	√
4.9 Precasting	
4.10 Equipment Operations	√
4.11 Dewatering – Work Areas	√
4.12 Marine Vessels	
4.13 Noise Control	√

EPP Section	Relevance
4.14 Historic Resources	√
4.15 Concrete Production	
4.16 Linear Developments	√
4.17 Vehicular Traffic	√
4.18 Storage Handling and Transfer of Fuel and Other Hazardous Substances	√
4.19 Sewage Treatment, Disposal and Compliance Testing	√
4.20 Waste Management	√
4.21 Avifauna Management	√
4.22 Marine Construction – Removal of Shoreline Berm / Dredging	
4.23 Species At Risk	√
4.24 Sensitive and Special Areas	√

Area Specific Measures

- In addition to the environmental protection procedures identified above, specific conditions of all government permits, approvals, and authorizations shall be followed.

5.2 Graving Dock Construction

The graving dock will be excavated using traditional earth-moving equipment, blasting will not be required. The floor area of the dock at the toe of the bund will be approximately 150 m x 150 m. Approximately 1,100,000 m^3 of material will be removed with approximately 250,000 m^3 of this material used to level and grade the area surrounding the graving dock site above existing grade to approximately 8 m CD.

The proposed graving dock will be excavated behind the natural coastal berm to a depth of approximately -18 m CD. A bentonite cut-off wall, approximately 900 mm thick will be constructed to minimize the ingress of water into the graving dock. The wall has been designed with a permeability of 10^{-8} m/s to a depth of -28 m CD at the sea bund side. The cut-off wall can be locally removed by a cutter suction dredger during the flooding of the graving dock prior to the float out of the CGS.

Environmental Protection Procedures

Standard Mitigation Measures

Standard Mitigation Measures relevant to graving dock construction are listed in Table 5-2, and presented in Section 4.0

Table 5-2: Relevant Environmental Protection Procedures

EPP Section	Relevance
4.1 Surveying	√
4.2 Clearing of Vegetation	
4.3 Quarrying and Aggregate Removal	
4.4 Erosion Prevention	√
4.5 Excavations, Embankment and Grading	√
4.6 Dust Control	√
4.7 Trenching	√
4.8 Pumps and Generators	√
4.9 Precasting	
4.10 Equipment Operations	√
4.11 Dewatering – Work Areas	√
4.12 Marine Vessels	
4.13 Noise Control	√
4.14 Historic Resources	√
4.15 Concrete Production	
4.16 Linear Developments	√
4.17 Vehicular Traffic	√
4.18 Storage Handling and Transfer of Fuel and Other Hazardous Substances	√
4.19 Sewage Treatment, Disposal and Compliance Testing	√
4.20 Waste Management	√
4.21 Avifauna Management	√
4.22 Marine Construction – Removal of Shoreline Berm / Dredging	
4.23 Species At Risk	√
4.24 Sensitive and Special Areas	√

Area Specific Measures

- In addition to the environmental protection procedures identified above, specific conditions of all government permits, approvals, and authorizations shall be followed.

- If deemed necessary based on conditions encountered during excavation (e.g., visual and olfactory evidence of contamination), soil sampling will be conducted on the material excavated from the graving dock site and results will be compared to the CCME *Soil Quality Guidelines for Industrial Sites* as well as the Atlantic PIRI RBCA Tier I criteria. Soil with TPH levels above 1,000 mg/kg will be quarantined for treatment/offsite disposal as required. Note that prior to any onsite treatment Husky

Energy will obtain approval from Service NL and the NL Department of Environment and Conservation.

- Erosion protection and sedimentation control measures (e.g., silt fence, riprap, etc.) will be implemented as required to prevent sedimentation of waterbodies.

- A plan will be developed to ensure that the site is dewatered during excavation and that resulting groundwater is directed into the settling pond.

- All dewatering wells will be developed and filters installed to remove particulate matter prior to pumping.

- Certificates of Approval for all drilled wells will be obtained as per Section 58 of the NL *Water Resources Act*.

- A rock lined drainage ditch will be constructed around the peripheral area of the graving dock. All drainage from the ditch will be directed toward the settling pond.

- Surface water drainage and water generated from construction dewatering activities will be directed into a settling pond prior to discharge into the marine environment. Water samples will be collected at the overflow weir and compared to the NL *Environmental Control Water and Sewage Regulations, 2003* Schedule A parameters. Samples will be collected and analyzed as follows:

  - Once a day for first week of pumping prior to discharge or where additional source of water are added to the treatment system.

