Fisheries and Oceans Canada | Pêches et Océans Canada

The Installation, Operation, Expansion, Modification, Removal, and/or Decommissioning of Aboveground Storage Tank Systems (Petroleum or Allied Petroleum Products)

Replacement Class

Screening Report

Fisheries and Oceans Canada

Gulf, Maritimes, and Newfoundland & Labrador Regions

2010

Canada

Please address your comments regarding this report to:

Andrea Powell
Environmental Coordinator, NL
Public Works and Government Services Canada
10 Barter's Hill, St. John's, NL A1C 5T2
Tel: (709) 772-5438 Fax: (709) 772-0916
Andrea.Powell@pwgsc-tpsgc.gc.ca

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Acronyms

ACCDC – Atlantic Canada Conservation Data Centre

AST – Aboveground Storage Tank

BMP – Best Management Practices

CCG-ANP – Canadian Coast Guard Aids to Navigation Program

CCME – Canadian Council of Ministers of the Environment

CEPA, 1999 – *Canadian Environmental Protection Act, 1999*

CEAA – Canadian Environmental Assessment Agency

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

DFO – Fisheries and Oceans Canada

EA – Environmental Assessment

EC – Environment Canada

FA – Federal Authority

HMP – Habitat Management Program

HPSD – Habitat Protection and Sustainable Development

km – kilometre(s)

L – litre(s)

m – metre(s)

MBCA – *Migratory Birds Convention Act*

mm – millimetre(s)

NB – New Brunswick

NL – Newfoundland and Labrador

NS – Nova Scotia

NWPA – *Navigable Waters Protection Act*

PEI – Prince Edward Island

PWGSC – Public Works and Government Services Canada

RA – Responsible Authority

RCSR – Replacement Class Screening Report

RPSS – Real Property, Safety and Security

SARA – *Species at Risk Act*

SCH – Small Craft Harbours

the Act – *Canadian Environmental Assessment Act*

the Agency – Canadian Environmental Assessment Agency

the AST projects – the installation, operation, expansion, modification, removal and/or decommissioning of petroleum or allied petroleum AST systems

the Registry – Canadian Environmental Assessment Registry

UNESCO – United Nations Educational, Scientific, and Cultural Organization

VEC – Valued Environmental Component

1. Introduction

Fisheries and Oceans Canada (DFO) is the largest federal property custodian in the Atlantic Provinces (New Brunswick (NB), Nova Scotia (NS), Prince Edward Island (PEI), and Newfoundland and Labrador (NL)). New regulations/amendments to the *Canadian Environment Protection Act* (CEPA, 1999) *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008) have prompted DFO to undertake a comprehensive initiative to upgrade and/or replace several hundred Aboveground Storage Tank (AST) systems at specific properties under its jurisdiction. The majority of these properties are coastally located, ranging from well developed Small Craft Harbour (SCH) areas to remote and relatively undeveloped fixed navigational aid sites.

Many projects involving AST systems do not require an environmental assessment under the *Canadian Environmental Assessment Act* (the Act) because they can be excluded in accordance with the Exclusion List Regulations. However, undertakings associated with AST systems within 30 metres (m) of a water body and/or involving ASTs with a system capacity larger than 4000 litres (L), require a screening-level environmental assessment under the Act.

A number of screening-level assessments are undertaken by DFO for AST projects on an annual basis within the Atlantic Provinces. Most of these projects will be similar in scope and result in a limited range of predictable mitigable environmental effects. As such, DFO proposes to develop a Replacement Class Screening Report (RCSR) to include all projects involving the installation, operation, expansion, modification, removal and/or decommissioning of AST systems containing petroleum or allied petroleum products on its properties throughout the Atlantic Provinces (the AST projects) within 30m of a water body and/or involve a system capacity greater than 4000L.

The development of an RCSR to include all of these projects is considered to be an efficient planning process that will greatly reduce time and resources associated with conducting individual environmental screenings for each site.

1.1 Class Screening and the Canadian Environmental Assessment Act

The Act and its regulations set out the legislative basis for federal environmental assessments. The legislation is intended to ensure that the environmental effects of projects involving the federal government are carefully considered early in the planning process, and before irrevocable decisions are made. The Act applies to certain projects which require a federal authority (FA) to make a decision or take an action, whether as a proponent, land administrator, source of funding or regulator (issuance of a permit or license). The FA then becomes a responsible authority (RA) and is required to ensure that an environmental assessment of the project is carried out prior to making its decision or taking action. DFO will act as the sole RA for this RCSR.

Most projects are assessed under a screening level of assessment. A screening systematically documents the anticipated environmental effects associated with a proposed project, and determines the need to modify the project plan or recommend further mitigation measures to eliminate adverse environmental effects or minimize the significance of those effects.

The screening of some repetitive projects may be streamlined through the use of a class screening report. This kind of report presents the accumulated knowledge of the environmental effects of a

given type of project and identifies measures that are known to reduce or eliminate any significant adverse environmental effects. The Canadian Environmental Assessment Agency (CEAA; the Agency) may declare such a report appropriate for use as a class screening after taking into account comments received during a period of public consultation.

A replacement class screening consists of a single report that defines the class of projects and describes the associated environmental effects, design standards, and mitigation measures for projects described within the report. It includes a determination regarding significance of environmental effects for all projects assessed by the replacement class screening. Once the Agency declares a RSCR, and where a RA is satisfied that a project falls within the class described in the RCSR, no further action is required under sections 18 or 20 of the Act, provided the RA ensures that design standards and mitigation measures described in the RCSR are implemented for the project.

1.2 Rationale for Replacement Class Screening

The applicability of the RCSR to AST projects is based on the following six criteria (CEAA, 2007):

1. ***Well-defined Class of Projects:*** The installation, operation, expansion, modification, removal and/or decommissioning of AST systems (petroleum or allied petroleum products) at DFO properties across the Atlantic Provinces is well-defined. The majority of these sites are located within 30m of a coastal water body and currently include an AST system with a capacity greater than 4000L. The undertakings in relation to AST systems are common projects with well understood methodologies, regulations and professional design that is compliant with the latest environmental regulations, and industry standard construction/installation practices.
2. ***Well-Understood Environmental Setting:*** The RCSR includes projects at all DFO properties in the Atlantic Provinces, ranging from the upland areas of coastal properties to inland terrestrial sites and well-developed SCH areas to remote undeveloped fixed navigational aid sites. DFO maintains background information and results from previous environmental assessments and studies such as Environmental Site Assessments for these properties, as projects are frequently assessed as part of its routine operations. As such, valued environmental components (VECs) and project-environment interactions are well understood.
3. ***Unlikely to Cause Significant Adverse Environmental Effects, Taking into Account Mitigation Measures*:** The projects at these properties are required under CEPA, 1999 as a means of reducing the risks associated with on-site petroleum and allied product use and storage, thereby reducing the potential for a significant adverse environmental effect as a result of an accidental spill or leak. Numerous screenings were completed in the past year, all with similar mitigation measures, and no incidents occurred.
4. ***No Project-specific Follow-up Program Required:*** In the case of the projects, follow-up programs as defined under the Act are generally not required. However, post-project monitoring and/or inspections will be conducted as part of regular DFO operations and programs. This ensures proper implementation and ongoing maintenance of the AST systems are carried out and any necessary adaptive management measures are undertaken.

5. ***Effective and Efficient Planning and Decision-making Process:*** The projects are required under the amendments to the CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008). DFO will be undertaking a comprehensive AST system upgrade and/or replacement initiative in the Atlantic Provinces over the next five (5) years to meet these specified requirements. Projects are generally identified from site inspections and audits several months in advance as part of the program planning.
6. ***Public Concerns Unlikely:*** Negative public comments or concerns regarding the projects are not considered likely given that the projects are being undertaken to meet more stringent regulations which will help prevent hazards to public and environmental health; are generally supported by the public and have not historically resulted in negative public comments; are small and localized in scale; and will not result in significant adverse environmental effects with the implementation of proper mitigation measures.

1.3 Consultation

The process for developing this RCSR included consultation with DFO's Habitat Management Program (HMP) in the Maritimes, Gulf and Newfoundland and Labrador Regions, DFO's Real Property, Safety and Security Branch, Environment Canada (EC), Public Works and Government Services Canada (PWGSC), and the Agency. Additional consultation has taken place with the NB Department of Environment, NS Department of Environment, PEI Department of Environment, Energy and Forestry and the NL Department of Environment and Conservation. A draft of the RCSR was circulated to these departments for review, and comments were incorporated before submission of the final draft to the Agency. Following its submission, the Agency conducted a 30-day public consultation period on the RCSR. All comments received were taken into consideration and incorporated into the RCSR, as appropriate, before its declaration by the Agency.

Internal consultation within DFO was completed to ensure the validity of project activity descriptions. The practicality of mitigation measures was also reviewed to provide the highest potential for successful implementation.

1.4 Canadian Environmental Assessment Registry

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to environmental assessments and to provide notice in a timely manner. The Registry consists of two components – an Internet site and a project file.

The Registry project file must include a copy of the RCSR. The RA maintains the file, ensures convenient public access, and responds to information requests in a timely manner.

The Registry Internet site is administered by the Agency. The RA and the Agency are required to post specific records to the Internet site in relation to the RCSR.

Upon declaration of the RCSR, the Act requires RAs to post on the Internet site of the Registry, at least every three months, statements of projects for which an RCSR was used. Each statement should be in the form of a list of projects, and should include:

- the title of each project for which the RCSR was used;
- the location of each project;
- RA contact information (name, phone number, address, email); and
- the date when it was determined that the project falls within the class of projects covered by the report.

Note: The schedule for posting statements is:

- no later than July 15 (for projects assessed from April 1 to June 30);
- no later than October 15 (for projects assessed from July 1 to September 30);
- no later than January 15 (for projects assessed from October 1 to December 31); and
- no later than April 15 (for projects assessed from January 1 to March 31).

2. Projects Subject to Class Screening

2.1 Projects Subject to the Canadian Environmental Assessment Act

The main objective of the new regulations outlined in the CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008) is to prevent soil and groundwater contamination from storage tank systems located on federal properties. These CEPA, 1999 regulations contain requirements for owners and operators of petroleum storage tanks including used oil tanks and heating oil tanks and requirements include official registration of tank systems, removal from service of some tank systems, standards for new tank systems as well as labeling, inspection, maintenance, record keeping and reporting.

More specifically, the CEPA, 1999 regulations apply to both aboveground and underground storage tanks and containers that store petroleum products and allied petroleum products[1] and that:

- have a capacity of more than 230 litres;
- are vented to the atmosphere (in other words operate at atmospheric pressure); and
- are designed to be installed in a fixed location.

