SEMA:TH
ENVIRONMENTAL MANAGEMENT PLAN

July 25, 2013

Submitted to:

SUMAS FIRST NATION
Lands & Resources Manager
3092 Sumas Mountain Road
Abbotsford, BC V3G 2J2

Submitted by:

DILLON CONSULTING LIMITED
3820 Cessna Drive, Suite 510
Richmond, BC V7B 0A2

Commercial Confidential
This document contains trade secrets or scientific, technical, commercial, financial and labour or employee relations information which is considered to be confidential to Dillon Consulting Limited ("Dillon"). Dillon does not consent to the disclosure of this information to any third party or person not in your employ. Additionally, you should not disclose such confidential information to anyone in your organization except on a "need-to-know" basis and after such individual has agreed to maintain the confidentiality of the information and with the understanding that you remain responsible for the maintenance of such confidentiality by people within your organization. If the head or any other party within any government institution intends to disclose this information, or any part thereof, then Dillon requires that it first be notified of that intention. Such notice should be addressed to: Dillon Consulting Limited, 235 Yorkland Boulevard, Suite 800, Toronto, Ontario M2J 4Y8 Attention: President.

Table of Contents

GLOSSARY III
1.0 INTRODUCTION 1
1.1 Framework *1*
1.2 Scope *1*
1.3 Purpose *2*
2.0 ADMINISTRATION 3
2.1 Document Control *3*
2.2 Annual EMP Review *3*
2.3 Annual EMP Chief and Council Review *4*
2.4 Semi-Annual Reviews *5*
2.5 Amendments *5*
2.6 Roles and Responsibilities *5*
3.0 METHODOLOGY 8
3.1 Literature Review *8*
3.2 Community Engagement *11*
4.0 ENVIRONMENTAL MANAGEMENT PRIORITIES 14
4.1 Air Quality *14*
4.2 Groundwater Protection *15*
4.3 Habitat Protection *16*
4.4 Fuel Handling and Storage *17*
4.5 Soil and Fill Management *17*
4.6 Solid Waste Handling and Disposal *18*
4.7 Land Development *18*
4.8 Surface Water Management *19*
4.9 Cultural Resources Protection *20*
4.10 Environmental Emergency Response *20*

5.0 IMPLEMENTATION 22
5.1 General Considerations *22*
5.2 Obligations for Implementation *22*
5.3 Reviewing and Updating the EMP *22*
5.4 Building the Sema:th Lands and Resources Department *22*
5.5 Schedule *23*
5.6 Training and Education *23*

APPENDICES

Appendix A: Environmental Operating Procedures
Appendix B: Implementation Schedule

GLOSSARY

Above-ground storage tank (AST)	An above-ground storage tank (AST) is any chemical or fuel (gas, diesel, or heating oil) storage tank located above ground. ASTs are commonly used to supply fuel to heat homes, store vehicle fuel or power generators.
Ammonia	Ammonia is a colourless pollutant with a pungent odour that also acts as a precursor to the photochemical reactions that produce secondary fine particulate matter. Ammonia itself is also associated with negative effects on human health and the environment. Major sources of ammonia include livestock waste and fertilizer production.
Ancestral Human Remains	Ancestral Human Remains: the skeletal or otherwise physical remains of a deceased person or persons in all likelihood of Stó:lō ancestry.
Aquifer	A geological formation of permeable rock, gravel, or sand containing or conducting groundwater.
Artifacts	Artifacts: objects that can be readily removed from the site of which they are a part; moveable objects (e.g., chipped stone flakes, knives, spears and arrowheads; tin cans; glass bottles and jars; basketry; personal gear; groundstone hand-mauls; bone pins; antler wedges; glass beads; looms; instruments; etc.).
Base flow	Portion of (stream) flow that comes from groundwater or other delayed sources.
BC Building Code 2012	Provides strong guidance for the construction of buildings; including extensions, substantial alterations, and upgrading of buildings to remove an unacceptable hazard and Is a requirement under Aboriginal Affairs and Northern Development Canada (AANDC) Terms of Reference. The BC Building Code applies to the core concepts of the National Building Code, along with elements specific to BC's unique development needs.
BC Fire Code 2012	Provides First Nations with a standard for acceptable level of fire safety within the community. It is not required by law that Nations follow the guidelines within the BC Fire Code; however, the Code provides standards which should be strongly considered.
BC Ministry of Environment Develop with Care 2012	Environmental Guidelines for Urban and Rural Land Development in British Columbia documents: Best Management Practices for Amphibians and Reptiles in Urban and Rural Developments in British Columbia (2004); Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia; Develop with Care: Species Factsheets – includes information related to land development and mitigation protocols for rare and endangered species; and South Coast Region Information Package – includes information on regional features, regionally significant species, and invasive alien species.
BC Plumbing Code 2012	A useful tool for the installation or designing of plumbing systems. It also applies to the extension, alteration, renewal and repair of existing plumbing systems. While the Code is not mandatory for Nations to adopt, it could be a useful tool and guide for plumbing practices unique to BC's development needs.

*Terminology as found in the Stó:lō Heritage Policy Manual.

British Columbia Emergency Response Management System (BCERMS)	*The Emergency Program Act* requires that all Provincial ministries and agencies utilize the BCERMS. First Nations, who have not ratified treaties with the Federal and Provincial government are governed by federal statue, are not legally required to follow the BCERMS model but are strongly encouraged to incorporate this model into their emergency plans. The majority of municipalities and First Nations utilize BCERMS to ensure consistent emergency principles and coordinated response efforts. To facilitate the same level of services to First Nation communities PEP, Aboriginal Affairs and Northern Development Canada (AANDC), and First Nations Emergency Services (FNESS) utilize the BCERMS model to standardize delivery of emergency management and response efforts.
British Columbia Extended Producer Responsibility (EPR) Programs	BC's policies and programs are designed to have producers of designated products take responsibility of the full life-cycle management of their items, including costs, collection, recycling and final disposal. EPR programs shift responsibility to the producer and away from local waste authorities. It also provides incentives for producers to incorporate environmental considerations and waste reduction measures into the design of their products. EPR materials should be managed responsibly. A list of current EPR products available on the Recycling Council of British Columbia (RCBC) website: http://rcbc.bc.ca/education/product-stewardship/programs#Top
British Columbia Heritage Conservation Act	British Columbia's archaeological sites are protected under the *Heritage Conservation Act* (HCA). This Act is the latest in a number of pieces of legislation focused on the protection of archaeological sites.
Canadian Environmental Protection Act	The *Canadian Environmental Protection Act* is administered by Environment Canada. Part 4 deals with pollution prevention; Part 5 deals with controlling toxic substances; and Part 8 deals with environmental matters related to emergencies.
Canadian Environmental Quality Guidelines	The federal government works with the provinces and territories to ensure Canadians receive clean, safe, and secure drinking water. Municipalities receive their powers from the provinces and have ability to pass by-laws that can have an impact on water resources.
City of Abbotsford's Soil Removal and Deposit Bylaw No. 1228, 2003	The bylaw that regulates the movement of soil within the City limits.
Criteria Air Contaminants	While many different contaminants may be emitted to air, there is a set of contaminants considered the "Criteria Air Contaminants" that are of particular interest in analyzing air quality. These contaminants are: Oxides of nitrogen (NOX); Sulphur dioxide (SO2); Carbon monoxide (CO); Volatile Organic Compounds (VOCs); and Particulate Matter (PM).
Critical habitat	Habitat that is necessary for the survival or recovery of a listed wildlife species.
Demolition and Land Clearing (DLC) waste (also referred to as Construction and Demolition (C&D) waste)	Demolition and Land Clearing (DLC) waste includes: building / demolition materials; bricks; concrete; gypsum / drywall; and wood.