  - Twice a week (every three or four days) for next three weeks.

  - Once a month thereafter.

- If exceedances are detected appropriate mitigation measures will be implemented. Also, the applicable regulatory bodies will be contacted.

- Effluent discharge from the settling pond will be visually inspected on a daily basis. If issues are identified a sample will be collected immediately.

- Silt fences as well as a crushed stone lined ditch will be installed downstream of the overflow weir.

5.3 Infilling "The Pond"

Material from the graving dock that is not used for leveling and grading (approximately 850,000 m^3) and all the material to be dredged (approximately 368,000 m^3) will be disposed of in "The Pond".

Environmental Protection Procedures

Standard Mitigation Measures

Standard Mitigation Measures relevant to Infilling "The Pond" are listed in Table 5-3, and presented in Section 4.0.

Table 5-3: Relevant Environmental Protection Procedures

EPP Section	Relevance
4.1 Surveying	√
4.2 Clearing of Vegetation	
4.3 Quarrying and Aggregate Removal	
4.4 Erosion Prevention	
4.5 Excavations, Embankment and Grading	
4.6 Dust Control	
4.7 Trenching	
4.8 Pumps and Generators	
4.9 Precasting	
4.10 Equipment Operations	√
4.11 Dewatering – Work Areas	
4.12 Marine Vessels	√
4.13 Noise Control	√
4.14 Historic Resources	
4.15 Concrete Production	
4.16 Linear Developments	
4.17 Vehicular Traffic	√
4.18 Storage Handling and Transfer of Fuel and Other Hazardous Substances	√
4.19 Sewage Treatment, Disposal and Compliance Testing	
4.20 Waste Management	√
4.21 Avifauna Management	√
4.22 Marine Construction – Removal of Shoreline Berm / Dredging	
4.23 Species At Risk	√
4.24 Sensitive and Special Areas	

Area Specific Measures

- In addition to the environmental protection procedures identified above, specific conditions of all government permits, approvals, and authorizations shall be followed.

- During infilling of "The Pond", water will be displaced over a weir structure. Water samples will be collected and compared to the NL *Environmental Control Water and Sewage Regulations, 2003*. Samples will be collected and analyzed as follows:

  - Bi-weekly samples for TSS will be collected. If site conditions dictate, additional sampling will be completed as determined by the site ;

  - Weekly samples will be collected and compared to the NL *Environmental Control Water and Sewage Regulations, 2003* Schedule A parameters.

- If TSS exceedances are detected appropriate mitigations will be implemented (e.g., silt curtains, flocculation, etc.). Silt fences as well as a crushed stone lined ditch will be installed downstream of the overflow weir.

- Effluent discharge from the "The Pond" will be visually inspected on a daily basis. If issues are identified samples will be collected immediately.

5.4 Cement Works and CGS Construction

The CGS will be constructed in the dry, which means completing the CGS in the graving dock, prior to towing to the Placentia deep-water site for topsides mating. The primary materials for the CGS are cement, sand, gravel and steel rebar for the concrete and structural steel and pipe for the shaft. The current estimate of the required volume of concrete is approximately 64,000 m^3. Slip-forming and other standard CGS construction methods will be used for the caisson and central shaft construction after completion of the base slab. Concrete batch plant(s) will be used on site for concrete production.

Potential activities associated with CGS construction in the dry dock are as follows:

- Concrete batch plant operation;

- Concrete placement; and

- Slip-forming;

Environmental Protection Procedures

Standard Mitigation Measures

Standard Mitigation Measures relevant to CGS Construction are listed in Table 5-4, and presented in Section 4.0.

Table 5-4: Relevant Environmental Protection Procedures

EPP Section	Relevance
4.1 Surveying	√
4.2 Clearing of Vegetation	
4.3 Quarrying and Aggregate Removal	√
4.4 Erosion Prevention	√
4.5 Excavations, Embankment and Grading	

EPP Section	Relevance
4.6 Dust Control	√
4.7 Trenching	
4.8 Pumps and Generators	√
4.9 Precasting	√
4.10 Equipment Operations	√
4.11 Dewatering – Work Areas	√
4.12 Marine Vessels	
4.13 Noise Control	√
4.14 Historic Resources	
4.15 Concrete Production	√
4.16 Linear Developments	
4.17 Vehicular Traffic	√
4.18 Storage Handling and Transfer of Fuel and Other Hazardous Substances	√
4.19 Sewage Treatment, Disposal and Compliance Testing	√
4.20 Waste Management	√
4.21 Avifauna Management	
4.22 Marine Construction – Removal of Shoreline Berm / Dredging	
4.23 Species At Risk	
4.24 Sensitive and Special Areas	

Area Specific Measures

- In addition to the environmental protection procedures identified above, specific conditions of all government permits, approvals, and authorizations shall be followed.