The CEPA, 1999 regulations also apply to all the piping and other equipment associated with the tanks.

These CEPA, 1999 regulations have prompted DFO to evaluate their AST systems and determine whether projects in the form of installation, operation, expansion, modification, removal, and/or decommissioning of AST systems are required to conform to the regulations.

As DFO is the proponent for the AST projects and triggers the Act as a RA, the completion of an Environmental Assessment (EA) is necessary before it can exercise any duty, power or function in relation to the projects, as defined by paragraph 5(1)*(a)* of the Act.

Under the Act, an EA is required for those AST projects that are located within 30m of a water body and/or involve a system capacity greater than 4000L as they cannot be excluded under the *Exclusion List Regulations.*

These AST projects also do not constitute a response to a national emergency; however, it is possible that they may be initiated quickly under the auspices of Section 7(1)(c) of the Act, which states that a project can be excluded from EA if the project is to be carried out in response to an emergency and carrying out the project forthwith is in the interest of preventing damage to property or the environment or is in the interest of public health or safety.

[1] A list of "Allied Petroleum Products" is included in Schedule I of the Regulations and includes motive fuels such as gasoline and diesel, used oil, and heating oil.

2.2 Projects Subject to the Replacement Class Screening Report

The project class for this RCSR involves the installation, operation, expansion, modification, removal and/or decommissioning of AST systems. AST projects subject to the RCSR are those undertaken at all DFO properties in the Atlantic Provinces within 30m of a water body and/or involve a system capacity greater than 4000L.

2.3 Projects Not Subject to the Replacement Class Screening Report

Schedule 1, Part 1, Section 23 of the *Exclusion List Regulations* indicates the following AST projects as excluded from EA:

"The proposed installation, operation, expansion, modification, removal or decommissioning of an aboveground storage tank system to be used for storing petroleum products or allied petroleum products if the project:

a) results in a system with a total capacity of no more than 4000L;
b) is conducted in accordance with the *Technical Guidelines for Aboveground Storage Tank Systems Containing Petroleum Products* (P.C. 1996-1233)[2] made under the *Canadian Environmental Protection Act, 1999* and dated August 7, 1996, as amended from time to time;
c) is not to be carried out within 30m of a water body; and
d) does not involve the likely release of a polluting substance into a water body."

The majority of the AST systems at DFO properties in the Atlantic Provinces are located within 30m of a water body, and in some cases the system capacities' exceed 4000L. In these cases, undertakings in relation to the AST systems would not meet the provisions of the *Exclusion List Regulations*; therefore an EA would be required for each of these projects. Similarly, contamination may exist at the project locations. The level of contamination may vary from one location to another and in some cases it is unknown. This RCSR does not apply to projects where the potential exists to release a polluting substance into a water body due to the known presence of contaminants in the soil or groundwater at the site.

Projects are not suitable for application of the RCSR if they are likely to have an adverse effect on a species at risk, either directly or indirectly, such as by adversely affecting their habitat, and/or that would require a permit under the *Species at Risk Act* (SARA). For the purposes of this RCSR, species at risk include:

[2] Note: Referred to outside the *Exclusion List Regulations* as *Federal Aboveground Storage Tank Technical Guidelines* (P.C. 1996-1233). Please note that the *Technical Guidelines for Aboveground Storage Tank Systems Containing Petroleum Products* under *CEPA* have been repealed. However, the Regulations *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* cover all the material that was contained in the aforementioned Technical Guidelines.

- Species identified on the List of Wildlife Species at Risk set out in Schedule 1 of SARA, and including the critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of SARA.
- Species that have been recognized as "at risk" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by provincial or territorial authorities.

A significant adverse effect on species at risk is defined as any effect resulting in a sustained suppression of fitness to maintain the population, or a decrease in density of the population below naturally occurring levels. For species designated as endangered (or significant for other reasons), the loss of these species at an individual level may be considered a significant adverse effect.

The RA must review the project description using the RCSR to ensure that there will be no adverse impacts on a listed wildlife species or its critical habitat. If appropriate information is not available, the RA must consult with appropriate resource personnel including SARA-competent ministers such as DFO Habitat Management Program (HMP) for aquatic species and EC for terrestrial species, who will search on the Atlantic Canada Conservation Data Centre (ACCDC) database to ascertain if it is known or reasonably suspected that species at risk could be adversely affected by the proposed project. If so, the RA must not proceed with using the RCSR.

The RA must also consult with EC personnel with regard to projects located in or adjacent to National Wildlife Areas or Migratory Bird Sanctuaries. Similarly, the RA must consult with EC personnel with regard to the location and seasonality of any nearby bird nesting colonies.

Some DFO sites are located within or adjacent to properties owned by the Parks Canada Agency. Parks Canada properties are often in sensitive areas. Parks Canada has a mandate to preserve ecological integrity in its parks and is a stakeholder in the “greater park ecosystem” surrounding Parks. Any projects carried out on properties within National Parks or in adjacent areas may (if deemed necessary after consultation with Park authorities) undergo an EA independent of this RCSR.

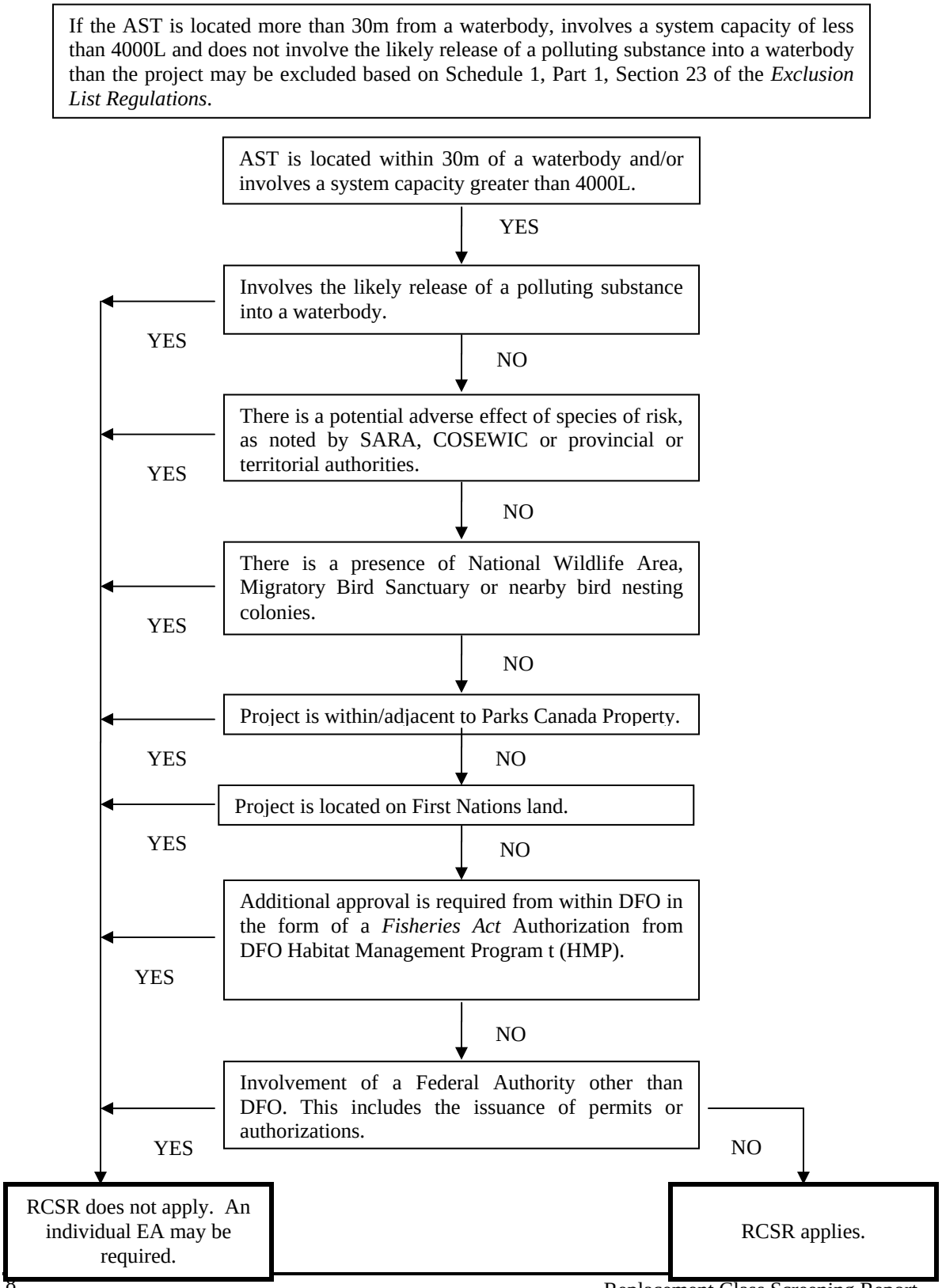
The RA must consult with personnel at DFO HMP if the project may potentially impact on fish or fish habitat. It is also important to note that watercourse crossings are not covered by this RCSR. Any watercourse crossings must be approved by the province and DFO HMP beforehand.

All projects that cannot be excluded under the *Exclusion List Regulations* and are not included in the RCSR will likely require an individual environmental assessment under the Act. Contents of this RCSR may be used to assist in the preparation of the individual environmental assessments.

This RCSR does not apply to projects where the proposed project activities are located on First Nations land.

Figure 1 provides a flow chart that describes RCSR inclusion/exclusion for AST projects.

Figure 1: AST RCSR Decision Flow Chart



3. Project Class Description

The Project Class is characterized by a large geographic boundary. All DFO administered properties within the Atlantic Provinces are included in the project class. Most of these properties are coastally located, ranging from well developed SCH areas to remote and relatively undeveloped fixed navigational aid sites. The AST projects subject to this RCSR will occur on land, often within 30m of a water body.

The project scope is quite narrow, with project activities being essentially confined to the outer boundaries of DFO properties in the Atlantic Provinces. The AST projects will be conducted directly on site by means of well understood methodologies, regulations and professional design that is compliant with the latest environmental regulations, and industry standard construction/installation practices. All AST project activities will also be carried out in accordance with the Environmental Management Systems of the proposed project location. Contingency plans will be in place as required by mitigation measures in the event of accidental spills, leaks or other accidents that could result in hazards to public health or the environment.

Figure 2 shows the geographic area under consideration, the Atlantic Provinces (NB, NS, PEI, and NL)

Figure 2: RCSR study area which includes all DFO properties within the Atlantic Provinces (ACOA, 2008).