Deposit	Means the act of moving soil and other material and placing it upon a parcel or contiguous parcels of land on which such soil and other material did not exist or stand.
DFO Freshwater Intake End-of-Pipe Fish Screen Guideline (1995)	Contains a set of guidelines to assist proponents in the design and installation of fish screens where freshwater is extracted from fish-bearing waters.
Endangered species	A wildlife species that is facing imminent extirpation or extinction.
Environmental Management Act	The *Environmental Management Act* replaces the old *Waste Management Act* and the *Environment Management Act* and brings provisions from both of those acts into one statute. The Act seeks to protect human health and the quality of water, land and air in British Columbia. The Act also enables the use of administrative penalties, informational orders and economic instruments to assist in achieving compliance.
Emergency Program Act	The *Emergency Program Act* requires that all Provincial ministries and agencies utilize the British Columbia Emergency Response Management System (BCERMS).
Emergency Program Management Regulation	The Emergency Program Management Regulation identifies the emergency management responsibilities of the Provincial Emergency Program (PEP) and other ministries.
Extended Producer Responsibility (EPR) Materials	Extended Producer Responsibility (EPR) Materials include: expired smoke alarms; cell phones; antifreeze, lubricating oil, oil filters and oil containers; rechargeable batteries and cell phones; electronic products and small appliances; light bulbs; medications; paint, flammable liquids, domestic pesticide and gasoline; thermostats; and tires.
Extirpated species	A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the world.
Features	Features: objects that form a permanent part of the site of which they are a part; objects that cannot physically be removed from the site of which they are a part - at least not without significant effort or without destroying the object (e.g., sqémél depressions; shell heaps; cache pits; earthworks; culturally modified trees; house frames / foundations; rock walls; pit-fall traps; trails; roasting pits; hearths; stone quarries; burial mounds / pits; monuments; roads / trails; etc.).
Fill	Refers to soil that has been removed from one area and deposited in another area, typically as a means to fill depressions and holes to make an area suitable for development.
Fine Particulate Matter	In addition to being one of the criteria air contaminants, it must be understood that fine particulate matter (PM2.5) can be both directly emitted from a source (primary) or created through a series of photochemical reactions in the atmosphere (secondary).
Fire Services Act	The *Fire Services Act* is administered by the B.C. Office of the Fire Commissioner, which is part of the Ministry of Public Safety and Solicitor General. Section 25 of the Act outlines emergency powers of the B.C. Fire Commissioner.
First Nations Lands Management Act	Provides First Nations the authority to create laws to control Nation lands, resources and the environment. This is a federal law and allows First Nations to create their own approach for making land allotments to individual Nation members, matrimonial real property interest or rights and "in cases of breakdown of marriage, respecting the use,

	occupation and possession of First Nation land and the division of interests in First Nation land".
Fisheries Act, 1985	The *Fisheries Act*, 1985 makes it illegal to harm fish habitats or fishing grounds. Environment Canada is responsible for the administration and enforcement of the *Fisheries Act* as it pertains to spills and environmental emergencies.
Fisheries and Oceans Canada (DFO) Land Development Guidelines for the Protection of Aquatic Habitat (1993)	Contains guidelines to protect fish populations and their habitat from the damaging effects of land development activities. These guidelines apply primarily to salmon, trout and char, but are applicable to all fish species.
Fraser Valley Regional District Integrated Solid Waste Management Plan (Draft, April 18, 2011)	Contains information on waste policies and goals and how waste materials will be managed in the region.
Fraser Valley Regional District Soil Deposit and Removal Bylaw No. 0061, 1996	Sections 723 and 799 of the Local Government Act, R.S.B.C. 1996, c. 323, authorize the Regional Board of the Fraser Valley Regional District to regulate the removal and deposit of soil in the Regional District.
Garbage or 'residual waste'	Garbage or 'residual waste' means materials that cannot be recycled, composted or diverted through other programs, such as: diapers; sanitary products; Styrofoam; cigarette butts; and lint.
Ground-level Ozone (ozone)	Ground-level Ozone (ozone) is an air contaminant associated with many negative health and environmental effects. Ozone is not emitted directly, but is the product of a series of photochemical reactions occurring in the atmosphere involving two precursor pollutants, NOX and VOCs.
Groundwater	Water that is found below ground in the soil or in pores and crevices in rock.
Guidelines for Canadian Drinking Water Quality	Set out the basic parameters all water systems should strive for in order to deliver the cleanest, safest, and most reliable drinking water to consumers. These guidelines apply to water destined for human consumption and are developed for select physical, chemical, microbiological, and radiological parameters. The most important guidelines deal with microbiological quality and help ensure the risk of exposure to disease-causing organisms in drinking water is minimized.
Habitat	(a) In respect of aquatic species: spawning grounds and nursery, rearing, food supply, migration and any other area on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic formerly occurred and have the potential to be reintroduced. (b) In respect of other wildlife species: the area or type of site where an individual or wildlife species naturally occurs or depends on directly or indirectly in order to carry out its life processes or formerly occurred and has the potential to be reintroduced.
Heating oil	A type of fuel generally used to power a furnace for a home or other building.
Household Hazardous Waste (HHW)	Household Hazardous Waste (HHW) includes: batteries; electronic waste; fluorescent tubes and compact fluorescent lights; household paints; pesticides and flammable liquids,

	medications; and waste oil, filters and containers.
Hydraulic oil	Oil used in the hydraulic systems of equipment such as excavators or backhoes.
ICI (Industrial, Commercial and Institutional) sector	Waste materials are often classified by source. Waste generated through industrial, commercial and institutional activities is referred to as "ICI sector" waste.
Iron and manganese	Iron and manganese are metallic elements present in many types of rock. Iron has the symbol "Fe" and manganese has the given symbol "Mn." Both are commonly found in water and are essential elements required in small amounts by all living organisms. Concentrations of iron and manganese in groundwater are often higher than those measured in surface waters.
Land Use Plan	A Land Use Plan is the principle land use planning document for a community. Its purpose is to produce a desirable and workable future land use system. The Land Use Plan is a general document that provides a set of overarching policies and maps which establish goals and provide guidance for the physical development of the community. Within the context of the Sema:th Land Use Plan, policies will have regard to relevant social, economic, and environmental matters.
Migratory bird	A migratory bird referred to in the Convention of the MBCA (1994), and includes the sperm, eggs, embryos, tissue cultures and parts of the bird.
Multi-barrier approach	An integrated system of procedures, processes and tools that collectively prevent or reduce the contamination of drinking water from source to tap in order to reduce risks to public health.
Municipal policies and bylaws	Can contain information on material bans; i.e., materials which are prohibited or banned from disposal at municipal landfills. Because waste generated on the reserve is collected and transported off-site for disposal, banned materials cannot be included in the garbage. Inclusion of these banned materials in the waste stream can result in fines and charges, which would be levied on the collection contractor and likely passed on to Sema:th Nation.
Municipal solid waste	Commonly known as trash or garbage generally refers to waste consisting of everyday items that are discarded by the public. It does not include industrial waste, agricultural waste, medical waste, radioactive waste or sewage sludge.
Nest	The nest of a migratory bird and includes parts of the nest that holds eggs or offspring.
Nitrate	Nitrate is a chemical compound of one part nitrogen and three parts oxygen that is designated the symbol "NO3." It is the most common form of nitrogen found in water.
Organic or 'compostable' waste	Organic or 'compostable' waste includes: 'green waste' – yard trimmings, grass, clippings, branches, etc.; food waste scraps; tissue paper; and food-soiled paper packaging.
Peak flow	The maximum instantaneous discharge of a stream at a specific location. Corresponds to the highest stage of a flood.
Point and non-point sources of contamination	Contaminants can originate from a "point source" or "non-point source" – meaning they can come from a single source (or point) or, that they don't have one specific source and come instead from the cumulative effect of any number of factors or activities.

Provincial Emergency Coordination Centre	The Provincial Emergency Coordination Centre (PECC) coordinates provincial resources and prioritizes and establishes provincial objectives in response to requirements at other levels. This level also serves as the coordination and communications link with the federal disaster support system. The Provincial Central Coordination level is activated when the key Ministry(ies) or the Director of the PEP considers it necessary to coordinate and direct overall provincial response to an emergency or disaster.
Provincial Standards and Best Practices for Instream Works (1994)	Assists in the planning and implementation stages for a proposed development by providing a series of performance guidelines and regulatory compliance standards.
Recyclables or 'blue box / bag' materials	These materials include: paper and envelopes; newspapers, magazines, flyers; cardboard; boxboard (e.g., cereal boxes); milk cartons and juice boxes; and containers such as plastic, metal and glass.
Regional Timing Windows of Least Risk	The BC MOE and DFO have developed a set of regional timing windows for activities that have the potential to impact fish and wildlife populations and their habitats. To reduce the risk of impacts, instream works and vegetation clearing are ideally limited to non-critical periods of the year, unless stringent, species-specific mitigation measures are initiated.
Removal	Means the act of removing soil from the parcel or contiguous parcels of land on which it exists and shall include the removal of soil which has been placed into a stockpile or other storage on any land.
Residential sector	Waste materials are often classified by source. Waste generated by single family and multi-family residential households is referred to as "residential sector" waste.
Soil	Soil is defined as: clay, silt, sand, gravel, cobbles, boulders, or peat.
Species at risk	An extirpated, endangered, or threatened species or a species of special concern.
Species of special concern	A wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.
Stó:lō Heritage	Stó:lō Heritage: all aspects of Stó:lō culture and lifeways - both tangible and intangible - of the past, present and future, including but not limited to: language, physical / spiritual landscapes; place names; ceremonial sites; burials and burial sites; spirited places; songs; dances; art; craft; design; religious / spiritual / ceremonial practices; places and materials; subsistence and material gathering practices and sites; oral histories including all sqwelqwel and sxwôxwiyám; traditional / historical knowledge; family names; archaeological sites, features and objects; historic sites, documents and objects. Stó:lō Heritage can be classified by 'type', such as Sxwôxwiyám, Xá:Xa, Ceremonial Regalia, etc., as presented in Section 4.0. Also referred to as 'Stó:lō Heritage Resources' in relation to resource management.
Stó:lō Heritage Policy, 2003	Stó:lō Heritage Policy, 2003 – As described in the Policy, the Stó:lō maintain ownership of and jurisdiction over all Stó:lō heritage sites and objects. On behalf of the broader Halkomelem-speaking community, Stó:lō Nation maintains jurisdiction over Stó:lō heritage sites and objects not otherwise linked directly to a family or individual. Stó:lō Nation