- Dewatering and sampling activities will continue as per Section 5.2.

5.5 Removal of Shoreline Berm and Dredging

Once the CGS is completed, the graving dock will initially be flooded to equalize the hydrostatic pressure, then a combination of land-based excavation equipment and a cutter suction dredge will be used to remove the shoreline berm, after which the float-out will occur. The dredger will be used to create an exit channel from the graving dock to a water depth of approximately -18 m CD to accommodate the draft of the CGS. During this period, the marine activities from the dredging operation will be closely coordinated with the Port of Argentia.

Shoreline Dredging

Shoreline dredging activities can be executed with the use of a cutter suction dredge or a backhoe dredger. Earth-moving equipment will be required to lower the level of the shoreline to the minimum dredging depth of the cutter suction dredge. Once the soil is loosened by the cutter suction dredge, the soil will be sucked into the dredger and pumped through a floating pipeline from the stern of the barge to the shoreline where it will be connected to a land-based pipeline for discharge to “The Pond” on the tip of the Argentia Peninsula. If a backhoe dredger is used it will deposit the excavated material into a transportation barge alongside the dredger. The barge will transport the dredged material to quayside for offloading and transportation to “The Pond” by earth-moving equipment.

Tow-out Channel Dredging

Tow out Channel dredging will be completed using a trailing suction hopper dredger

As part of the WREP environmental assessment, a site-specific sediment suspension model (AMEC Environment & Infrastructure (AMEC) 2012a) demonstrated that using this dredge method, suspended sediment levels will not exceed the *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (CCME 2002). Suspended sediment concentrations above 25 mg/L are expected to persist for no more than 4 hours within an area of approximately 0.7 km^2, in all wind scenarios. Concentrations above 10 mg/L would persist for approximately six hours, and total suspended solid levels above 5 mg/L would last for about 10 hours for a single dredging operation. A trailing suction hopper dredger will transfer the sediment into the hopper of the vessel. The soft material within the tow-out corridors could be removed easily with a trailing suction hopper dredger, and if necessary, the assistance of a backhoe dredger for harder material may be required.

Once full, the dredge vessel will transit to quayside where it will be connected to a temporary land-based pipeline and the material pumped ashore for discharge to “The Pond”. These pipelines can be extended and repositioned in such a way that the sediment will be placed evenly over “The Pond” area. At the end of the pipeline, earth-moving equipment will be used for the final spreading and levelling of the material, if necessary.

The marine logistics associated with the dredging operation will be coordinated with the Port of Argentia. As previously stated, “The Pond” at the head of the Argentia Peninsula has been evaluated as the primary spoils disposal site.

Environmental Protection Procedures

Standard Mitigation Measures

Standard Mitigation Measures relevant to Removal of Shoreline Berm and Dredging are listed in Table 5-5, and presented in Section 4.0.

Table 5-5: Relevant Environmental Protection Procedures

EPP Section	Relevance
4.1 Surveying	
4.2 Clearing of Vegetation	
4.3 Quarrying and Aggregate Removal	
4.4 Erosion Prevention	√
4.5 Excavations, Embankment and Grading	√
4.6 Dust Control	√
4.7 Trenching	
4.8 Pumps and Generators	√
4.9 Precasting	
4.10 Equipment Operations	√
4.11 Dewatering – Work Areas	
4.12 Marine Vessels	√
4.13 Noise Control	√
4.14 Historic Resources	√
4.15 Concrete Production	
4.16 Linear Developments	
4.17 Vehicular Traffic	√
4.18 Storage Handling and Transfer of Fuel and Other Hazardous Substances	√
4.19 Sewage Treatment, Disposal and Compliance Testing	√
4.20 Waste Management	√
4.21 Avifauna Management	
4.22 Marine Construction – Removal of Shoreline Berm / Dredging	√
4.23 Species At Risk	
4.24 Sensitive and Special Areas	√

Area Specific Measures

- In addition to the environmental protection procedures identified above, specific conditions of all government permits, approvals, and authorizations shall be followed.