3.1 Installation, Operation, Expansion, Modification, Removal and/or Decommissioning of AST Systems

The Project Class will include the installation, operation, expansion, modification, removal, and/or decommissioning of AST systems that are within 30m of a water body and/or have a system capacity of greater than 4000L. It will include various undertakings in relation to components of AST systems, including tank, dispensing equipment, associated piping, secondary containment, and transfer areas associated with these systems.

3.1.1 Construction/Installation/Expansion/Modification/Replacement

All project activities will conform to the design standards and regulations in the CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008). The new regulations are primarily based on federal codes including the:

- *National Fire Code of Canada (2005).*
- *Installation Code for Oil Burning Equipment, CAN/CSA B139-09 (2009).*

These new CEPA, 1999 regulations identify clauses outlined by the Canadian Council for Ministers of the Environment (CCME) in *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, CCME PN1326 (2003)* as requirements.

New, expanded and modified AST systems will be designed and installed in accordance with applicable regulatory requirements and best management practices of the petroleum industry that may include such ancillary features as concrete pads, signage, spill kits as well as barricades and/or fencing for vehicle protection and product transfer areas. In some cases, new ASTs will be installed in or relocated to buildings that are specifically designed for that purpose. All AST systems will have an emergency response plan in place.

Where applicable, new AST system installations will be identified to EC and an identification number will be received and displayed prior to the first fill. Existing AST systems will often remain in operation during construction/installation of the new AST systems and upon replacement, the existing AST systems will be decommissioned. All materials will be transported by motor vehicle, helicopter, or boat to/from the site.

3.1.2 Operation/Maintenance

Following the construction phase, the AST systems will be used solely for the storage and dispensing of petroleum or allied petroleum products. The AST systems will continue to operate as before and are not likely to result in the release of effluents or emissions to the surrounding environment, provided the proper storage and refueling procedures are adhered to. AST systems will be maintained by qualified individuals as per the design standards and codes in the CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008)

3.1.3 Removal/Decommissioning

When an AST system is decommissioned, its components will be cleaned/purged, dismantled and removed, or they may be refurbished for re-use generally after the new system is in place. These AST systems may be refurbished for re-use (where tanks meet applicable guidelines and standards) in accordance with the manufacturer's specifications or disposed of at a provincially-approved facility. Appropriate stipulations set forth in the CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008) will be reviewed prior to AST withdrawal from service and/or removal.

3.2 Seasonal Scheduling and Duration of Projects

The AST projects, including concrete pad installation, removal, and replacement may occur during any season with the exception of winter freeze-up (i.e., when the ground is frozen). The projects are anticipated to take from one to two weeks to complete.

4. Environmental Review

DFO routinely undertakes AST projects involving petroleum or allied petroleum products at its properties in the Atlantic Provinces. DFO also conducts post-project monitoring and/or inspections as part of regular operations and programs. Individual environmental screenings previously completed for these types of projects have developed standard remediation methods and mitigation measures. Environmental review methods used in the creation of this report include desktop literature review, internal consultation, and discussion with technical authorities at PWGSC.

4.1 Environmental Assessment Boundaries

The boundaries for the RCSR include NB, NS, PEI, and NL and the adjacent coastal portion of Canada's territorial waters in the Atlantic Ocean. Within the RCSR boundary, DFO manages over 40,000 kilometres (km) of coastline (DFO, 2008a). Smaller boundaries have been defined for the assessment scope to identify project-specific environmental effects. The project spatial boundaries, essentially the actively used areas of the harbour, light station, or fixed navigational aid properties, will be used as a basis for the assessment. A radius of 200m around project areas has been found effective in capturing potential environmental effects resulting from project activities. However, due to the close proximity of the AST projects to water bodies, if a hydrocarbon spill occurred this radius could increase.

The temporal boundaries of the EA include the full lifecycle of the AST projects, including construction/installation, operation, and removal/decommissioning.

4.2 Environmental Setting

AST systems are generally located at all DFO properties, with the majority being located at SCH areas, fixed navigational aids sites and light stations. Other DFO properties where AST systems may be located include Coast Guard stations, search and rescue stations, warehouses, offices, and bait depots.

DFO properties may include any of the substrates that exist across the Atlantic Provinces in terrestrial and aquatic environments. Typical substrates within project boundaries include bedrock, cobble, gravel, sand or mud (i.e., silt/clay). Strictly terrestrial areas may also be characterized by the presence of soils or organic overburden.

As there are no specific environmental criteria that determine the location of DFO properties, a general description of the environmental settings in which these SCH areas, fixed navigational aid sites and light station facilities are constructed is provided below. In addition, a general description of the ecozones found within the Atlantic Provinces is included.

4.2.1 Fisheries and Oceans Canada Property Locations

Small Craft Harbours

SCH is a branch of DFO that is responsible for the management of a national system of harbours that accommodates primarily commercial fishing vessels, including approximately 693 harbours in the Atlantic Provinces (DFO, 2008a). The harbours also serve a wide range of other users such

as recreational boaters, aquaculture operators, commercial tour operators, and private and public ferry services. Typically SCH areas consist of marine infrastructure such as wharves, breakwaters and launching facilities as well as terrestrial (upland) portions that often contain such facilities as service and parking areas, fuel systems, waste containment systems, and various types of buildings. SCH areas may have been created by artificial breakwaters, be in the sheltered part of an inlet, or have been carved out of a sandy-silt area by dredging. A typical small craft harbour is pictured below.

Neils Harbour, NS with AST System in Foreground

The majority of SCH areas in the Atlantic Provinces are developed, operational harbours with varying degrees of utilization over many years. Environmental Site Assessments have been completed for most SCH areas and have revealed some typical environmental site conditions that are consistent with the land use for these type of properties. In the upland areas, soils located near fuel storage tanks and waste oil storage tanks may be impacted with hydrocarbons due to previous spills and leaks. Heavy metals may be found in dredged harbour sediments, which are sometimes used onsite for the construction of service and parking areas. Lead-based paints are found on the building materials of older structures at these sites. Creosote timbers have also been used as a building material in the past for various marine structures such as wharves, breakwaters and slipways.

Fixed Navigational Aids

The primary purpose of fixed navigational aids is to "facilitate the safe and expeditious movement of maritime traffic" (Canadian Coast Guard Aids to Navigation Program (CCG-ANP), 2005).

Terrestrial fixed navigational aids, apart from light stations, can be shore ranges, lattice towers, beacons, posts, or other configurations. There are approximately 1663 of these in the Atlantic Provinces and are intended to be highly visible to vessels (DFO, 2008b). They are built on

specific properties of varying sizes owned by DFO. Some properties are no longer in use and are vacant. Terrestrial sites tend to be ecologically similar to light station sites. Many sites are used for local navigation and are situated in more sheltered locations within bays. The sites may be surrounded by forest, wetland, dunes, grassland, or developed lands. A typical fixed navigational aid is pictured below.

Eddy Point Range Light, NS

Typical environmental site conditions at fixed navigational aid stations include lead-acid and hydrocarbon impacted soil from onsite disposal of battery waste and fuel storage.

Light Stations

The locations selected for light station placement are predominantly exposed headlands or islands which reflect this purpose. Smaller fixed navigational aids can be located at very small sites to mark obstructions or to guide mariners into a harbour or bay.

There are 141 major light stations in the Atlantic Provinces (DFO, 2008b). Light stations tend to be built on promontories or on islands at the extent of safe navigation along a waterway. The intention is to maximize visibility and audibility to passing shipping. Many light stations are remote and difficult to access. Many are built on bedrock while others are on overburden set back from the wave zone. The local ecology tends to be exposed rock or grass or stunted trees in an area of high wind exposure. A typical light station is pictured below.

East Quoddy Light Station, NB

Most light station properties in the region have had at least a Phase 1 Environmental Site Assessments conducted. Results have shown that lead-based paints were extensively used on structures at these sites. Hydrocarbon and metal impacted soils associated with fuel storage tanks are also typical. Due to the remote location of some of the light stations, typically there was an area designated for garbage disposal and refuse burning, which resulted in impacted soils.

4.2.2 Ecozones

All of the sites under consideration are located within three ecozones of Canada found in the four Atlantic Provinces. These include the Atlantic Maritime Ecozone, the Boreal Shield Ecozone, and the Eastern Taiga Shield Ecozone (EC, 2005).

The Atlantic Maritime Ecozone describes a cluster of peninsulas and islands which form the northeastern end of the Appalachian mountain chain. The Maritime Provinces of NB, NS, and PEI are all found within this ecozone. This ecozone is characterized by over 9000 km of coastline, deeply indented by tidal inlets and impressive sand dunes and almost 4000 offshore islands dotted with lagoons and extensive marshes surround NS. The proximity of the Atlantic Ocean creates a moderate, cool, and moist maritime climate. Most of the ecozone experiences long, mild winters (averaging about -4°C in January) and cool summers (the mean daily July temperature is 18°C). Coastal communities are generally several degrees warmer in winter and slightly cooler in summer. During late spring and early summer, the mixing of the cold Labrador Current and the warm Gulf Stream produces frequent banks of sea fog over coastal areas. Average precipitation varies from 1000 millimetres (mm) inland to 1425mm along the coast. Forests are generally composed of mixed stands of conifers and deciduous species, including red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), yellow birch (*Betula alleghaniensis*), sugar maple (*Acer saccharum*), red and white pine (*Pinus resinosa* and *Pinus strobus*), and eastern hemlock (*Tsuga canadensis*). Common mammals include white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces*), black bear (*Ursus americanus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), and eastern chipmunk (*Tamias striatus*), while birds frequenting this area include whip-poor-will (*Caprimulgus vociferus*), blue jay (*Cyanocitta cristata*), eastern bluebird (*Sialia sialis*), and rose-breasted grosbeak (*Pheucticus ludovicianus*). Breeding colonies of marine birds are also found here, including great and double-

crested cormorant (*Phalacrocorax carbo* and *Phalacrocorax auritus*), Atlantic puffin (*Fratercula arctica*), common and thick-billed murre (*Uria aalge* and *Uria lomvia*), black guillemot (*Cepphus grylle*), and razorbill (*Alca torda*). Representative marine species include various species of seals and whales (EC, 2005).