	recognizes and accepts the shared heritage interests of other traditionally Halkomelem speaking communities and organizations not directly associated with the Nation. Stó:lō Nation endeavours to establish heritage related Protocol Agreements, as needed, with such Halkomelem communities and organizations. Stó:lō Nation may also develop heritage related Protocol Agreements with non-Aboriginal governments and resource management agencies.
Stó:lō Intellectual Property	Stó:lō Intellectual Property: knowledge, the nature of use of which has been transmitted from generation to generation, which is regarded as Stó:lō and as belonging to Stó:lō individuals, families, communities or the Nation as a whole. Stó:lō Intellectual Property, though rooted in the past, is contemporary knowledge that changes with time. Stó:lō Intellectual Property includes: place names; oral history; family names; songs; dances; designs/ images / arts; language; knowledge.
Surface water	Surface water refers to water flowing across or accumulating on the ground surface as a result of precipitation processes and most often due to the influence of rainfall and snowmelt. As water inundates and accumulates on the surface, it begins to flow towards creeks, streams, lakes, ditches, or installed storm sewer systems or reservoirs. Regionally, surface water originates in mountainous areas and then flows through creeks, streams, and as overland flow to larger creeks and streams in lowland areas.
Threatened species	A wildlife species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.
Total, Faecal and E. coli bacteria	Coliform bacteria are described and grouped, based on their common origin or characteristics, as either Total or Faecal Coliform. The Total group includes Faecal Coliform bacteria such as Escherichia coli (E .coli), as well as other types of Coliform bacteria that are naturally found in the soil. Faecal Coliform bacteria exist in the intestines of warm blooded animals and humans, and are found in bodily waste, animal droppings, and naturally in soil.
Underground storage tank (UST)	An underground storage tank (UST) is a storage tank located underground to contain chemicals, fuel, or septic materials.
Waste stream	Waste can also be classified by stream or material. Typical terminology used by the municipal waste stream is provided in Appendix I.
Watershed	The area of land where all of the water that is under it or drains off of it goes into the same place (US EPA).
Watershed management	Conservation Authorities define watershed management as “managing water resources within specific watersheds by knowing how much water is in the system, where it comes from, who is using it, how it is being contaminated and where it ends up. Watershed management takes into consideration all the outside activities that can influence the quality and quantity of our surface and groundwater.”
Well or borehole	Groundwater is accessed through wells or boreholes which are dug or drilled into aquifers.

Zero Waste Challenge	The term "zero waste" is a concept that promotes a future where landfills are no longer needed. The term is intended to encourage people to think more holistically about their waste and to view it as a resource instead of garbage destined for burial. Zero Waste is a mindset meant to propel change in the existing solid waste management system and to promote the adoption of more aggressive waste reduction policies aimed towards stopping waste before it is created and maximizing reuse and recycling programs.

1.0 INTRODUCTION

S'ólh Téméxw te íkw'élò. Xólhmet te mekw'stám ít kwelát – "This is our land. We have to look after everything that belongs to us". In our Stó:lō culture, a link exists between the past, present, and future. In our Halq'emeylem language we have the word tomiyeqw – the relationship expressed in this word connects people seven generations past with those seven generations in the future. The connection between the past and the future rests with those of us living today. It is in this spirit that we, the Sema:th People today, undertook the development of our Environmental Management Plan (EMP).

We created the Sema:th EMP to ensure a healthy environment, protection of resources, appropriate development, and a celebration of our living culture. Our ancestors lived in harmony with the land and had sophisticated methods of environmental management. We wish to honour them through this EMP, by acknowledging our role as the current caretakers of the land. In doing so, we recognize the important role we play in ensuring a healthy and prosperous future for the generations still to come.

1.1 Framework

In December 2010, the *Sema:th Land Code* was accepted. The *Sema:th Land Code* is an important and exciting step in Sema:th autonomy. The Land Code was drafted pursuant to the Framework Agreement on First Nation Land Management and the *First Nation Land Management Act (FNLMA)*. Since November 2011, the Land Code has been operational, making Sema:th responsible for our acts or omissions in managing our lands. Under Land Code, Sema:th First Nation Council has the power to make laws in respect of the development, conservation, protection, management and administration of Sema:th Lands (Sema:th Laws). This Environmental Management Plan (EMP) will assist Sema:th Nation in managing our Lands in an environmentally and culturally sustainable manner.

1.2 Scope

The EMP is developed as an operational manual to be used by Sema:th to manage activities and related environmental features that have the potential to impact the environment and health of people on Sema:th Lands. As illustrated in Figure 1, Sema:th Lands are located on the south side of the Fraser Valley, east of the City of Abbotsford. Sema:th Lands refer to the land comprised of Sumas Indian Reserve #6 and is approximately 628 acres (~254 ha).

The authority of the EMP lies only within Sema:th Lands. However, Sema:th wishes to work collaboratively and respectfully with local municipal, regional, provincial, and federal bodies to ensure that the environment is protected for everyone.

1.3 Purpose

Through the implementation of a series of Environmental Operating Procedures (EOPs), the EMP aims to:

- Prevent and/or minimize environmental impacts (to the fullest extent possible) on Sema:th Lands;
- Provide a proactive rather than re-active environmental management regime;
- Incorporate environmental considerations into the decision making process;
- Improve environmental protection and performance that goes beyond compliance with applicable laws, regulations, Best Management Practices, and standards;
- Protect Sema:th Lands and the environment for future generations;
- Incorporate Sema:th Traditional Knowledge into current environmental management practices;
- Improve operational structure and efficiency with regard to environment management;
- Facilitate continual environmental management improvement;
- Bring together the information, documentation and research that has been conducted on Sema:th Lands to ensure that sound environmental stewardship occurs;
- Promote the principles of sustainable development on Sema:th Lands;
- Increase the overall awareness of workers and neighbouring municipalities regarding environmental issues and practices on Sema:th Lands; and
- Increase environmental awareness and pride among Sema:th people.

2.0 Administration

The EMP is a living document that must evolve in response to changing environmental, operational and legislative conditions. The following section outlines administrative tasks associated with the EMP.

2.1 Document Control

Document control is a means of keeping track of documents, procedures, and processes. The purpose is to ensure that everyone has easy access to and uses the correct and most up-to-date versions. Environmental legislation, best management practices (BMPs), and procedures can change over time which will require amendments and updates to the EMP. Therefore it is important that documents related to the EMP are controlled to ensure that only the current versions of the documents are referred to and used.

To help ensure that the EMP and related documents remain current and that only the most up-to-date versions are used, the following document control measures will be implemented:

- Include a date and version number on all documents;
- Review all documents on a pre-determined schedule;
- Revise documents as required;
- Obtain appropriate approvals and sign-offs on all revised documents prior to issuing or re-issuing;
- Remove and destroy/recycle all outdated documents;
- Maintain an electronic master copy at the Lands & Resources Department Office; and
- Store all EMP records in hard copy and/or on an electronic data records system for 5 years.

2.2 Annual EMP Review

The Sumas Lands & Resources Manager is responsible for ensuring that the EMP and related documents are reviewed, updated, and maintained as appropriate. To meet this commitment, the Lands & Resources Manager will lead an annual review of the EMP and related documents and record the results and findings in an Annual EMP Review Report which will be presented to Chief and Council (see Annual EMP Review Meeting below).

The review will include, but will not be limited to:

- An assessment of all EOPs for adequacy, accuracy and relevance and will include any recommended amendments ;
- An examination of recent changes to applicable legislation and regulations as they relate to specific EOPS;
- An assessment of the EOP goals, objectives and targets and the degree to which they are being met;
- The success of the EMP implementation plan including recommendations for improvement; and
- The effectiveness of the document control and recommended changes.