5.6 Tow-out to Deepwater Site and Topsides Mating

Once construction of the CGS is complete, the structure will be floated out of the graving dock and towed to a deep-water site in Placentia Bay for installation of the topsides. Two potential deep-water sites have been identified, west of Red Island and west of Merasheen Island. A decision between the two potential mating sites will be made after further site evaluation, including local stakeholder consultation, to obtain all necessary information about the tow-out route and the deep-water location.

Upon arrival at the deep-water site, the tow tugs will hold the structure at the required location while four moorings are connected to the structure and tightened to maintain position for the installation of the topsides. The CGS will be ballasted to a predetermined depth for the installation of the topsides.

The position of the CGS will be maintained by four pre-installed seabed anchors, which will be connected to mooring points on the CGS by anchor chain approximately 1,500 m each in length. Each leg of the overall mooring system will be comprised of a seabed anchor, pennant wire and buoy for deployment and recovery of the anchor, a chain connecting the anchor to the CGS and a tension pontoon aligned with the chain. These moorings will be set and marked just prior to the float out of the CGS from the graving dock. The mooring systems will be recovered and removed from the deep-water site once the topsides facility has been mated with the CGS and is under tow to the offshore site. The CGS itself will not be in contact with the seafloor.

During the mating operation and inshore hook-up work, the Port of Argentia will be used as a logistics base for the supply of materials, equipment and personnel. There will be limited marine traffic between the deep-water site and the Port of Argentia throughout the time that the WHP is at the deep-water site.

Environmental Protection Procedures

Standard Mitigation Measures

Standard Mitigation Measures relevant to topsides mating and commissioning are listed in Table 5-5, and presented in Section 4.0.

Table 5-6: Relevant Environmental Protection Procedures

EPP Section	Relevance
4.1 Surveying	
4.2 Clearing of Vegetation	
4.3 Quarrying and Aggregate Removal	
4.4 Erosion Prevention	
4.5 Excavations, Embankment and Grading	
4.6 Dust Control	
4.7 Trenching	
4.8 Pumps and Generators	√
4.9 Precasting	

EPP Section	Relevance
4.10 Equipment Operations	√
4.11 Dewatering – Work Areas	
4.12 Marine Vessels	√
4.13 Noise Control	√
4.14 Historic Resources	√
4.15 Concrete Production	
4.16 Linear Developments	
4.17 Vehicular Traffic	
4.18 Storage Handling and Transfer of Fuel and Other Hazardous Substances	√
4.19 Sewage Treatment, Disposal and Compliance Testing	√
4.20 Waste Management	√
4.21 Avifauna Management	
4.22 Marine Construction – Removal of Shoreline Berm / Dredging	
4.23 Species At Risk	√
4.24 Sensitive and Special Areas	√

Area Specific Measures

- In addition to the environmental protection procedures identified above, specific conditions of all government permits, approvals, and authorizations shall be followed.

6.0 CONTINGENCY PLANS

Contingency plans to deal with accidents and unplanned situations will be implemented and modified as required throughout the Project.

The objectives of these contingency plans are to avoid/minimize the following:

- Danger to persons;
- Area affected by a spill or fire;
- Degree of disturbance to the area during clean-up; and
- Degree of disturbance to wildlife.

Husky Energy has established a series of contingency plan processes that apply to this EPP. These are listed below and described in the following sections:

- Fire Contingency Plan;
- Spill Contingency Plan;
- Wildlife Encounters;
- Discovery of Historic Resources; and
- Vessel Accidents.

6.1 Fuel and Hazardous Material Spills

Environmental Concerns

The uncontrolled release to the environment of fuels and hazardous materials can negatively impair the quality of air, soil and water (freshwater and marine), and harm vegetation, wildlife, aquatic organisms, historic resources and human health and safety.

Personnel Training

All workers employed by contractors and subcontractors shall be required to attend an employee environmental orientation session prior to, or shortly after, commencing work on the Project. All personnel shall be made aware of the WHMIS regulations and the enactment of these on the Argentia construction site. Supervisory staff members, including the members of the Project Environment and Regulatory Team, shall be trained as “On-Scene Commanders” for the purposes of cleaning up a fuel or hazardous materials spill. They shall be trained in spill clean-up procedures and how to mobilize the necessary equipment and personnel. Clean-up equipment will be present in specific areas of the site. A Spill Response Team shall be trained to carry out actual deployment and operation of spill equipment. Practice drills (deployment and communications exercises) shall be conducted to maintain a state of readiness for an emergency.