The Boreal Shield Ecozone, the largest in Canada, extends from northern Saskatchewan to Newfoundland passing north of Lake Winnipeg, the Great lakes, and the St. Lawrence River. The entire island of Newfoundland and parts of Labrador are contained within this ecozone. Mostly inland, this ecozone ranges in mean annual temperatures from -4^{o}C in northern Saskatchewan to 5.5^{o}C in Eastern Newfoundland. Mean annual precipitation is significantly higher along the coastal regions of Labrador and Newfoundland compared to values recorded at other areas of the ecozone. It is heavily forested where 80% of the area is host to a variety of coniferous and deciduous trees, represented by closed stands of conifers such as white and black spruce (*Picea glauca* and *Picea mariana*), balsam fir (*Abies balsamea*), and tamarack (*Larix laricina*), broadleaf trees such as white birch (*Betula papyrifera*), trembling aspen (*Populus tremuloides*), and needle-leaf trees such as white, red, and jack pine (*Pinus strobus*, *Pinus resinosa*, and *Pinus banksiana*). The landscape is made up of upland areas, wetlands and headwaters of large drainage basin systems such as the Churchill, St. Lawrence, Rupert, and Broadway Rivers. Common mammals include woodland caribou (*Rangifer tarandus caribou*), white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces*), black bear (*Ursus americanus*), and many smaller species such as the striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), and eastern chipmunk (*Tamias striatus*), while representative birds include boreal and great horned owl (*Aegolius funereus* and *Bubo virginianus*), common loon (*Gavia immer*), yellow rumped warbler (*Dendroica coronata*), blue jay (*Cyanocitta cristata*), and evening grosbeak (*Coccothraustes vespertinus*) (EC, 2005).

The Eastern Taiga Shield Ecozone lies on the eastern side of Hudson Bay and occupies central Quebec and Labrador. Mean annual temperatures and precipitation amounts within this ecozone range from -1^{o}C to -5^{o}C and 500-800mm respectively where the warmer temperatures and higher precipitation rates are found nearest the coast. This ecozone consists mainly of stunted black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*) with alder (*Alnus sp*.), willow (*Salix sp*.), and tamarack (*Larix laricina*) found in association with bogs and wetlands. These wooded areas merge into open arctic tundra along the northern boundary of the ecozone. Approximately fifty species of mammals are found here, including barren ground and woodland caribou (*Rangifer trandus groelandicus* and *Rangifer tarandus caribou*), moose (*Alces alces*), wolf (*Canus lupus*), arctic fox (*Vulpes lagopus*), beaver (*Castor canadensis*) and lynx (*Felis lynx*). Migratory birds such as ducks, geese, loons, and swans frequent the ecozone because of the large number of fresh water lakes and rivers throughout (EC, 2005).

4.2.3 Heritage Resources

The Atlantic Provinces are rich with heritage resources from historic and pre-historic times, dating back 500, and 1,200 years respectively. The most frequently recorded archaeological sites include shell middens, lithic scatters, pictographs and petroglyphs, and rock formation sites including fish weirs and traps, canoe runs and cairns.

The Atlantic Provinces each have National Parks and various National Historical Sites. A small number of these Historic Sites have been named World Heritage Sites by the United Nations, Educational, Scientific, and Cultural Organization (UNESCO). L'Anse aux Meadows (NL), Gros

Morne National Park (NL), Old Town Lunenburg (NS), and Joggins Fossil Cliffs (NB) have been recognized for their cultural or natural importance.

Light stations in particular occupy a prominent position in the heritage consciousness of Atlantic Canadians. They are among the oldest structures built by Europeans in Eastern Canada and have been the subject of picture books, historical references, and art works. Many sites are visited by tourists and decommissioned light stations are often acquired by local community groups to be used as tourist destinations. Some of these light stations have been designated National Historic Sites, such as the light stations in Red Bay and Cape Race, NL.

4.2.4 Species at Risk

There are numerous species at risk within the RCSR boundary due to the large area that it encompasses. Representative species include marine and terrestrial mammals, birds, amphibians, fishes, arthropods, mollusks, insects, vascular plants, mosses, and lichens.

A list of species at risk has not been included in this report as the list is very dynamic and information regarding species at risk within project boundaries will be obtained from the federal and provincial listings for an area on a project-by-project basis. The resource for location information on species at risk in Atlantic Canada is the ACCDC which can be readily accessed.

Any project that is likely to have an adverse effect on a species at risk, either directly or indirectly, will not be subject to this RCSR (see Section 2.3). See Appendix 1 for a list of environmental information resources that provide direction to more species at risk information.

4.3 Issues Scoping and Valued Environmental Components

Issue scoping included analysis of previous project activities with respect to locations and identified ecosystem receptors. The scoping exercise was internal and focused on existing information and institutional knowledge.

A VEC-project interaction matrix, provided in Table 1 identifies the possible interactions between project activities and ecosystem components within the spatial boundaries of this assessment, including accidents and malfunctions. Only the ecosystem components that have the potential to be affected by the projects have been selected as VECs for further analysis in this EA.

VECs have been identified by assessing parts of the ecosystem that may be affected as a result of project activities. This discussion is separated into physical-chemical, ecological, and anthropogenic effects.

VECs were determined based on the benefits they provide ecologically and socially. VEC-project interactions were then identified by reviewing project activities and their relationship to physical-chemical, ecological, and anthropogenic elements. A summary of VEC justifications and project activities interactions is included in Table 2.

4.4 Potential Environmental Effects

The ensuing discussion briefly describes the potential environmental effects associated with unmitigated project activities. This discussion is separated into physical-chemical, ecological,

and anthropogenic effects. The potential environmental effects associated with VEC - project interaction and a summary of the mitigation measures that addresses these effects are provided in Table 3.

Table 1: Valued Environmental Components-Project Interaction Matrix

PROJECT PHASE	PROJECT ACTIVITIES	Valued Environmental Components																															
		PHYSICAL – CHEMICAL EFFECTS																ECOLOGICAL EFFECTS												ANTHROPOGENIC EFFECTS			
		WATER RESOURCES								LAND RESOURCES						ATMOSPHERIC QUALITY				SPECIES AND POPULATIONS								COMMUNITIES AND HABITATS							
																		TERRESTRIAL				AQUATIC											
		WATER TABLE ALTERATION	GROUND WATER FLOW	GROUND WATER QUALITY CHANGES	SHORELINE AND BOTTOM ALTERATION	SURFACE FLOW VARIATION	FRESHWATER QUALITY	MARINE WATER QUALITY CHANGES	WETLANDS/MARSHES	SOIL EROSION	SOIL QUALITY	UNIQUE PHYSICAL FEATURES	COMPACTION AND SETTLING	STABILITY (SLIDES AND SLUMP)	GEOLOGY	AIR QUAILITY	NOISE	DUST	CLIMATE CHANGE	VEGETATION	BIRDS AND MAMMALS	AMPHIBIANS AND REPTILES	INVERTEBRATES	VEGETATION	BIRDS AND MAMMALS	AMPHIBIANS AND REPTILES	FISH AND INVERTEBRATES	TERRESTRIAL COMMUNITIES	TERRESTRIAL HABITATS	AQUATIC COMMUNITIES	AQUATIC HABITATS	HUMAN HEALTH & SAFETY	HERITAGE / ARCHAEOLOGICAL RESOURCES	LAND/ RESOURCE USE	AESTHETICS
CONSTRUCTION/ INSTALLATION/ REPLACEMENT	**CONSTRUCTION/INSTALLATION OF NEW TANKS AND PADS** (incl. transportation and operation of all equipment required for such activities)			•			•	•	•	•	•					•	•	•		•	•	•	•	•	•	•	•			•	•	•	•		•
	EXPANSION, MODIFICATION, AND REPLACEMENT OF EXISTING TANKS AND PADS (incl. transportation and operation of all equipment required for such activities)			•			•	•	•	•	•					•	•	•		•	•	•	•	•	•	•	•			•	•	•	•		•
	DISPOSAL OF WASTE MATERIALS (incl. transportation methods)			•			•	•	•	•	•					•	•	•		•	•			•	•	•	•			•	•	•	•		•
OPERATION/ MAINTENANCE	**PUMPING OF FUEL AND FILLING OF TANKS**			•			•	•	•		•					•	•	•			•	•	•	•	•	•	•			•	•	•	•		•
	DISPOSAL OF WASTE MATERIALS			•			•	•	•	•	•					•	•	•		•	•			•	•	•	•			•	•	•	•		•
REMOVAL/ DECOMMISSIONING	**PERMANENT REMOVAL OF TANKS AND PADS** (incl. transportation and operation of all equipment required for such activities)			•			•	•	•	•	•					•	•	•		•	•	•	•	•	•	•	•			•	•	•	•		•
ACCIDENTS/ MALFUNCTIONS	**UPSETS** (incl. transportation and operation of all equipment required for remediation activities)			•			•	•	•	•	•					•	•	•		•	•	•	•	•	•	•	•			•	•	•	•		•

- indicates interaction.

Table 2: VEC Justification and Project Activities Interaction

Valued Environmental Components	VEC Justification	Project Phase	VEC – Project Activities Interaction
PHYSICAL-CHEMICAL			
Water Resources	- changes to groundwater quality. - changes to freshwater quality. - changes to marine water quality. - physical/chemical alterations to wetland/marsh characteristics or function.	- construction	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions), installation of concrete pads and other ancillary features (i.e., barricades and fencing), waste disposal, and installation, expansion, modification, or replacement of ASTs. - temporary interruption of services to fisheries and recreational activities.
		- operation/ maintenance	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions), disposal of waste materials, and maintenance and operation of ASTs.
		- removal/ decommissioning	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions), removal of concrete pads and other ancillary features (i.e., barricades and fencing), and removal and/or decommissioning of ASTs. - temporary interruption of services to fisheries and recreational activities.
Land Resources	- creation of soil erosion. - changes to soil quality.	- construction	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions), installation of concrete pads and other ancillary features (i.e., barricades and fencing), waste disposal, and installation, expansion, modification, or replacement of ASTs. - interactions with archaeological artefacts.

Valued Environmental Components	VEC Justification	Project Phase	VEC – Project Activities Interaction
		- operation/ maintenance	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions), pumping of fuel and filling of tanks, disposal of waste materials, and operation of ASTs.
		- removal/ decommissioning	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions), removal of concrete pads and other ancillary features (i.e., barricades and fencing), and removal and/or decommissioning of ASTs.
Atmospheric Quality	- changes to air quality. - increase in noise activity above ambient noise levels. - creation of dust above ambient levels.	- all phases	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions). - chemical/physical interactions with AST system activities (operation, decommissioning).
ECOLOGICAL			
Species and Populations	- disturbance of terrestrial and aquatic vegetation. - disturbance of terrestrial and aquatic birds and mammals. - disturbance of terrestrial and aquatic amphibians and reptiles. - disturbance of terrestrial and aquatic invertebrates. - disturbance of fish.	- construction	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions), installation of concrete pads and other ancillary features (i.e., barricades and fencing), hydrocarbon emissions, waste disposal, and installation, expansion, modification, or replacement of ASTs. - transportation to/from the site including by boat or helicopter.
		- operation/ maintenance	- chemical/physical interactions from machinery operation (i.e., hydrocarbon emissions), disposal of waste materials, hydrocarbon emissions, and maintenance and operation of ASTs.