2.3 Annual EMP Chief and Council Review

Sema:th Chief and Council and the Lands & Resources Manager will meet annually for an EMP Review Meeting. The meeting will serve to review and discuss:

- The results and findings of the EMP Review Report including:
    - Performance summary for activities covered under each EOP;
    - Update on how current and adequate the EOP Goals and Objectives are and how the commitments are being met;
    - Effectiveness and suitability of the EMP and the related EOPs in relation to changing conditions and information;
    - Changes to legislation and regulations that may impact the EMP and specific EOPs;
- The environmental incident report summary and any environmental non-conformances;
- Remediation and preventative actions;
- Any concerns resulting from interested parties;

The annual meeting will also allow the EMP review team to approve, confirm, and/or set new goals, objectives and targets as needed, as well as to review, modify and approve budgets as necessary to continue implementing the EMP.

2.4 Semi-Annual Reviews

An EMP and/or EOP review can also occur outside of the annual review in response to significant regulatory changes, new land use processes, changes in industrial operations, and/or organizational adjustments. As required, the Lands & Resources Manager will carry out semi-annual assessments on the effectiveness, performance, and achievements of each EOP and make amendments as necessary.

2.5 Amendments

Amendments to the EMP and/or EOPs will be completed as follows:

- As necessary, each amendment will be presented to Sema:th Chief and Council for review, adoption and approval for implementation; and
- The amended policy will be printed, signed, and circulated to relevant personnel (e.g., Managers) and posted.

2.6 Roles and Responsibilities

Role	Responsibilities
Chief and Council	▪ Establish and define the overall organizational structure, including roles, responsibilities, and authorities to effectively implement and maintain the EMP. ▪ Provide the equipment, training, human resources, and funding necessary to implement and maintain the EMP. ▪ Participate annually in the EMP Review Meeting.
Lands & Resources Department The Lands & Resources Manager is ultimately responsible for the following tasks but is allowed to delegate procedural aspects to other department staff and/or other Sema:th departments, contractors, agencies, etc., as appropriate.	▪ Maintain the Approved EMP o Conduct or assign responsibilities for EMP/EOP reviews and inspections and related documentation. o Maintain current EOPs within the EMP. o Establish and implement EMP document control procedures. o Ensure that legal requirements relevant to the EMP are reviewed annually. o Maintain a central, electronic and hard copy version of the EMP. o Prepare the Annual EMP Review Report. o Coordinate and participate in the Annual EMP Review meeting. o Prepare an annual budget for Chief and Council to review and approve for the implementation and maintenance of the EMP.

Role	Responsibilities
Lands & Resources Department	o Ensure that adequate training of Sema:th staff is provided related to the implementation and requirements of the EMP. ▪ Communicate the EMP o Ensure that staff and contractors are aware of the EMP and EOP requirements and objectives. o Communicate the EMP goals, objectives, and EOPs both internally and externally, and as appropriate. o Liaise with, advise, and report back to Chief and Council on the status of project activities and any environmental issues. o Advise Chief and Council of any non-compliance and any emerging environmental issues and assist in addressing them. o Liaise with regulatory agencies as required. o Maintain a registry of complaints. ▪ Review Compliance with the EMP o Schedule and coordinate internal EMP and EOP reviews. o Implement or assign corrective action as required in response to inspection or monitoring results, audit findings, Chief and Council reviews or incidence reports. o Monitor contractor's compliance. o Periodically review monitoring reports to ensure required data is being collected. ▪ Maintain EMP Related Documents (including but not limited to): o Environmental permits, approvals and government agency correspondence related to the EMP. o Agreements with fuel, chemical and waste contractors and suppliers for activities related to the EMP. o Facility site plans, records, checklists, audit reports and related documentation. ▪ Environmental Incidences o Promptly investigate all reportable environmental incidences to ensure that appropriate reporting, response and other legal requirements have been met.

Role	Responsibilities
Lands & Resources Department	o Able to stop work to ensure compliance with regulatory and/or EMP requirements. o Ensure environmental incidents are reported to the appropriate/applicable agencies and Chief and Council. o Retain the services of a qualified Environmental Professional to assess and mitigate risk associated with impacts to the environment.
Contractors	▪ Adhere to the requirements set out in the EMP and other applicable legislation. ▪ Communicate environmental responsibilities and requirements of this EMP to their staff and sub-contractors, and record that communication. ▪ Ensure all members of their staff and sub-contractors are trained to prevent or mitigate environmental impacts. ▪ Ensure all labour, equipment, and materials are available to execute the project activities and respond to environmental incidents. ▪ Correct deficiencies and any non-compliance items raised by Sema:th First Nation. ▪ Retain the services of a Qualified Environmental Professional to assess and mitigate risk associated with impacts to the environment.

3.0 Methodology

A multi-staged approach was taken for the development of the EMP to ensure the goals and objectives met the needs and requirements of Sema:th Lands and its community members. The development of the EMP included a collaborative approach to gather invaluable knowledge and input from Sema:th members, which helped guide the identification of the top environmental management priorities on Sema:th Lands.

The following initial tasks were completed to provide important background information necessary for the development of the EMP and the associated EOPs:

- Review of existing literature related to environmental features and activities associated with Sema:th Lands;
- Community engagement; and
- Compilation of existing legislative guidelines, policies, regulations, best management practices (BMPs), and applicable standards.

3.1 Literature Review

To develop an understanding of the existing baseline conditions and to assist in identifying key environmental management priorities on Sema:th Lands, a desktop overview and literature review was completed. Documents included, but were not limited to:

- Sumas First Nation Phase 1 Environmental Site Assessment, 2009;
- Sumas First Nation – I.R. No. 6 Phase 2 Environmental Site Assessment, 2012;
- Draft Sumas First Nation – I.R. No. 6 Phase 3 Environmental Site Assessment, 2013;
- Stó:lō Environmental Conservation and Land Use Policy – Draft, August, 2002;
- Stó:lō Heritage Policy Manual – May, 2003;
- Upper Stó:lō Fraser Valley Plant Gathering book;
- Fire Protection Agreement – December, 1996;
- Sumas First Nation Draft Highest and Best Use Study – December, 2012; and
- Sanitary Sewer Agreement – December, 1991.

To date, a number of site investigations have been completed or are on-going on Sema:th Lands to identify present and potential environmental management issues, particularly related to site contamination. The most significant of the studies completed to date have included Phase 1 (completed in 2009), Phase 2 (completed in 2012), and Phase 3 (in progress) environmental site assessments (ESA) and an environmental emergency response plan, completed in 2011. Specific documents are discussed further below.

3.1.1 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was completed by Teranis Consulting Ltd. (Teranis; Sumas First Nation Phase 1 Environmental Site Assessment, 2009) to establish the environmental conditions and identify areas of primary environmental concern on Sema:th Lands prior to the implementation of the Land Code. Teranis identified a total of forty four (44) Areas of Potential Environmental Concern (APECs) on or adjacent to Sumas land. APECs were associated with fill sites, fuel storage tanks (above and underground), vehicle maintenance areas and/or commercial/industrial operations, such as the Brick Plant, Metal Box site, former SES Soil Remediation Facility, former Rotary Kiln site, former Miners Camp and former Saw Mill.

3.1.2 Phase 2 Environmental Site Assessment

The Phase 2 ESA was completed by Teranis in 2012, to confirm the presence or absence of contaminants within the areas of potential environmental concern identified during the Phase 1 ESA (Sumas First Nation – I.R. No. 6 Phase 2 Environmental Site Assessment, 2012). Summary of the results indicated that metals and hydrocarbons were found to be elevated in soil and groundwater, and a total of 22 Areas of Environmental Concern (AECs) were retained for further investigation from the original 44 APECs. The principle areas of concern include the following:

- Landfill (stability, asbestos, contaminated soil & leachate plume);
- Widespread low level metals and PHC impacts at the Brick Plant;
- High levels of PHCs in soil & groundwater at the former Rotary Kiln, Bunker UST and former fueling facility on Lot 76;
- Metals and PHCs on Lot 55 and Metal Box Container site; and
- Fill quality west of Kilgard Road and south of the Admin Office.