As appropriate, workers shall be trained and/or certified under the *Transportation of Dangerous Goods Act*.

Prevention

The Contractor will be responsible for ensuring the following procedures are implemented to minimize the likelihood of a spill.

1. A Spill Prevention Plan will be submitted by the Contractor for approval by the HSEQ Manager.

2. Regular inspections of containment reservoirs (i.e., tanks, drums, vessels, etc).

3. Ensure that equipment is in good working order and will inspect equipment periodically for fuel or hydraulic fluid leaks.

4. All mechanics and outside service personnel are to ensure every precaution is taken to prevent spills from oil changes, antifreeze, hydraulic top ups, etc. Wherever practical, drip pans/ containers will be used.

5. All empty oil, antifreeze and hydraulic containers are to be collected from the site of the maintenance and placed in approved containers or returned to the shop for disposal.

6. Oils and lubricants will be stored on level terrain, inside an appropriately dyked area, in locations approved by the Construction Manager.

7. Storage of potentially hazardous materials and equipment refuelling/servicing will be conducted in accordance with the procedures outlined in this EPP.

Initial Response and Reporting

In the event of a fuel or hazardous material spill, the following procedures shall apply.

1. The individual who discovers the leak or spill shall notify his immediate supervisor and provide as much information as possible. The individual shall make a reasonable attempt to immediately stop the leakage and contain the flow without compromising his/her health and safety or that of others.

2. Spill location, type of fuel or hazardous material (if known), volume, and terrain condition at the spill site shall be determined and reported immediately to the HSE Advisor who shall immediately notify the Construction Manager, HSEQ Manager (or designate), and the HSE Advisor.

3. Any spill in-water, and spills greater than 70 L on land, or any amount on land that can enter water frequented by fish shall be reported to the CCG by calling the spill reporting number 1-800-563-9089. Required pertinent information includes:

    - Name of reporter and phone number;

    - Time of spill or leak;

- Time of detection of spill or leak;
- Type of product spilled or leaked;
- Amount of product spilled or leaked;
- Location of spill or leak;
- Source of spill or leak;
- Type of accident - collision, rupture, overflow, other;
- Owner of product and phone number;
- If the spill or leak is still occurring;
- If the spill or leaked product is contained, and if not, where it is flowing;
- Wind velocity and direction;
- Temperature;
- Proximity to bodies of water, water intakes, and facilities;
- Tidal action where applicable; and
- Snow cover and depth, terrain, and soil conditions.

Clean up Procedures for Spills on Land

The Husky Energy Construction Manager, in consultation with the Environmental Monitor, and regulatory authorities will:

- Assemble at the spill equipment containers location or as directed by the On-Scene Commander;
- The On-Scene Commander will brief the Response Team on the spill situation;
- Assess site conditions and environmental effect of various clean-up procedures.
- Choose and implement an appropriate clean-up procedure.
- All members shall be provided with personal protective equipment (PPE) (i.e., life vests, rubber gloves, boots), as appropriate;
- The team will transport necessary equipment to the spill location to start clean-up;
- Attempt to contain the spill by ditching, deploying absorbent materials, etc;
- All contaminated soil in the area will be removed and replaced if appropriate;

- Deploy on-site personnel to mobilize pumps and empty drums or other appropriate storage to the spill site;

- Protect beaches by deploying additional boom or absorbent materials;

- If wildlife are observed in the area attempt to keep them away using boats or noise generating devices;

- Dispose of all contaminated debris, cleaning materials, and absorbents in an approved landfill site;

- The boundaries of the spill area will be marked for future monitoring and clean-up if needed; and

- Take all necessary precautions to ensure that the incident does not reoccur.

Clean up Procedures for Spills in Water

A marine spill necessitates immediate on-site response. Therefore, spill equipment will be stored onsite, and trained emergency response people will be available. In organizing a cleanup of shoreline pollution, site conditions and the impact of various containment and cleanup procedures, including the following, will be assessed:

- If on-site equipment is not adequate, immediately mobilize additional containment and cleanup equipment and manpower in consultation with the CCG;

- If the area has less than 1/10th ice cover and currents are relatively weak (less than 0.5 knots), deploy containment boom and recover as much fuel as possible with work boats, pump, and sorbents;

- Protect all beaches by deployment of floating boom if possible;

- Dispose of all contaminated debris, cleaning materials, and absorbents at an approved landfill site; and

- If feasible and necessary, establish a holding and cleaning facility for oil-fouled birds.