Valued Environmental Components	VEC Justification	Project Phase	VEC – Project Activities Interaction
		- removal/ decommissioning	- physical/chemical interactions from machinery operation (i.e., hydrocarbon emissions), removal of concrete pads and other ancillary features (i.e., barricades and fencing), hydrocarbon emissions, and removal and/or decommissioning of ASTs.
Communities and Habitats	- disturbance of and changes to aquatic communities. - disturbance of and changes to aquatic habitats.	- construction	- physical/chemical interactions from machinery operation (i.e., hydrocarbon emissions), installation of concrete pads and other ancillary features (i.e., barricades and fencing), wasted disposal, hydrocarbon emissions, and installation, expansion, modification, or replacement of ASTs.
		-operation/ maintenance	- physical/chemical interactions from machinery operation (i.e., hydrocarbon emissions), disposal of waste materials, hydrocarbon emissions, and maintenance and operation of ASTs.
		- removal/ decommissioning	- physical/chemical interactions from machinery operation (i.e., hydrocarbon emissions), removal of concrete pads and other ancillary features (i.e., barricades and fencing), hydrocarbon emissions, and removal and/or decommissioning of ASTs.
ANTHROPOGENIC			
Health and Safety	- risk to and protection of human health and safety.	- all phases	- potential accidents and health repercussions from physical dangers including machinery operation and contact with hydrocarbons.

Valued Environmental Components	VEC Justification	Project Phase	VEC – Project Activities Interaction
Socio-Cultural	- disturbance to site function and normal operation. - disturbance and changes to heritage/archaeological resources. - changes to aesthetics of the site.	- all phases	- improved infrastructure for commercial and recreational vessels. - temporary interruption of services to fisheries and recreational activities.

Table 3: Potential Environmental Effects and Mitigation Measures Summary

VEC	Potential Environmental Effects	Mitigation Measures
WATER RESOURCES	Potential contamination from improperly disposed AST systems. Potential contamination from an improperly installed, modified, expanded, maintained, or decommissioned AST system. Potential contamination from hydrocarbons released from machinery. Potential of erosional runoff leaving the site during pad replacement. Potential hydrocarbon contamination from the improper operation of AST systems. Potential contamination from disposal of waste material.	AST SYSTEM INSTALLATION/OPERATION/MAINTENANCE 1. AST systems must be designed, installed, operated, expanded, modified, removed, or decommissioned in accordance with the CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008). 2. Proper storage and refueling procedures for AST operation must be adhered to. 3. An approach of "contain and recover" should be adopted. Drop sheets or other means should be used to prevent paint chips and other debris from entering the surrounding aquatic environment. Refuse must be disposed of appropriately. MACHINERY OPERATION 1. Machinery must be regularly checked for leakage of lubricants or fuel and must be maintained in proper working order. 2. Equipment and vehicle refueling must be done at least 30m from any water body or wetland and on an impermeable surface. Petroleum spill clean-up equipment, adequate for the activity involved, must be on-site. Spill equipment will include, as a minimum, at least one 250L (i.e., 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks should be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). 3. Vehicles must remain on stable, hardened surfaces and not be operated below the line of Highest High Water (never in the intertidal zone). 4. Operations must only occur where entirely necessary to complete the works to reduce effects to nearby soils, vegetation, and resident species. Respect must be given to the natural environment to minimize the footprint of the project. CONCRETE PAD INSTALLATION 1. When placing concrete, spills of fresh concrete must be prevented. If concrete is discharged from the transit mixer directly to the form work or placed by wheelbarrow, proper sealed chutes must be constructed to avoid spillage. If the concrete is being placed with a concrete pump, all hose and pipe connections must be sealed and locked properly to ensure the lines will not leak or uncouple. Crews must ensure that concrete forms are not filled to overflowing. 2. All concrete forms must be constructed and sealed in a manner that will prevent fresh concrete or cement laden water from leaking into the surrounding water. 3. All tools, pumps, pipes, hoses, and trucks used for finishing, placing, or transporting

VEC	Potential Environmental Effects	Mitigation Measures
		fresh concrete must be washed off in such a way to prevent the wash off water from entering the marine environment. The wash water must be contained and disposed of upland in an environmentally acceptable manner. 4. Any fill material used during pad replacement (if any) must be non-toxic, free of fines and sediments, and obtained from an approved site. 5. Installation, operation, expansion, modification, removal, decommissioning, or landscaping must be carried out in such a manner that sediment/silt does not enter any adjacent watercourses or wetlands. 6. To prevent erosional runoff during pad replacement, work must be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric, sediment fences, etc.) must be used, as appropriate, to prevent erosion and release of sediment into any adjacent watercourses or wetlands. GENERAL 1. Any material or debris lost as a result of wave or storm action must be immediately recovered by the operator when safe to do so. 2. Activities must be completed in such a way as to minimize the amount of fines and organic debris that may enter nearby aquatic environments. 3. Contaminated material must not be placed in a non-contained area. 4. All construction, operational, and maintenance wastes must be recycled where possible or otherwise disposed of appropriately. Any hazardous waste (i.e., fuels, lubricants) must be stored in sealed, labeled containers and disposed of in accordance with applicable regulations. 5. All debris deposited throughout the life of the project must be removed from the site.
LAND RESOURCES	Contamination of the soil from fuel spills from either an AST system or machinery. Soil exposed during pad replacement may erode. Potential hydrocarbon contamination from the improper operation of AST systems. Potential contamination from disposal of	AST SYSTEM INSTALLATION/OPERATION/MAINTENANCE 1. AST systems must be designed, installed, operated, expanded, modified, removed, or decommissioned in accordance with the CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008). 2. Proper storage and refueling procedures for AST system operation must be adhered to. 3. An approach of "contain and recover" must be adopted. Drop sheets or other means must be used to prevent paint chips and other debris from entering the surrounding terrestrial environment. Refuse must be disposed of appropriately.

VEC	Potential Environmental Effects	Mitigation Measures
	waste material.	MACHINERY OPERATION 1. Machinery must be regularly checked for leakage of lubricants or fuel and must be maintained in proper working order. 2. Refueling must be done at least 30m from any water body or wetland and on an impermeable surface. Petroleum spill clean-up equipment, adequate for the activity involved, must be on-site. Spill equipment will include, as a minimum, at least one 250L (i.e., 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks should be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). CONCRETE PAD INSTALLATION 1. All construction, operational, and maintenance wastes must be recycled where possible or otherwise disposed of in a provincially approved manner. Any hazardous material (i.e., fuels, lubricants) must be stored in sealed, labelled, containers and disposed of in accordance with applicable regulations. 2. Any exposed soil must be minimized by limiting the area that is exposed at one time and by limiting the time that any one area is exposed. If soil is stockpiled, it must be covered with hay mulch and/or dyked to prevent erosion. 3. Any fill material used during pad replacement (if any) must be non-toxic, free of fines and sediments, and obtained from an approved site. GENERAL 1. All construction, operational, and maintenance wastes must be recycled where possible or otherwise disposed of in a provincially approved manner. Any hazardous material (i.e., fuels, lubricants) must be stored in sealed, labelled, containers and disposed of in accordance with applicable regulations. 2. Contaminated material must be properly handled and contained, and disposed of at an approved treatment or disposal facility.

VEC	Potential Environmental Effects	Mitigation Measures
ATMOSPHERIC QUALITY	Noise, dust, and fumes generated as a result of the installation, operation, expansion, modification, removal and/or decommissioning of AST systems. Short-term exposure to contaminated air quality as a result of hazardous material spills or equipment malfunctions. Operation at the project site may cause short-term elevated noise levels and dust. Construction activities may cause increase in dust material. Use of heavy machinery may cause short-term elevated noise levels and emissions at the site.	MACHINERY OPERATION 1. All construction equipment must be fitted with standard and well-maintained noise suppression devices. Engines must not be allowed to idle excessively between work periods. 2. Construction activities must be carried out during times acceptable to local authorities and smaller, less disturbing equipment will be used where possible. GENERAL 1. Dust suppression by the application of water must be employed when required. The project authority shall determine locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied. Waste oil must not to be used for dust control under any circumstances.

VEC	Potential Environmental Effects	Mitigation Measures
SPECIES AND POPULATIONS/ COMMUNITIES AND HABITATS	Potentially adverse effects on aquatic and terrestrial flora and fauna from improperly disposed AST systems. Potentially adverse effects on aquatic and terrestrial flora and fauna from vegetation clearing and improperly installed, modified, expanded, maintained, or decommissioned AST systems. Potentially adverse effects on aquatic and terrestrial flora and fauna from hydrocarbons released from machinery. Potentially adverse effects on aquatic flora and fauna due to erosional runoff leaving the site during pad replacement. Potentially adverse effects on aquatic and terrestrial flora and fauna from disposal of waste material. Potential adverse effects to migratory birds during site access.	AST SYSTEM INSTALLATION/OPERATION/MAINTENANCE 1. Mitigation presented for water and land resources is also applicable for Species and Populations and Communities and Habitats and implementation of the mitigation measures listed below will ensure compliance with the *Migratory Birds Convention Act* (MBCA). 2. If a nest is found during vegetation clearing activities, the nest site and neighboring vegetation will be left undisturbed until nesting is completed. Construction activities will also be minimized in the immediate area until nesting is completed. GENERAL 1. If construction activities require access to the site by water, main channels must be used, where feasible. Any watercourse crossing must be approved by DFO HMP and the province. 2. Concentrations of seabirds, waterfowl, or shorebirds must not be approached when approaching the project area, accessing wharves, or ferrying supplies. 3. Wetlands or sensitive coastal habitats (i.e., any area in which plant or animal life or their habitats are either rare or especially valuable) must not be accessed nor used as staging areas. 4. All vessels and machinery should be well muffled, and maintained in proper working order and must be regularly checked for leakage of lubricants or fuel. 5. Public roads must be used to access the project area, where feasible. 6. Helicopter use near seabird breeding colonies must be avoided from May 1st to August 31st. Helicopter use outside this temporal window must include an adjustment to altitude and pattern of flight lines in order to minimize disturbance to migratory birds.