Phase II recommendations included:

- Conduct a Supplemental Phase 2 ESA to verify and delineate contamination (metals, PAHs - naphthalene and phenanthrene and petroleum hydrocarbons) identified by the Phase 2 ESA;
- Advance additional groundwater monitoring wells to establish background groundwater quality;
- Confirm the presence of asbestos in soil at the landfill site and determine the source of this material;
- Assess slope stability at the former SES landfill site;
- Identify the location of groundwater abstraction wells on Sumas lands and their current status and usage;
- Conduct additional air quality monitoring to assess potential impact from local source(s), and to confirm AQ during spring, summer and fall, when impacts are typically more pronounced; and
- The former Brick Plant appears to be in a considerable state of disrepair. Building walls appear to be structurally unsound and may collapse and pose a risk to people working on the site. It is recommended that the Nation retain a suitably qualified structural engineer to assess building condition, safety issues, potential for continued long term use and anticipated maintenance and decommissioning costs.

3.1.3 Phase 3 Environmental Site Assessment

At the time of writing this document, a Phase 3 ESA is currently on-going and is being completed by Teranis. The purpose of the Phase 3 is to focus on delineating soil and groundwater impacts and completing recommendations for the areas of environmental concern, as outlined in the Phase 2 report. Based on the results of the Phase 3 ESA, further recommendations for management will likely focus on soil and groundwater impacts; quarterly monitoring of groundwater and surface water in select areas; completion of a human health and ecological risk assessment; and remediation efforts through removal of soil and/or groundwater contaminant sources.

3.1.4 Sumas First Nation Emergency Plan

The Sema:th emergency response plan was updated in September 2011 (Sumas First Nation Emergency Plan, 2011). The plan provides an overview of, but not limited to the following:

- Emergency contacts and community context;
- Emergency plan overview;
- Sema:th management organizational structure;
- Hazard, risk and vulnerability assessment;

- Evacuation procedures and response action plans; and
- Recovery roles and procedures.

3.2 Community Engagement

Community input into the EMP is a critical component of the development of the EMP. To fully engage the Sema:th community a series of activities and discussions related to environmental management were completed. Through coordination with the Lands Advisory Committee (LAC), Chief and Council, and Lands staff, community engagement initiatives have included:

- Community newsletters;
- Development and distribution of a community questionnaire;
- Community open house;
- Meetings, workshops, and presentations with the Sema:th Management Team;
- Youth visit; and
- Graffiti boards.

The objectives of the community engagement and consultation process were to:

- Gain the best possible understanding of the existing conditions on Sema:th Lands;
- Gain an understanding of Sema:th members principal concerns regarding environmental issues on their lands;
- Identify the top environmental management priorities on Sema:th Lands; and
- Collaborate and develop a series of goals, objectives, and targets for each environmental management category.

Through this consultation, the top ten environmental management priorities on Sema:th Lands were identified (discussed in Section 3.3 and Section 4.0).

3.2.1 Community Newsletters

Two newsletters were developed and distributed to the community to inform Sema:th members about the EMP and the process involved in its development. The first newsletter, distributed by the LAC on February 27, 2013, outlined the purpose and objectives of the EMP and introduced the upcoming community questionnaire and open-house. The second newsletter was distributed by the LAC on April 5, 2013 and summarized the results of the questionnaire and open house.

3.2.2 Community Questionnaire and Open House

A community questionnaire was developed and distributed to Sema:th members by the LAC on March 11, 2013. Questionnaires could also be completed at the Open House, held on March 14, 2013. The community survey questionnaire consisted of 12 questions to gauge members knowledge and awareness surrounding environmental issues and management on Sema:th Lands. Members were also asked to identify the resources they value most and discuss the biggest environmental threats to Sema:th Lands. The questionnaire was open to members' ages 14 years and older. A total of 96 questionnaires were completed by Sema:th members. The results of the survey were analysed and the findings are summarized in a memorandum, along with the questionnaire, which are provided in Appendix A.

3.2.3 EMP Meetings

Throughout the development of the EMP, the following meetings were held with Lands Staff, the LAC, and Chief and Council to incorporate the best interests of Sema:th members throughout the project design, planning, and implementation:

- Project Initiation Meeting – February 21, 2013;
- Questionnaire Results Presentation and Confirmation of EOP Categories – March 25, 2013; and
- EOP Goals and Objectives Workshop – April 2, 2013.

The objectives of the meetings were to:

- Provide project updates;
- Solicit input and seek guidance on the development of the EMP;
- Identify and confirm the list of top environmental management priorities to be highlighted in the EMP through the development of the 10 EOPs ;
- Develop specific goals for each EOP and a list of objectives and targets to meet the goals – the list of goals, objectives and targets provide the framework for each EOP; and
- Provide an open forum for discussion with Sema:th members through their Leadership to gather information from the community. This invaluable information ensures the EMP captures the communities goals and priorities for environmental management on Sema:th Lands.

Taking into account the input from the community, guidance of the Leadership (Chief and Council and LAC), review of background documents, and knowledge gained through community consultation, a list of the top 10 environmental management priorities for the EMP were identified as follows (in no particular order):

- Air Quality;
- Groundwater Protection;
- Habitat Protection;
- Fuel Handling and Disposal;
- Soil and Fill Management;
- Solid Waste Handling and Disposal;
- Land Development;
- Surface Water Management;
- Cultural Resources Protection; and
- Environmental Emergency Response.

Descriptions of the 10 environmental management priorities are discussed further in Section 4. Each environmental priority has been developed into a separate EOP which are found in Appendix A. The EOPs are designed to provide guidance for Sema:th on environmental management issues.

4.0 Environmental Management Priorities

Through consultation and review of background documents, 10 environmental management priorities were identified for Sema:th Lands. The following section provides an overview of each priority and a high-level description of existing conditions that helped guide the development of the EOPs.

4.1 Air Quality

Air quality is a measure of the state of the air around us and the air that we breathe. Good air quality refers to air that is unpolluted, clear, and clean. Poor air quality refers to polluted air that has the potential to be harmful to human health or the environment. Poor air quality may be the result of emissions to the atmosphere from human activities (e.g., car emissions, industrial activities; Province of British Columbia, 2013a).

Sema:th First Nation is located in the Fraser Valley. The Fraser Valley is located in a confined airshed, which means that the area is more likely to experience a buildup of contaminants in the air (Fraser Valley Regional District, 2008). The confined airshed in the Fraser Valley is likely created by the weather, wind, and geography of the valley (Province of BC, 2013b). In particular, the topography of the area (mountains and valleys), wind direction, temperature, air pressure, and the types of pollutants all contribute to the amount of pollutants that build up in the air and in turn affect the local and regional air quality. The buildup of pollutants in the air has the potential to negatively impact human health, visibility, and the environment.

Locally, the main sources of poor air quality within the Sema:th Lands are related to industrial operations and agricultural activities. Community input identified air quality as a major concern particularly related to emissions from Royal Flex Lox Pipe Plant (off Sema:th Lands) and Big Steel Box. Air monitoring was carried out as a component of the Phase II ESA to assess the potential impacts from the asphalt batching plant or potential sources other industrial activities. The particulate material concentrations measured during the testing measured quite low and did not exceed provincial or Metro Vancouver Air Quality Objectives. The data did suggest however, that there are short-term elevated concentrations of PM10 that may be due to localized sources (e.g., vehicle emissions, road dust, industrial emissions, and local combustion sources). It should also be noted that PM10 concentrations measured on Sema:th were consistently more elevated than those recorded in Abbotsford.

Managing the air quality associated with these operations (e.g., air emissions such as dust, air pollution associated with vehicle emissions) can help to improve the air we breathe and allow for a healthier environment. While there are limitations for improving air quality in the Fraser Valley, and particularly on Sema:th Lands due to the location and surround industry, we can still control the quality of our emissions and act as stewards of the environment to promote air quality.

4.2 Groundwater Protection

Water occurring beneath the ground surface amongst spaces between rocks and soil is referred to as groundwater. The water within these spaces is typically found within 100 m of the ground surface (Environment Canada, 2011). Water underground can collect in a formation of permeable rock or loose material (e.g., sand, gravel, silt) and can be extracted for human consumption. This collection of water underground is called an aquifer and is the source of drinking water for Sema:th First Nation.

As described in the Teranis Phase I ESA (2009), the depth of groundwater on Sema:th Lands is likely to be variable depending on subsurface stratigraphy and bedrock elevation. Based on water levels within identified streams and creeks, groundwater is likely within 5 m of ground surface across much of Sema:th Lands. Local groundwater flow is inferred to generally flow south. Information presented on the Ministry of Environment web based BC Water Resources Atlas for the community drinking well indicated that groundwater is approximately 4 metres below ground surface. The Water Resources Atlas also indicates that there are 15 groundwater wells on Sema:th Lands. However, Teranis notes that provincial well inventories are typically incomplete and additional wells may be present.