The procedure for a shoreline pollution cleanup will include:

- Assemble at the spill equipment containers location or as directed by the On-Scene Commander;

- The On-Scene Commander will brief the Response Team on the spill situation;

- Assess site conditions and environmental impact of various cleanup procedures;

- All members shall be provided with PPE (i.e., life vests, rubber gloves, boots), as appropriate;

- If conditions necessitate/permit deploy the containment boom using the spill response boat;
- Deploy on-site personnel to mobilize pumps and empty drums or other appropriate storage to the spill site;
- Deploy on-site personnel to build containment dykes and commence pumping the contained material into drums;
- Apply absorbents if necessary;
- If appropriate, use a water hose or other means to concentrate product in a location easily accessible for clean-up;
- Protect beaches by deploying additional boom or absorbent materials;
- If wildlife are observed in the area attempt to keep them away using boats or noise generating devices;
- Dispose of all contaminated debris, cleaning materials, and absorbents in an approved landfill site;
- Locate, map, and stake the boundaries of contaminated beach and landfill for future monitoring and treatment;
- Assess and appropriately treat any areas disturbed by cleanup activities; and
- Take all necessary precautions to ensure that the incident does not reoccur.

Site Restoration

Following a spill event, the site may require restoration by the contractor responsible for the spill to return the site to its original use prior to the incident. Restoration will be approved by the Construction Manager. Restoration may involve replacing contaminated soil with clean fill or routing watercourses away from the contaminated site until it can be cleaned up. Husky Energy will consult with applicable regulatory agencies to determine appropriate site restoration requirements.

Follow-up Regulatory Report

Following the spill incident and response, the HSE Advisor shall be responsible for preparing a written report which shall be sent (as soon as possible and no later than 30 days after the spill) to the:

Government Service Centre
Services NL
5 Mews Place
P.O. Box 8700
A1B 4J6

and

Environment Canada, Emergency Response Coordinator,
P.O. Box 5037
St. John's, NL
AIC 5V3

6.2 Wildlife Encounters

The objective is to minimize interactions on-site personnel may have with wildlife during Project construction and to ensure compliance with applicable acts and regulations.

6.2.1 Environmental Concerns

Encounters with wildlife may result in distress for both the animal and the employee. Serious injury could result to site workers in some instances. Threats to personnel include encounters with bears, any animals with young, moose (when in rut) and rabid animals such as fox, wolf, beavers, etc. Bites from any animals are potentially dangerous. Wildlife encounters have the potential to distress animals to the point of altering feeding and breeding behaviour. Physical injury or death to wildlife could also occur e.g. collision of vessels with marine mammals.

If the animal encountered is a species listed under the SARA or the Newfoundland and Labrador *Endangered Species Act*, the observation will be reported immediately to the CWS and the NLDEC. Section 32 of SARA prohibits killing, capturing and destruction of critical habitat for those species listed on Schedule 1 as extirpated, endangered and threatened. Critical habitat is defined as the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species.

6.2.2 Contingency Procedures

Encounters with Marine Mammals and Birds Species (at Risk or Not)

The following measures will be implemented by both Contractor and Company personnel in the event that marine mammals are observed in close proximity to Project vessels during construction activities:

(a) No personnel will approach, feed or harass wildlife if encountered.

(b) Take all normal precautions to avoid a collision.

(c) Concentrations of sea ducks, other waterfowl or shorebirds will not be approached.

(d) Only vessels equipped with mufflers will be used.

(e) Food scraps that could attract birds will be collected and properly disposed of.

(f) Husky Energy will comply with the *Migratory Bird Convention Act*, SARA and the NL *Endangered Species Act* and all applicable Regulations.

(g) Marine vessel speed will be restricted to 10 knots to reduce the risk of collision.

(h) The CWS and Wildlife Division's regional Conservation Officer located at the Forest Resources Office at Paddy's Pond will be contacted with regard to wildlife encounters with rare or endangered wildlife species. Guidance as to the appropriate action to take will be given by these authorities.

Terrestrial Wildlife Species (at Risk or Not) Encounter Prevention Measures

The following measures will be implemented by both Contractor and Company personnel to minimize the likelihood of wildlife encounters.

(a) No personnel will approach, feed or harass wildlife if encountered.