VEC	Potential Environmental Effects	Mitigation Measures
HEALTH AND SAFETY/SOCIO-CULTURAL	Project crews are vulnerable to health risks from exposure to fumes from machinery and contact with hydrocarbons. In addition, the public may be affected by temporary disruptions during works. The aesthetic of construction, operation, and decommissioning could be perceived to be negative. Potential damage to or destruction of historical or archaeological artifacts. The project will result in improved infrastructure for commercial and recreational vessels.	AST SYSTEM INSTALLATION/OPERATION/MAINTENANCE 1. Site access must be restricted to construction personnel and authorized visitors. Workers must be provided with appropriate personal protective equipment. 2. Operations must only occur where entirely necessary to complete the works to reduce effects to nearby soils, vegetation, and resident species. Respect must be given to the natural environment to minimize the footprint of the project. MACHINERY OPERATION 1. Storage of fuels and petroleum products must comply with safe operating procedures, including containment facilities in case of a spill. 2. Onsite crews must have emergency spill clean-up equipment, adequate for the activity involved, must be on-site. Spill equipment will include, as a minimum, at least one 250L (i.e., 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). GENERAL 1. Aesthetic effects created by activities are expected to be short-term and localized. Sites must be kept in a tidy manner during activities and left in a good condition at the end of the project. 2. Activities must be completed in such a way as to minimize the amount of fines and organic debris that may enter nearby aquatic environments. 3. All personnel involved with activities must be adequately trained and utilize appropriate personal protective equipment. 4. Archaeological sites in remote locations may not have been previously identified. Care must be taken to observe and identify any archaeological deposits while work is being completed. Work must be stopped if evidence shows a potential archaeological artifact or deposit and a provincial representative contacted: NB – Albert Ferguson (506) 453-2756; NS – Robert Ogilvie (902) 424-6475; PEI – Charlotte Stewart (902) 368-5940; NL – Martha Drake (709) 729-2462. 5. All debris deposited throughout the life of the project must be removed from the site. 6. All laws, regulations, guidelines, and best practices from federal, provincial, or municipal governments or their officers must be strictly followed. Any apparent conflicts or discrepancies must be successfully resolved before the pertinent work can proceed. 7. Proper notice must be given to the appropriate authorities to warn of potential disruptions during works.

4.4.1 Physical-Chemical Effects

Water: Changes in marine and/or freshwater quality could result from project activities such as the removal of old AST systems and concrete pads and improper disposal of waste materials. Fines, foreign materials and organic debris could also enter the aquatic environment or wetlands while old pads are being removed and new pads are installed. The environmental effects from the release of fines, foreign materials and organic debris would be expected to last only as long as the removal and installation phases are engaged: from approximately one day to one week. The environmental effects from the physical-chemical interactions during system removal or operation could last a significantly long time depending on the volume of the spill and proximity to the marine environment, groundwater or surface water.

Land: Site access and machinery operation could contribute to soil erosion. Material that is removed during excavations and backfilling and is not stabilized may contribute to soil erosion during the removal and installation phases of the project. Soil quality may be altered from physical-chemical interactions between the soil and heavy machinery, equipment, or AST systems throughout the life of the project.

Atmosphere: The primary atmospheric effects are localized noise, dust, and emissions that result from machinery operation and activities. The duration of these effects is equal to project activity duration: approximately one day to a week. Fumes may also be emitted from the AST systems during operation, maintenance, and decommissioning activities.

4.4.2 Ecological Effects

The projects could have adverse effects on species and populations as well as communities and habitats. Aquatic and terrestrial fauna might experience short-term disturbance from dust, noise, and reduced air quality in the vicinity of the project site. The transportation and disposal of waste materials and/or hydrocarbons could have adverse effects on terrestrial vegetation if these procedures are not carried out properly. Adverse effects from potential hydrocarbon spills as the result of project activities may be significant in terms of both temporal and spatial boundaries. In addition, terrestrial habitats may be disturbed as a result of heavy equipment use and/or installation of an AST system at a new location. It is expected, however, that these habitats would return following decommissioning activities. It should also be noted that the AST projects will be mostly carried out at well-developed sites such as SCH areas, therefore the potential for significant impacts to ecological resources is minimal.

In light of the new CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008), the installation of improved AST systems and removal of older systems will prevent soil and groundwater contamination by reducing the chance of accidental spill or leakage of petroleum or allied petroleum products. This would also contribute to reduced potential for adverse effects to the surrounding ecological setting, including species and habitats.

4.4.3 Anthropogenic Effects

Project crews and site users are vulnerable to health risks from exposure to fumes from machinery and hydrocarbons. Safety risks may result from machinery operation, accidental falls, and site access.

An archaeological survey of potential sites for AST projects has not been conducted. The projects will require some excavation of the underlying soil during pad replacement, however in a limited fashion. In addition, most of the sites have a long history of anthropogenic activities and many are highly developed, such as SCH harbours. The potential for the disruption of archaeological/heritage resources is considered to be minimal.

Archaeological sites in remote locations may not have been previously identified. Care should be taken to observe and identify any archaeological deposits while work is being completed. Work must be stopped if evidence shows a potential archaeological artifact or deposit and the following provincial representatives will be contacted:

- New Brunswick: Albert Ferguson – (506) 453-2756;
- Nova Scotia: Robert Ogilvie – (902) 424-6475;
- Prince Edward Island: Charlotte Stewart – (902) 368-5940; and
- Newfoundland and Labrador: Martha Drake – (709) 729-2462.

Specifically, an assessment has been made on the interaction with potential or established Aboriginal or Treaty rights (with respect to fisheries) at those sites. Prior to any project-related activities occurring, the DFO Area Aboriginal Coordinator will be contacted, as appropriate, by project authorities.

The projects will improve the infrastructure at DFO properties. In light of the new CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008), the installation of improved AST systems and removal of older systems will prevent soil and groundwater contamination by reducing the chance of accidental spill or leakage of petroleum or allied petroleum products, thereby reducing associated human and environmental health risks.

4.5 Effects of Accidents and Malfunctions

The likelihood of accidents or malfunctions occurring and causing negative environmental impacts due to project activities and physical works is minimal. Potential accidents and malfunctions may occur during the removal and installation phases and during operation and maintenance activities. These may include:

- vehicle collisions;
- spills from equipment operated on site;
- mechanical failures;
- spills or leaks (from chemicals) into the marine and terrestrial environment; and
- major storm events.

Project activities that could result in accidents and/or malfunctions largely relate to the operation and maintenance of heavy machinery, vehicles, and the use of hand tools. Mechanical failures, vehicle collisions, spills, and leaks would likely be attributed to human error. Spills resulting from improperly stored materials are also possible. Major storm events could cause erosion or mobilization of contaminated soils or backfill with potential impacts on downstream populations or habitats. These accidental spills or unplanned events related to hazardous materials can be damaging to the terrestrial, freshwater, or marine environment.

Accidents and malfunctions will be avoided through compliance with mitigation measures listed in Table 3 and Appendix 2 of this RCSR. For example, vehicles will be regularly serviced to avoid malfunctions and all spills, regardless of size, will be reported in accordance with local legislation. Weather forecasts will be monitored and contingency plans will be in place as required by mitigation measures.

4.6 Effects of the Environment on the Project

Under the Act, an EA must consider potential effects the environment may have on projects. Increased weather extremes and a number of adverse events may affect the projects. Following standards and ensuring protection against these effects are increasingly important. The projects are vulnerable to a variety of effects from the environment such as:

- Extreme and adverse weather-related effects (i.e., heavy precipitation) that can delay project activities and can damage the projects, and/or cause unpredictable run-off, erosion, or sedimentation during the pad removal and/or installation phase and/or cause problems for machinery operation.
- Tidal surges and flooding in the vicinity of project activities, given that many of the sites are adjacent to the coastline and in relatively low-lying estuarine areas
- High winds could become a liability, potentially leading to damage to wharf infrastructure, AST systems, machinery, or personnel when cranes are lowering ASTs into place.

The effects that have been identified are considered mitigable and avoidable through design and the use of stringent remediation standards. Mitigation measures to avoid effects of the environment on the projects are covered in Table 3, and Appendix 2 of this RCSR.

4.7 Mitigation Measures

Mitigation measures that address the environmental effects associated with AST systems have been developed through various levels of government, industry Best Management Practices (BMP) and internal DFO protocols. The mitigation measures included in these documents have been synthesized, modified, and enhanced for the purposes of this report.

DFO project authorities will ensure that mitigation measures will be implemented by including the necessary compliance with the RCSR in contracts with outsourced projects. Furthermore, all DFO staff involved in project activities will be required to read the RCSR and implement it properly as part of standard operating procedures. All projects will be supervised by a qualified environmental professional to ensure compliance with the RCSR and all regulatory requirements. A copy of the RCSR will be available on-site when project activities are being conducted.

A full copy of the RCSR mitigation measures is included in Table 3, which includes a summary of the potential environmental effects and mitigation measures that address these effects organized by VEC. Standard mitigation measures, organized by project activity, are included in Appendix 2 with the intention of providing a convenient reference for crews to access the measures to be implemented.

The primary sources for the measures included in this report are previous screening documents written for AST projects at SCH harbours, light station and fixed navigational aid properties. These documents provided a suitable starting point for mitigation measures as they include standard mitigation measures for RCSR-applicable project activities.

4.8 Analysis and Prediction of Significance of Residual Environmental Effects

Residual effects are those environmental effects that remain after the application of design standards and the implementation of mitigation measures. Under the Act, the significance of residual environmental effects must be considered. This section provides criteria for evaluating the significance of potentially adverse residual environmental effects. Analysis of the significance of residual environmental effects is based on several criteria including magnitude, geographic extent, duration, frequency, and reversibility (see Table 4). This table was adapted in reference to the November 1994 Agency Reference Guide, *Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects*, and *The Responsible Authority's Guide* (Canadian Environmental Assessment Agency, 1994a). The criteria were assessed using past experience and professional judgment and are combined to determine whether or not an activity's effect is significant.