Based on inferred groundwater flow direction and local creeks, land use located to the north, northeast, northwest should be considered and is located up-gradient and have the greatest potential to impact groundwater quality on Sema:th Lands. This also includes land currently occupied by Royal Flex Lox Pipe Plant.

Impacts to groundwater can occur as a result of contamination, which can cause groundwater to be unsuitable for use. Groundwater contamination is associated with hazardous materials seeping through the ground to groundwater sources or aquifers. Cleaning up contaminated groundwater can be very expensive and difficult. Contamination sources may include but are not limited to leaking gasoline storage tanks, pesticide or fertilizer, and accidental spills that can negatively impact the quality of groundwater.

Sema:th's drinking water is supplied by groundwater wells and a water treatment system is located on the north side of Lakeview Drive (Teranis, 2009). However, it is thought that some community members may

obtain their drinking water from private abstraction wells. Given the shallow elevation of the groundwater and the drinking water wells, there is concern of potential contamination and infiltration from surface level pollutants.

Sema:th currently has a groundwater sampling program in place to test and analyze domestic water use for Total Coliform, E. Coli, and Enzyme Substrate Coliform on a weekly basis. Results have been found to be in compliance with Health Canada drinking water guidelines (Sumas Lands & Resources Officer, Personal Communications, 2013). Regular sampling was also recommended in the Draft Phase III ESA (quarterly sampling) at several monitoring wells: former SES site (landfill and fill area), the brick plant waste dump, and Bunker C. There are concerns regarding elevated petroleum hydrocarbons, dissolved metals, PAHs, and other indicators of landfill leachate and ground gas parameters (e.g., methane and carbon dioxide). Recommended continuous and regular monitoring of groundwater quality is consistent with the feedback received from the community consultation process.

4.3 Habitat Protection

Habitat can be defined as the natural home or environment of a plant, animal, or other organism. All plants and wildlife depend on a healthy habitat. Aquatic habitat is the habitat within water, specifically the organisms such as plants and animals that occur in water, and can include creeks, streams, and wetlands. Terrestrial habitat includes land surfaces such as habitat within forests or a field. A variety of aquatic and terrestrial habitats occur across Sema:th Lands.

The loss of habitat is one of the main reasons that species are at risk today. A range of factors can lead to habitat loss. These factors include increased development, resource management activities, pollution and the spread of invasive plants and animals (Government of Ontario, 2013).

Habitat protection includes the use of practices and strategies to conserve and protect species and their habitats. Practices and strategies may include identifying species or communities that are sensitive within a given area, using guidance documents or best management practices when conducting activities in or near aquatic or terrestrial habitat, and obtaining appropriate permits when undertaking works in or near aquatic or terrestrial habitat. Protection of aquatic and terrestrial habitat is important for the long-term viability of our lands.

The existing surface water and creeks on Sema:th Lands provide habitat for a number of resident fish species as well as migratory Pacific salmon (both currently and historically), while the existing terrestrial habitat may be utilized by a variety of wildlife species and migratory birds. There are a number of species

afforded protection under federal legislation, including species at risk and migratory birds that have been identified on Sumas Mountain, immediately adjacent to Sema:th Lands. The community is concerned that aggressive development on the surrounding landscape will reduce the amount of available and quality of habitat remaining on their traditional territory. While habitat fragmentation limits migratory corridors for wildlife, the preservation and enhancement of the existing habitat on Sema:th Lands will ensure impacts from development are minimized.

4.4 Fuel Handling and Storage

Fuel, such as oil or diesel, is often stored in tanks in above-ground or underground storage tanks, which if not properly installed or maintained can result in fuel spills. Spills of fuel can contaminate drinking water, groundwater, and soil as well as cause odour and health problems. In addition, fuel released into the environment also has the potential to contaminate sewers, drainage ditches, and surface water.

As described in the ESAs, a significant component of impacts to soil and groundwater on Sema:th Lands are associated with poor fuel handling and storage (in addition to fill sites and industrial activities) (Teranis, 2012). The Phase II ESA noted that indications of hydrocarbon impacts (strong odours and visible product in soil) were identified in numerous locations including but not limited to the former Rotary Kiln, Brick Plant, a former service station, Sumas Works Yards, Big Steel Box, and various lots. Therefore, proper fuel handling and storage procedures including response and mitigation measures are key to preventing the unnecessary release of fuel into the environment. The results of the community questionnaire suggested a lack of education and awareness related to proper fuel handling, spill response, proper storage and disposal.

4.5 Soil and Fill Management

Soil is unconsolidated organic or mineral material located at the surface of the earth that serves as a medium for the growth of plants on land (Agriculture and Agri-Food Canada, 2011). Fill refers to soil that has been removed from one area and deposited in another area, typically as a means to fill depressions and holes to make an area suitable for development. It is important to properly manage soil and fill brought to the Nation and/or removed from the Nation to ensure deposited material is not contaminated, thereby reducing the potential for human or environmental health risks.

The ESAs noted numerous areas of soil contamination on Sema:th Lands. In particular, Sumas Environmental Services (SES) operated a soil treatment facility on Sema:th Lands which involved the biological treatment of petroleum hydrocarbon contaminated soil. Treated soil was reportedly deposited in a landfill located on Sema:th Lands, west of the SES treatment facility. The Phase II ESA concluded that

the findings suggest that soil deposited in the Landfill site was not treated sufficiently to reduce hydrocarbon concentrations below 'regulatory criteria'. In addition, the ESA highlighted several fill areas where there was elevated presence of metals and PAHs suggesting the use of untreated/contaminated fill.

The Draft Phase III ESA also provided recommendations to complete a human health and ecological risk assessment for chromium, nickel, and dissolved metals concentrations in soil in several areas on Sema:th Lands to determine if their concentrations pose a potential threat. The environmental issues surrounding soil and fill management were also identified during the community consultation process. Sema:th members felt that contaminated soils was one of the top environmental threats and identified soil and fill management as a priority on their lands.

4.6 Solid Waste Handling and Disposal

Solid waste is waste that is produced by residential, commercial, institutional, demolition, land clearing, or construction sources (Province of BC, 2013c). Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. The term usually relates to materials produced by human activity, and the process is generally undertaken to reduce their effect on health, the environment or aesthetics (Wikipedia, 2013).

The ESAs noted and the community consultation confirmed issues surrounding several "household" type waste dumps on Sema:th Lands, which included observations of burned garbage and improperly disposed garbage along roadsides and along creek banks The questionnaire results suggest that the majority of members feel that waste and other materials are not being disposed of properly, suggesting a lack of education and awareness in the community. The EOP will provide information related to the proper handling and disposal of waste material.

4.7 Land Development

Land development refers to the alteration of land through activities such as grading, excavation, soil removal, construction, alteration, or clearing of habitats (Queen's Printer for Ontario, 2013). This alteration of conversion of land is associated with modern communities that are constructed or reconstructed for people to live, work, worship, shop, play, and with other supporting land uses (Dewberry & Couture, 2008).

Throughout the land development process, it is important to maintain environmental and cultural values supported by the land and surrounding environment. Maintenance of environmental and cultural values during land development can be achieved through the use of environmental protection and stewardship

practices (Province of British Columbia, 2013d).

The City of Abbotsford has currently zoned Sema:th Lands as agricultural, general industrial, and rural residential land use. It should be noted that Sema:th will be developing their own Land Use Plan and Zoning By-law which will likely change these designations. General land use within Sema:th Lands include residential, parkland, agricultural, and industrial (currently brick and clay products manufacturing, vehicle servicing facility, and steel container storage restoration). Through the implementation of this EMP, we hope to facilitate and regulate responsible and sustainable development to ensure the long-term viability sustainability of Sema:th Lands.

4.8 Surface Water Management

Surface water refers to water that has accumulated on the ground surface (Thompson Rivers University, 2006). Water typically accumulates on the ground surface through precipitation such as rain, snow, or hail. As water accumulates on the surface, it begins to flow towards creeks, streams, lakes, ditches, or installed storm sewer systems or reservoirs. Regionally, surface water originates in mountainous areas and then flows through creeks, streams, and as overland flow to larger creeks and streams in lowland areas.

Surface water can be negatively impacted through contamination from human and natural sources (Thompson Rivers University, 2006). Human-caused contamination can occur through the release of hazardous materials to surface water from residential, industrial, and commercial operations. For example, water within a creek which runs through an agricultural area can be negatively impacted if pesticides and fertilizers are released into the creek. Pesticides and fertilizers may cause detrimental impacts to the aquatic life of the creek, reducing the creek's productivity, and reducing the quality of the surface water. Natural sources of surface water contamination include bacteria, viruses, of toxins within the water which are naturally occurring. If the water is consumed by wildlife, pets, or humans, they may become ill.