(b) Firearms will not be permitted on or near the work site. Hunting by Project employees on site will be forbidden.

(c) All food waste will be properly contained and disposed of on a regular basis at an approved facility.

(d) The CWS and Wildlife Division's regional Conservation Officer located at the Forest Resources Office at Paddy's Pond will be contacted with regard to wildlife encounters with rare or endangered wildlife species. Guidance as to the appropriate action to take will be given by these authorities.

(e) Personnel will be advised of rare or endangered wildlife potentially occurring within the Project area.

(f) No pets will be allowed at the site.

(g) If large wildlife (e.g., moose) are struck with vehicles or equipment, the regional Conservation Officer located at the Forest Resources Office at Paddy's Pond will be notified.

(h) Always yield the territory to the animal.

(i) Be alert to the signs of animal presence (e.g., footprints, droppings, etc.) and report to the Construction Manager. Wildlife encounters pose a risk for stress or injury to both the wildlife and site personnel (i.e., moose-vehicle collisions). Control measures and environmental protection procedures have been put in place to minimize the risk to wildlife and humans.

6.3 Discovery of Historic Resources

There are no known archaeological sites in the project area however the possibility exist that activities such as dredging may uncover historic resources. This contingency plan focuses on the procedures to be implemented in the case of a suspected archaeological or heritage resource discovery.

Environmental Concerns

Heritage and archaeological resources may be disturbed or discovered during construction activity. These features represent a valuable cultural resource, and uncontrolled disturbance could result in loss or damage to these resources and the information represented by them.

Contingency Procedures

Prior to construction, all personnel working on the site will be informed of their responsibility to report any unusual findings, and to leave such findings undisturbed.

Archaeological Discovery

In the event of the discovery of a historic artifact or archaeological site, the following procedures shall apply:

- Work in the immediate area will be suspended and the Construction Manager and HSE Advisor will be notified immediately.
- The HSEQ Manager will contact the PAO.
- The site area will be flagged for protection and avoidance, with an appropriate buffer zone determined in consultation with the PAO.
- An Incident Report Form will be filed with the Project Manager.
- In the event that the PAO determines the find is an archaeological deposit, the Company and its contractors will take direction from the PAO regarding further contacts and required actions.
- The Company will take all reasonable precautions to prevent employees or other persons from removing or damaging any such articles or sites until they have been assessed.
- A qualified archaeologist will conduct an archaeological assessment of the resource and report the resource to the PAO. No work at that particular location will continue until the qualified archaeologist, in consultation with the PAO authorizes renewal of the work.

6.4 Vessel Accidents

Environmental Concerns

There exists the potential that vessels involved during construction activities may run aground, become involved in collisions with structures or other vessels, or sink due to inclement weather or other reason. Negative environmental effects may result if fuel, hazardous materials, or other physical/chemical substances are released to the environment during vessel accidents. The priority concern is for the health and safety of all crew members and passengers.

Contingency Procedures

1. All stationary hazards, such as moored platforms or vessels, will be marked in accordance with CCG and Transport Canada regulations.

2. Project related vessels shall be aware of the designated CSZs and use a safe shipping route to its port destination.

3. No Project related vessels shall discharge wastes, bilge water, ballast water, pollutant, or other deleterious substance into Canadian waters. The discharge of garbage (solid galley wastes, food wastes, paper, rags, plastics, glass, metal, bottles, junk or similar refuse) from ships into Canadian waters and waters of the Fishing Zones of Canada is prohibited.

4. Placentia Traffic will issue Notices to Shipping in the area and Notices to Mariners, giving information about all aspects of safety.

5. All crew members will be familiar with emergency procedures for both life-threatening and potentially polluting situations.

6. If a ship is in distress, it is the Captain's duty to do whatever possible to save the crew and passengers and to protect vessel and cargo. The order of priority of action will be for the protection of human life, prevention of pollution of the environment, and prevention of shipping lane impediment.

7. When ships collide, it is the Captain's responsibility to do the utmost to rescue, help and/or assist the other vessel if this can be done without putting own ship, crew or cargo into further danger.

8. The ship's Captain will immediately contact the CCG, Marine Emergencies, 24-hour Report Line for vessels in distress (1-800-565-1633), through which the appropriate agencies will be notified and specific action taken.

6.5 Fire Contingency Plan

Construction related activities could result in fire that could spread to the surrounding area. Alternatively, a forest fire started offsite could spread to the Project area. This contingency plan contains procedures for fire prevention as well as response action plans for non-forest fires (e.g., localized fires, such as equipment) and forest fires.