Table 4: Rating System Used to Determine the Significance of Residual Environmental Effects

Criteria	Negligible	Minor	Major
Magnitude	Minute levels of disturbance and/or damage (i.e., within natural variation).	Low levels of disturbance and/or damage (i.e., temporarily outside range of natural variation).	High levels of disturbance and/or damage (i.e., outside the range of natural variation).
Geographic Extent	Limited to direct project site.	Extends beyond direct project site but remains within the project boundaries.	Extends beyond the project boundaries.
Duration of Effects	Less than one day.	Days to weeks.	A month or longer.
Frequency of Effects	Occurs on a monthly basis or less frequently.	Occurs on a weekly basis.	Occurs on a daily basis or more frequently.
Reversibility	Effects reversible over short term without active management.	Effects reversible over short term with active management.	Effects reversible over extended term with active management or effects are not reversible.
Ecological Context	Occurs in a previously developed or disturbed area for the same purpose or function.	Occurs in a previously developed or disturbed area for purposes that differ from original purpose or function.	Occurs in an area that is ecologically fragile, sensitive to imposed stresses, or not previously impacted or disturbed by human activities.

The above rating system was used to determine whether or not a residual environmental effect was significant based on the following definitions:

Significant: A residual environmental effect is considered significant when it introduces frequent, major levels of disturbance and/or damage and when the effects last longer than a month and extend beyond the project boundary following the application of mitigation measures. It is either reversible with active management over an extended term or irreversible. A significant effect would not be consistent with well-defined environmental protection outcomes such as no degradation of shorelines, no loss of fish or aquatic habitat, no contamination of land, etc. and as defined would be in violation of the CEPA, 1999 and/or the *Fisheries Act*.

Not Significant: A residual environmental effect is considered *not significant* when it has minor or negligible levels of disturbance and/or damage, the effect lasts less than a week, and is contained within the project boundaries following the application of mitigation measures. An effect that is *not significant* is reversible with or without short-term active management.

Residual effects from project activities affect identified VECs including water, land, atmosphere, species and populations/communities and habitats, and socio-cultural factors. Each of these residual effects has been examined according to the above criteria ratings and all of the residual effects were found to be insignificant. Table 5, below, includes a summary of the criteria and significance of the residual environmental effects associated with AST projects.

Table 5: Significance of Residual Environmental Effects

			Criteria Ratings						
VEC	**Project Phase/Elements**	**Residual Environmental Effects**	**Magnitude**	**Geographic Extent**	**Duration of Effect**	**Frequency of Effect**	**Reversibility**	**Ecological Context**	**Significance**
WATER RESOURCES	All phases	None expected.	1	1	1	1	1	1	**Not Significant**
LAND RESOURCES	All phases	Chemical change: soil structure in a small, localized manner.	1	1	1	1	1	1	**Not Significant**
ATMOSPHERIC QUALITY	All phases	Chemical release of fumes and dust.	2	1	2	1	1	1	**Not Significant**
	All phases	Noise.	2	2	2	1	1	1	**Not Significant**
SPECIES AND POPULATIONS/ COMMUNITIES AND HABITATS	All phases	Short term disturbance to terrestrial and aquatic species.	1	1	1	1	1	1	**Not Significant**
SOCIAL/CULTURAL FACTORS	All phases	Improved infrastructure Reduced human health risks.	1	1	+	+	1	1	**Not Significant**

Legend: 1=Negligible, 2=Minor, 3=Major, + = positive effect

4.9 Cumulative Environmental Effects

The Act requires that the assessment of potential environmental effects also consider whether cumulative environmental effects are likely to occur. Cumulative environmental effects are defined as "changes to the environment that are caused by an action in combination with other past, present and future human activities" (Canadian Environmental Assessment Agency, 1999). The concept of cumulative environmental effects recognizes that the environmental effects of individual activities can combine and interact with each other to cause aggregate effects that may be different in nature or extent from the effects of the individual activities (Canadian Environmental Assessment Agency, 1994b).

For the purposes of assessing whether cumulative environmental effects are likely to occur, the identification of likely future projects should take into consideration projects that are certain (i.e., approved, under regulatory review, or officially announced to regulatory agencies) and reasonably foreseeable (i.e., identified in a development plan that is approved or under review, or conditional upon approval of a development plan that is under review). Hypothetical actions (i.e., conjectural or discussed on a conceptual basis) are not considered (Canadian Environmental Assessment Agency, 1999).

The potential environmental effects associated with AST projects are short-lived, localized, and reversible; their capacity to act in a cumulative manner is minimal. For the purposes of this RCSR, the cumulative effects assessment must consider the potential cumulative effects resulting from: (1) other projects addressed by this RCSR, (2) other project/activities within the site boundaries, and (3) projects and activities occurring outside the site boundaries.

4.9.1 Analysis of Cumulative Project Interactions

Interactions Between the Projects

The environmental effects associated with the projects, as defined by this RCSR, have been found to be negligible, and limited to each individual project site. Project sites are isolated so it is not possible for interactions between projects to occur. Considering these factors, the environmental effects of individual AST projects are not likely to contribute to cumulative effects in combination with other project sites.

Interactions Between the Projects and Other Projects/Activities Inside Site Boundaries

The environmental effects of interactions between the projects and other projects/activities inside the site boundaries must be factored into the consideration of cumulative effects.

Due to the small size of each individual AST project's boundaries, it is highly unlikely that other projects will occur while the activities are occurring. At SCH locations there are day-to-day operational and maintenance activities to consider. There is potential that industrial or recreational activities may occur within the boundaries of some projects. These are routine activities (boat loading/unloading, vessel launching, facility repairs and maintenance, etc.) that typically have minimal or negligible environmental effects. Other projects may occur within the DFO site boundaries and may interact with the AST project activities.

Given that the potential environmental effects resulting from the AST projects at a site are expected to be negligible and limited to the immediate area of each individual project, it is unlikely that the environmental effects of the projects will interact with the environmental effects of other project/activities inside the site boundaries and contribute to cumulative effects.

Interactions Between the Projects and Projects/Activities Outside Site Boundaries

The environmental effects of interactions between the projects and projects/activities outside site boundaries must be considered during the assessment of cumulative effects.

There is potential for a wide range of activities/projects to occur outside of the project boundaries. Fishing, shipping, recreational, and residential activities may occur outside of project boundaries. These are routine activities that typically have minimal or negligible environmental effects. Outside the immediate project area potential adverse cumulative environmental effects are considered improbable and insignificant.

4.9.2 Summary of Cumulative Effects on Valued Environmental Components

Taking the mitigation measures from Section 4.7 of this RCSR into account, potential adverse environmental effects would be limited to each individual project site. Consequently, potential adverse cumulative environmental effects are unlikely to occur either inside or outside the project boundaries.

Proper project planning and design will take into account surrounding infrastructure and other projects or activities inside and outside of project boundaries which could have the potential to act in a cumulative manner on affected VECs. Consequently, the potential for any cumulative effects to occur as a result of project interactions with other the projects, other projects, or activities inside or outside the sites' boundaries are unlikely.

DFO will assess cumulative effects on an annual basis. DFO will report on the continuing validity of cumulative environmental effects assessments on a yearly basis.

4.10 Summary of Significance of Residual Environmental Effects (including Cumulative Effects)

All residual environmental effects remaining after the application of recommended mitigation measures were found to be negligible or insignificant and limited to the immediate project area. Although the potential exists for short-term environmental effects during the projects, the implementation of recommended mitigation measures will result in insignificant impacts. DFO concludes that projects under this RCSR will not likely contribute to significant adverse environmental effects, provided that the recommended mitigation measures are applied.

5. Roles and Responsibilities

5.1 Responsible Authorities

DFO, as the proponent, can be considered the lead RA for all components of the RCSR. It should be noted that since the RA is DFO, the RCSR can be applied, where appropriate, by all branches of the department. Structures and activities included in the report have been selected to minimize the potential for additional permitting and, therefore, the inclusion of other RAs.

It will be the responsibility of DFO to:

- ensure that projects are properly identified as class-applicable;
- ensure that applicable mitigation measures are implemented;
- place a regular statement on the Registry Internet site noting the extent to which the RCSR has been used, as identified in Section 1.4;
- maintain the Registry project file, ensure convenient public access, and respond to information requests in a timely manner; and
- provide annual confirmation of the continuing validity of cumulative effects assessment conditions to the Agency.

5.2 Roles and Responsibilities of Other Responsible Authorities and Federal Authorities

The following sections describe the roles and responsibilities of other federal authorities that may be involved in AST projects.

5.2.1 Transport Canada

This RCSR does not exempt DFO from the requirement to obtain approval in accordance with Federal laws such as the *Navigable Waters Protection Act* (NWPA). The NWPA requires that the proponent (DFO) apply for approval of any work located in, on, over, under, through or across any navigable water. However, the scope of the projects included in this RCSR does not include any such work, so Transport Canada is not a RA.

5.2.2 Others

If permitting or approval is required from an FA other than DFO, this RCSR will not apply and an individual assessment under the Act may be required. Potential FAs of note include other entities that have been delegated with land management: Parks Canada, Port Authorities, Transport Canada, and Indian and Northern Affairs Canada, for example. Also, if an additional approval is required from within DFO in the form of a *Fisheries Act* Authorization from DFO Habitat Management Program (HMP), this RCSR will not apply.

The following list includes FAs that have provided comments regarding this report's identification of potential environmental effects, recommended mitigation measures, and procedures. Comments have been incorporated as appropriate such that further referrals to these FAs will not be required except as outlined in this report:

- EC; and
- DFO HPSD.

Any project that requires further assessment by or referral to another FA will not be included in this RCSR.

5.3 Provincial Coordination

This RCSR is not designed to compensate for provincial requirements nor does it eliminate the need for provincial project-specific approvals where required. This RCSR does not exempt DFO from complying with relevant provincial legislation.

6. Procedures for Amending the Replacement Class Screening Report

The RA will notify the Agency in writing of its interest to revise the RCSR as per the terms and conditions of the declaration. It will discuss the proposed revisions with the Agency and affected federal government departments and may invite comment from stakeholders on the proposed changes. For a re-declaration of the RCSR, a public consultation period will be required. The RA will then submit the proposed revisions to the Agency, along with a statement providing a rationale for each revision proposed as well as a request that the Agency amend or re-declare the RCSR.

6.1 Amendments

The purpose of an amendment is to allow for minor modifications to the RCSR after experience has been gained with its operation. Amendments do not require public consultation and do not allow for changes to the term of application. In general, amendments to the RCSR can be made if the Agency is satisfied that changes:

- represent editorial changes intended to clarify or improve the document and procedures screening process;
- streamline or modify the planning process; and/or
- do not materially alter either the scope of the projects subject to the RCSR or the factors to be considered in the assessment required for these projects.