There are a number of watercourses that flow through or adjacent to Sema:th Lands including Sumas River, Marshall Creek, Kilgard Creek, and a number of other unnamed creeks and streams. A primary concern of the community surrounds the transportation of sediment and other pollutants into surface waters on Sema:th Lands through stormwater runoff, erosion, and other point/non-point sources. Proper management of surface water is important to the long-term viability of our aquatic and terrestrial environments.

4.9 Cultural Resources Protection

As described by Jordan-Bychkov and Domosh, culture can be defined as learned collective human behaviour. These learned traits form a way of life held in common by a group of people. Learned similarities in speech, behaviour, ideology, livelihood, technology, value system, and society bind people together.

Sema:th boasts a rich, complex, and dynamic culture full of our own distinct values, beliefs, traditions, and heritage. The future of Sema:th is important. The future of our people is based on our history, land culture, people and resources. Sema:th People wish to incorporate Traditional Knowledge into environmental management processes and protect our cultural resources so that development, activities on our land, and the use of our resources benefit the people today and ensure prosperity for future generations. We wish to continue to grow our culture, while learning from the past, to create a vibrant future.

4.10 Environmental Emergency Response

In the event of an environmental emergency, we must be prepared to respond to any event that has the potential to negatively impact human health and/or the environment. Examples of environmental emergencies include landslides, earthquakes, fires, floods, spills and the release of hazardous substances in to the natural environment. An emergency response includes a team of government, industry, communities, and local organizations to respond to an environmental emergency as soon as possible to reduce impacts (Government of Canada, 2012). Environmental emergency response is key to preventing, preparing for, and mitigating situations that have the potential to negatively affect the environment and human health (Province of British Columbia, 2013e).

Through the questionnaire and consultation process, community members expressed a consensus of concern related to the lack of formal procedure surrounding environmental emergency response. The majority of the community were either unsure or did not know what to do or who to call in the event of an environmental emergency. Additionally, the community expressed a feeling of concern related to the following potential environmental emergencies on Sema:th Lands:

- Spills (i.e., fuel and oil spills);
- Landslides caused by blasting on the mountain;
- Earthquakes;
- Fires – specifically related to explosions or industrial fires at Flex Lox; and

- Gas leaks or pipeline bursts.

Education and awareness training to the community would be required to ensure individuals are aware of specific responsibilities and procedures as they pertain to emergency response.

5.0 Implementation

The following implementation strategies will assist in putting the EMP and related EOPs into full effect.

5.1 General Considerations

The EMP and associated EOPs are a comprehensive environmental strategy that provides Best Management Practices (BMPs), guidelines, and strategies to assist Sema:th in protecting our land, environment, resources, and People. The EMP is intended to be visionary, goal-oriented, and long-term focused, based on the aspiration of both present and future community Members.

5.2 Obligations for Implementation

When Chief and Council approve the EMP, or any amendment to the EMP, the Nation and all entities or parties working on Sema:th Lands must follow the EMP and utilize the EOPs, BMPS, guidelines, and strategies to guide future land development activities in a manner that promotes environmental stewardship while minimizing negative effects. Chief and Council will have the mandate to make all community members and other parties wishing to operate on Sema:th Lands, aware of the EMP and related EOPs.

5.3 Reviewing and Updating the EMP

Provisions for reviewing and updating the EMP are found in the following sections of this report:

- Section 2.2
- Section 2.3
- Section 2.4
- Section 2.5

5.4 Building the Sema:th Lands and Resources Department

The Sema:th Lands and Resources Department is currently staffed in the following two positions – the Lands and Resources Manager and the Lands Clerk. Through the implementation of the EMP, significant responsibilities are going to be allocated to the Lands and Resources Department. Additional staffing resources will be required to ensure that the Department is fully functional and is able to manage the additional workload and responsibilities. Potential positions could include:

- Enforcement Officer;
- Environmental Technician(s); and
- Environmental Officer.

5.5 Schedule

The Implementation Schedule (Appendix B) is designed to assist Sema:th First Nation with establishing clear timelines for activities recommended in the EMP. The timeline summarizes the recommended activities of the EMP and has organized these into a series of timeframes including: foundation activities (< 1 year); short term activities (1 – 3 years); medium term activities (4 – 5 years); and long-term activities (6 years +). The table also identifies specific timeframes within specific fiscal years for the implementation of these activities.

5.6 Training and Education

As Sema:th begins to implement the EMP there are going to be employment opportunities for Sema:th Members in the areas of environmental management. To maximize these opportunities and to ensure that Sema:th Members have priority hiring opportunities on jobs related to environmental management (e.g., construction monitoring), Sema:th will build community capacity through the following:

- Identify suitable candidates to take part in environmental training programs both for short-term and long-term employment (e.g., Environmental Officer);
- Allocate specific funding to train Members; and
- Maintain a database of personnel who have completed environmental training programs related to the EMP.

The following provides a list of schools and environmental training programs relevant to the implementation of the EMP and applicable EOPs.

Vancouver Island University

- Erosion and Sediment Control (3-day);
- Environmental Field Techniques for Construction Projects (3-day);
- Environmental Monitoring for Construction Projects (3-day);
- Water Quality Sampling and Design (3-day);
- Freshwater Sampling Methods and Design (2 days each); and

- Environmental Technician Certificate Program (25-day).

Kwantlen Polytechnic University

- Environmental Protection: Diploma of Technology (2 - 3 years)

British Columbia Institute of Technology (BCIT)

- Fish and Wildlife Recreation Diploma Program (1 year)

APPENDIX A

Environmental Operating Procedures

EOP 1

Air Quality Management

Air quality is a measure of the state of the air around us and the air that we breathe. Poor air quality refers to polluted air that has the potential to be harmful to human health or the environment. Poor air quality may be the result of emissions to the atmosphere from human activities (e.g., car emissions, industrial activities; Province of British Columbia, 2013a).

Goal:

- We recognize that air is a shared resource and essential to life, and we will do our part to promote improved air quality for everyone.

Objectives:

- Establish better relationships with Metro Vancouver and the Fraser Valley Regional District.
- Become more involved in the regional air quality decision-making process as follows:
    - Establish baseline conditions based on the work done by regional agencies to date.
    - Draw upon the existing regional air quality monitoring network to characterize/ monitor air quality moving forward.
- Create policies for household burning.
- Create and enforce a process to manage air emissions from new development.
- Educate members and generate awareness on air quality issues and management strategies for our community and neighbours.

Environmental Operating Procedure No. 1	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisory Committee, Developers/Proponents, Nation Members	Revision Date: July 25, 2013

Terminology

Criteria Air Contaminants: While many different contaminants may be emitted to air, there is a set of contaminants considered the "Criteria Air Contaminants" that are of particular interest in analyzing air quality. These contaminants are:

- Oxides of nitrogen (NO_X)
- Sulphur dioxide (SO_2)
- Carbon monoxide (CO)
- Volatile Organic Compounds (VOCs)
- Particulate Matter (PM)
    - Total Particulate Matter (TPM)
    - PM with a diameter less than or equal to 10 microns (PM_{10})
    - PM with a diameter less than or equal to 2.5 microns ($PM_{2.5}$)

Ground-level Ozone (ozone): is an air contaminant associated with many negative health and environmental effects. Ozone is not emitted directly, but is the product of a series of photochemical reactions occurring in the atmosphere involving two precursor pollutants, NO_X and VOCs.

Fine Particulate Matter: In addition to being one of the criteria air contaminants, it must be understood that fine particulate matter ($PM_{2.5}$) can be both directly emitted from a source (primary) or created through a series of photochemical reactions in the atmosphere (secondary).

Ammonia: is a colourless pollutant with a pungent odour that also acts as a precursor to the photochemical reactions that produce secondary fine particulate matter. Ammonia itself is also associated with negative effects on human health and the environment. Major sources of ammonia include livestock waste and fertilizer production.

Legislation, Standards, and Policies

- *Canadian Environmental Protection Act, 1999 (CEPA 1999)*
- Indian Reserve Waste Disposal Regulations, C.R.C., c 980
- *British Columbia Environmental Management Act (Part 6 – Clean Air Provisions)*
- British Columbia Waste Discharge Regulation (B.C. Reg. 320/04)
- British Columbia Agricultural Waste Control Regulation (B.C. Reg. 131/92)
- British Columbia Open Burning Smoke Control Regulation (B.C. Reg 145/93)
- British Columbia Solid Fuel Burning Domestic Appliance Regulation (B.C. Reg 302/94)

Potential Impacts

Sema:th Nation is located in the Fraser Valley. The Fraser Valley is located in a confined airshed, which means that the area is more likely to experience a buildup of contaminants in the air (Fraser Valley Regional District, 2008). The confined airshed in the Fraser Valley is likely created by the weather, wind, and geography of the valley (Province of BC, 2013b). The airshed in the Fraser Valley is bordered by seacoast and mountains. This creates the potential for air to remain "trapped" within the Fraser Valley, creating a higher potential for pollutants to accumulate. Additionally, the Fraser Valley is subject to the movement of air emissions from the north western United States into the region. This trans-boundary pollution may contribute to air quality locally. The buildup of pollutants in the air has the potential to negatively impact human health, visibility, and the environment.