6.5.1 Environmental Concerns

Fires could result in terrestrial habitat alteration, wetland habitat loss and direct mortality of wildlife. Fire fighting chemicals and any spilled materials could enter the freshwater, wetland and marine environments and adversely affect biota and habitat if allowed to disperse and persist. Fires also have the potential for adverse effects on air quality and could pose risks to human health and safety.

6.5.2 Contingency Procedures

Prevention Measures

Husky Energy and contractors will take all precautionary measures to prevent fire hazards when working at the site. These include but are not limited to the following measures:

- All flammable waste will be disposed of in on a regular basis.
- Smoking will be permitted in designated areas only.
- Husky Energy and its contractors will be trained in fire prevention and response.
- Firefighting equipment, sufficient to suit onsite fire hazards will be maintained in proper operating condition and to the manufacturer's/national Fire Protection Association standards. Husky Energy will ensure that its personnel and contractors are trained in the use of such equipment.

Non-forest Fires Response Action Plan

- Notify nearby personnel.
- On-site personnel will take immediate steps to extinguish the fire using appropriate equipment.
- Notify the Husky Energy Project Manager and the Construction Manager.
- If the fire cannot be contained, contact the Placentia Fire Department.
- In case of related medical emergencies, the Placentia RCMP detachment will be notified immediately.

Forest Fires Response Action Plan

- Fires will be reported immediately.
- Notify the Husky Energy Project Manager and the Construction Manager.

- In case of related medical emergencies, the Placentia RCMP detachment will be notified immediately.

- Contact the Forestry and Agrifoods Agency's Forest Fire Protection Centre in Gander (1 866 709 3473 or 1-709 256-3473)

7.0 PERMITS, APPROVALS AND AUTHORIZATIONS

The following table provides a potential list of permits, licences, approvals, and other forms of authorization required for the undertaking.

Regulatory Agency	Permit and/or Regulatory Approval	Activity Requiring Regulatory Approval
Government of Canada		
Fisheries and Oceans Canada	Approval under Section 36 of the *Fisheries Act*	Waste water discharge to the marine environment
Fisheries and Oceans Canada	Approval under Section 35(2) of the *Fisheries Act*	Dredging activities, nearshore and in tow-out corridors
Environment Canada	Section 35 of the *Migratory Birds Convention Act*	Waste water discharge to the marine environment
Transport Canada	Approval under *Navigable Waters Protection Act*	Mating topsides at the deep-water site Dredging activities, nearshore and in tow-out corridors
Government of Newfoundland and Labrador		
Water Resources Management Division	Alteration to a Body of Water (Schedule A to H). This application form is required as well as the appropriate Schedule application form (see below).	Any activity in or near any body of water including infilling, dredging, pumping out of a waterbody
Water Resources Management Division	Alteration to a Body of Water - Schedule H - Other Alterations	Other works within 15 m of a waterbody
Water Resources Management Division	Certificate of Approval for Site Drainage	Water run-off from the WREP site
Water Resources Management Division	Water Use Authorization	Water withdrawal and/or operation for use during construction
Water Resources Management Division	Certificate of Approval for Water and Sewerage Works	Water and sewage distribution system Operation of a sewage treatment plant
Water Resources Management Division	Non-Domestic Drilled Well Permit	Dewatering wells
Forest Services Branch	Commercial Operating Permit	Construction activities
Government Services Branch	Certificate of Approval for Waste Management System	Waste management activities Rock disposal areas Dredge spoils disposal

Regulatory Agency	Permit and/or Regulatory Approval	Activity Requiring Regulatory Approval
Government Services Branch	National Building Code Form (FC/NBC - Long Form) or Request for Approval of Plans (FC/NBC - Short Form)	Buildings on Site
Government Services Branch	Building Accessibility Exemption	Building on Site
Department of Environment and Conservation	Certificates of Approval for the Construction and/or Operation of various industrial facilities	Facilities with air emissions and/or effluent discharge may be required to obtain a Certificate of Approval for the construction and operation of the facility (e.g., batch plant)
Government Services Branch	Fuel storage system registration – storage and handling of gasoline and associated products	All tanks onsite
Canada-Newfoundland and Labrador Offshore Petroleum Board		
C-NLOPB	Decision Report on the Development Application	Construction of the WHP and operation offshore