6.2 Re-declaration

The purpose of a re-declaration is to allow substantial changes to the RCSR after experience has been gained with its operation. Re-declarations require a public consultation period. A re-declaration of an RCSR may be undertaken for the remaining balance of the original declaration period or for a new declaration period if the changes:

- extend the application of the RCSR to projects or environmental settings that were not previously included, but are similar or related to projects included in the class definition;
- represent modifications to the scope of the projects subject to the RCSR or the factors to be considered in the assessment required for these projects;
- reflect new or changed regulatory requirements, policies or standards;
- introduce new design standards and mitigation measures;
- modify the federal coordination notification procedures;
- extend the application of the RCSR to RA(s) who were not previously declared users of the report;
- remove projects that are no longer suitable for the class; and/or
- extend the term of application of the RCSR.

6.3 Term of Application

Based on the repetitive and predictable nature of these projects and DFO's extensive experience implementing and monitoring the projects in the Atlantic Provinces this report will be in effect for five (5) years from its date of declaration. The term of application is consistent with the objectives of the RCSR as it will reduce the administrative burden of such EAs for small projects over a long term while continually monitoring the effectiveness of the RCSR and reporting on cumulative effects assessments. These projects are generally supported by the public and have not historically resulted in negative public comments. DFO does not anticipate public concerns regarding the activities over the next decade. Past projects have shown that the implementation of the standard operating protocols described in the RCSR are effective in ensuring that significant adverse environmental effects do not occur. Therefore DFO does not anticipate adverse environmental effects as a result of these projects.

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Personal Communications/Consultations

Durigon, Deborah: Class Screening Advisor, Canadian Environmental Assessment Agency

Furness, Janielle: Public Works and Government Services Canada

Grant, Carole: Fisheries and Oceans Canada – Habitat Protection and Sustainable Development, Newfoundland & Labrador

Ingram, Daniel: Environment Canada

MacDonald Paul: Fisheries and Oceans Canada – Small Craft Harbours

MacLean, Melanie Ann: Fisheries and Oceans Canada – Habitat Protection and Sustainable Development, Nova Scotia

MacLean, Roxanne A.: Fisheries and Oceans Canada – Real Property, Safety and Security

Meade, James: Fisheries and Oceans Canada – Habitat Evaluation Section, Newfoundland & Labrador

Melanson, Terry: Fisheries and Oceans Canada – Habitat Protection and Sustainable Development, New Brunswick

Powell, Andrea: Public Works and Government Services Canada

Appendix 1

Environmental Information Resources

Environmental Information Resources

Fisheries and Oceans Canada	• Home page (http://www.dfo-mpo.gc.ca/) • Atlantic Provinces Operational Statements (http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_e.asp)
Environment Canada	• Atlantic Region • (http://www.atl.ec.gc.ca/index_e.html)
Canadian Environmental Assessment Agency	• Canadian Environmental Assessment Agency (http://www.ceaa-acee.gc.ca) • Canadian Environmental Assessment Registry (http://www.ceaa-acee.gc.ca/050/index_e.cfm)
Province of Nova Scotia	• Home page (http://www.gov.ns.ca) • Natural Resources • Heritage/Archaeology • Species at Risk
Province of New Brunswick	• Home page (http://www.gnb.ca/) • Natural Resources • Heritage/Archaeology • Species at Risk
Province of Prince Edward Island	• Home page (http://www.gov.pe.ca/) • Natural Resources • Heritage/Archaeology • Species at Risk
Province of Newfoundland and Labrador	• Home page (http://www.gov.nl.ca/) • Natural Resources • Heritage/Archaeology • Species at Risk
Species at Risk data	• Atlantic Canada Conservation Data Centre home page (http://www.accdc.com) • *Species at Risk Act* (http://laws.justice.gc.ca/en/s-15.3/text.html) • Species at Risk Registry (http://www.sararegistry.gc.ca/default_e.cfm • Species at Risk, Search by Map (http://www.sararegistry.gc.ca/sar/index/map_e.cfm) • Committee on the Status of Endangered Wildlife in Canada (http://www.cosewic.gc.ca)

Appendix 2

Standard Mitigation Measures Organized by Project Activity

PROJECT ACTIVITY	MITIGATION MEASURES
GENERAL (to be incorporated into all activities below)	1. AST systems must be designed, installed, operated, expanded, modified, removed, or decommissioned in accordance with the CEPA, 1999 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (Canada Gazette, 2008). 2. All personnel involved with activities must be adequately trained and utilize appropriate personal protective equipment. 3. Site access must be restricted to construction personnel and authorized visitors. Workers must be provided with appropriate personal protective equipment. 4. Storage of fuels and petroleum products must comply with safe operating procedures, including containment facilities in case of a spill. 5. Onsite crews must have emergency spill clean-up equipment, adequate for the activity involved, must be on-site. Spill equipment will include, as a minimum, at least one 250L (i.e., 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). 6. Proper notice must be given to authorities to warn of potential disruptions during works. 7. Aesthetic effects created by activities are expected to be short-term and localized. Sites must be kept in a tidy manner during activities and left in a good condition at the end of the project. 8. Archaeological sites in remote locations may not have been previously identified. Care must be taken to observe for evidence of archaeological deposits while work is being completed. Work must be stopped if evidence shows a potential archaeological artifact or deposit and a provincial representative contacted: NB – Albert Ferguson (506) 453-2756; NS – Robert Ogilvie (902) 424-6475; PEI – Charlotte Stewart (902) 368-5940; NL – Martha Drake (709) 729-2462. 9. All laws, regulations, guidelines and best practices from federal, provincial or municipal governments or their officers must be strictly followed. Any apparent conflicts or discrepancies must be successfully resolved before the pertinent work can proceed. 10. Activities must be completed in such a way as to minimize the amount of fines and organic debris that may enter nearby aquatic environments. 11. Operations must only occur where entirely necessary to complete the works to reduce effects to nearby soils, vegetation, and resident species. Respect should be given to the natural environment to minimize the footprint of the project. 12. Installation, operation, expansion, modification, removal, decommissioning, or landscaping must be carried out in such a manner that sediment/silt does not enter any adjacent watercourses. 13. If construction activities require access the site by water, only main channels should be used. Any watercourse crossing must be approved by DFO HMP and the province beforehand. 14. Concentrations of seabirds, waterfowl, or shorebirds must not be approached when approaching the construction site, accessing wharves, or ferrying supplies. 15. Wetlands or sensitive coastal habitats (i.e., any area in which plant or animal life or their habitats are either rare or

PROJECT ACTIVITY	MITIGATION MEASURES
	especially vulnerable) must not be accessed nor used as staging areas. 16. All vessels and machinery must be well muffled, in proper working order and be checked for leakage of lubricants or fuel. 17. Public roads must be used to access the project area, where feasible. 18. Dust suppression by water is the method to be employed when required. The construction manager shall determine locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied. Waste oil is not to be used for dust control under any circumstances. 19. Any material or debris lost as a result of wave or storm action must be immediately recovered by the operator when safe to do so. 20. Helicopter use near seabird breeding colonies must be avoided from May 1st to August 31st. Helicopter use outside this temporal window must include an adjustment to altitude and pattern of flight lines in order to minimize disturbance to migratory birds.
AST SYSTEM INSTALLATION/ OPERATION/MAINTENANCE	1. Proper storage and refueling procedures for AST operation must be adhered to. 2. An approach of "contain and recover" must be adopted. Drop sheets or other means must be used to prevent paint chips and other debris from entering the surrounding terrestrial environment. Refuse must be disposed of appropriately. 3. Petroleum spill clean-up equipment, adequate for the activity involved, must be on-site. Spill equipment will include, as a minimum, at least one 250L (i.e., 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks should be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). 4. If a nest is found during vegetation clearing activities, the nest site and neighboring vegetation will be left undisturbed until nesting is completed. Construction activities will also be minimized in the immediate area until nesting is completed.

PROJECT ACTIVITY	MITIGATION MEASURES
CONCRETE PAD REPLACEMENT	1. When placing concrete, spills of fresh concrete must be prevented. If concrete is discharged from the transit mixer directly to the form work or place by wheelbarrow, proper sealed chutes must be constructed to avoid spillage. If the concrete is being placed with a concrete pump, all hose and pipe connections must be sealed and locked properly to ensure the lines will not leak or uncouple. Crews must ensure that concrete forms are not filled to overflowing. 2. All concrete forms must be constructed and sealed in a manner that will prevent fresh concrete or cement laden water from leaking into the surrounding water. 3. All tools, pumps, pipes, hoses, and trucks used for finishing, placing, or transporting fresh concrete must be washed off in such a way to prevent the wash off water from entering the marine environment. The wash water must be contained and disposed of upland in an environmentally acceptable manner. 4. To prevent erosional runoff during pad replacement, work must be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric, sediment fences) must be used, as appropriate, to prevent erosion and release of sediment into any adjacent watercourses or wetlands. 5. Any exposed soil must be minimized by limiting the area that is exposed at one time any by limiting the time that any one area is exposed. If soil is stockpiled, it must be covered with hay mulch and/or dyked to prevent erosion. 6. Any fill material used during pad replacement (if any) is to be non-toxic, free of fines and sediments, and obtained from an approved site.
MACHINERY OPERATION	1. Machinery must be regularly checked for leakage of lubricants or fuel and must be maintained in proper working order. 2. Equipment and vehicle refueling must be done at least 30m from any water body or wetland and on an impermeable surface. Petroleum spill clean-up equipment, adequate for the activity involved, must be on-site. Spill equipment will include, as a minimum, at least one 250L (i.e., 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks should be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). 3. Vehicles must remain on stable, hardened surfaces and not be operated below the line of Highest High Water (never in the intertidal zone). 4. All construction equipment must be fitted with standard and well-maintained noise suppression devices. Engines must not be allowed to idle excessively between work periods. 5. Construction activities will be carried out during times acceptable to local authorities and use smaller, less disturbing equipment where possible.

PROJECT ACTIVITY	MITIGATION MEASURES
WASTE DISPOSAL	1. All debris deposited throughout the life of the project must be removed from the site. 2. All tools, pumps, pipes, hoses, machines, trucks or other items used in the project must be washed off in such a way as to prevent the wash off water from entering the aquatic environment. The wash water must be contained and disposed of upland in an environmentally acceptable manner. 3. Contaminated material must be properly handled and contained, and disposed of at an approved treatment or disposal facility. 4. Waste or any miscellaneous unused materials must be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown into the marine or terrestrial environment. 5. All construction, operational, and maintenance wastes must be recycled where possible or otherwise disposed of in a provincially approved manner. Any hazardous materials (i.e., fuels, lubricants) must be stored in sealed, labelled, containers and disposed of in accordance with applicable regulations.