Maintaining good air quality is essential to the ongoing health of Sema:th and our Lands. Declining air quality may have potential impacts on the people (e.g., increased respiratory illness) and on the environment (e.g., damage to vegetation).

Managing air quality associated with operations on Sema:th Lands can help improve the air we breathe and allow for a healthier environment. While air quality on Sema:th Lands is dictated by regional air quality, we can work towards improving our behaviour and community and act as stewards of the environment to promote good air quality.

Best Management Practices

All development must comply with applicable Sema:th, federal, and provincial regulations, permits, authorizations, conditions, and agreements with respect to air quality management/protection.

The Fraser Valley Regional District (FVRD) has developed an Air Quality Management Plan (AQMP), originally adopted in 1998 (with draft revisions proposed). The FVRD AQMP identifies key drivers of air quality within the region as being ground-level ozone, fine particulate and precursors to both of these (e.g., ammonia, volatile organic compounds, oxides of nitrogen). The AQMP has linked the long term management of air quality within FVRD to reductions in these key drivers. As the population in the area continues to grow over time, there is the potential for an increase in pollutant emissions associated with the increased activity. Therefore, the AQMP outlines recommendations to help the FVRD with maintaining or improving air quality without limiting growth.

Strategy 1: Manage future developments

To allow for the management of air emissions associated with future development (e.g., industrial, commercial, or residential) of Sema:th Lands, all development should be subject to a review and assessment (if applicable) of air emissions. Through the air quality assessment process (see Appendix I, EOP Process: Air Quality and Managing Future Developments), identify potential impacts, assess proposed mitigation (e.g. design specifications), and determine net effects.

Strategy 2: Ongoing monitoring

The Lands & Resources Department shall review annual monitoring reports for approved developments and assess for compliance with associated mitigation measures. Sema:th will work collaboratively with the Proponent and regulators to address any air quality monitoring issues.

Strategy 3: Manage vehicle emissions through anti-idling policy

Vehicle emissions are a major contributor to air emissions within the regional air shed. One practice to manage emissions from vehicles is to develop and implement an anti-idling policy. Such a policy would engage members of the community and emphasize the importance of improving our personal daily habits. The Lands & Resources Department and/or the Lands Advisory Committee will work with the community to develop the detailed policy, and build capacity within the community with regards to the purpose and need for the policy.

Strategy 4: Participate actively in regional air quality committees

Sema:th Lands have nearby industrial activities that may affect our air quality but are out of our jurisdiction. By participating in regional committees, we will be more likely to affect change in the best interest of our air quality. Participation in these committees will also allow for Sema:th to draw upon the existing efforts of regional planning committees/agencies in defining baseline conditions and also in developing and implementing real-time air quality monitoring.

Strategy 5: Leverage relationships with other agencies

The FVRD has declared working proactively with First Nations as a goal of their Air Quality Management Plan. Sema:th will work towards establishing better relationships with the FVRD and the Greater Vancouver Regional District and Metro Vancouver. To improve these relationships, the Lands & Resources Department and the Lands Advisory Committee will consider engaging the districts in a two-way dialogue surrounding the interests and concerns of Sema:th.

Strategy 6: Prohibit illegal burning of waste on Sema:th Lands

Burning of waste is prohibited under the Indian Reserve Waste Disposal Regulations, Section 10, except under the authority of a permit authorized by the Minister of Aboriginal Affairs and Northern Development. The burning of waste, e.g., household waste, can cause the emission of pollutants that may cause negative effects to human health or the environment. Therefore, burning of waste shall not occur on Sema:th Lands.

Strategy 7: Minimize open burning

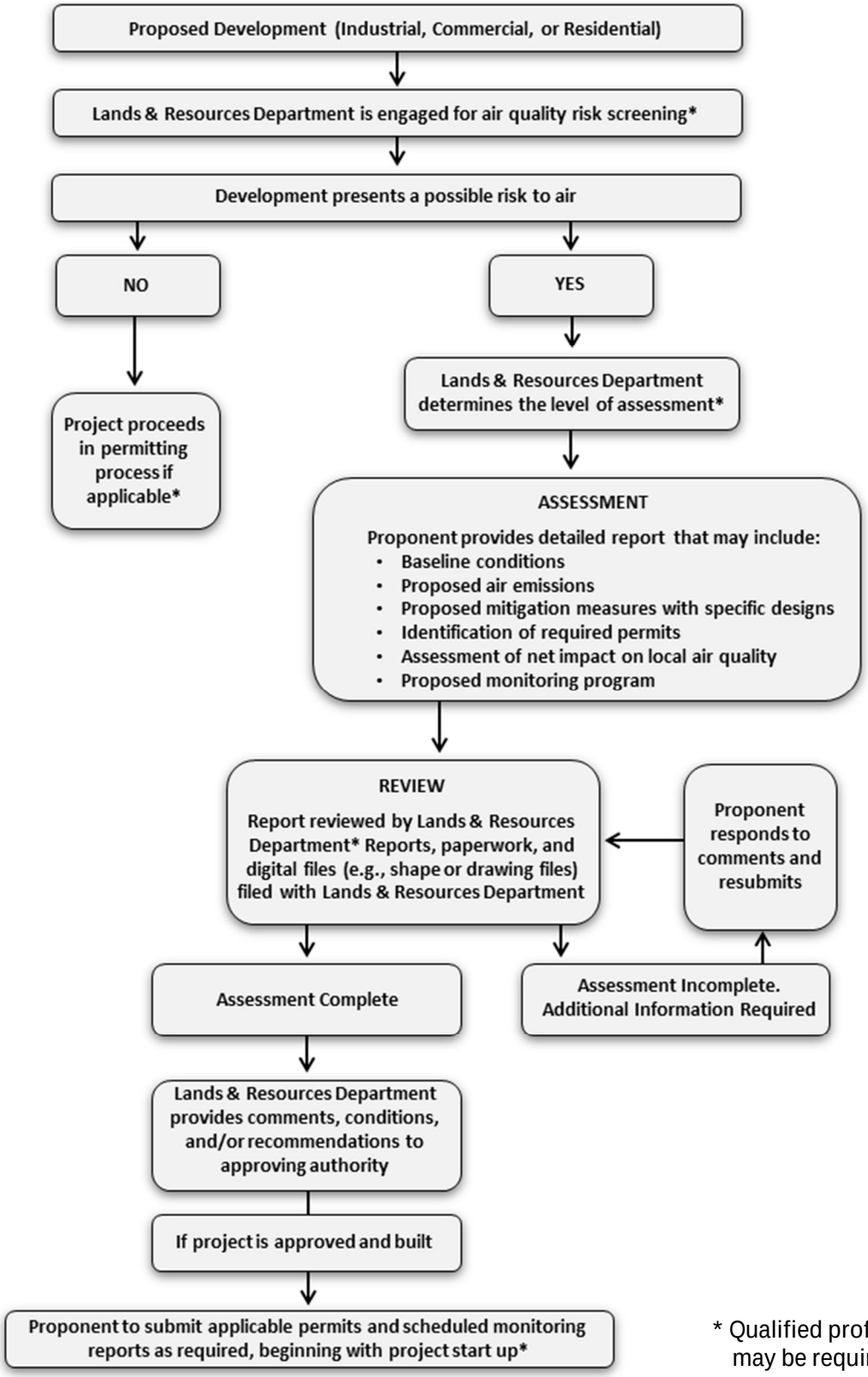
Open burning within the community should be minimized. Efforts will be made to educate the community about the significance of open burning as a source of fine particulates. Sema:th will develop a policy and permitting process to help regulate and minimize open burning.

Strategy 8: Education and awareness

Develop community air quality awareness through education and programs including, but not limited to:

- Anti-idling campaigns;
- Car-pooling advocacy;
- Reducing household energy use; and
- Avoiding power tools (e.g., gas-powered lawn mowers) when possible.

Appendix I
EOP Process: Managing Air Quality for Proposed Development



* Qualified professional services may be required.

EOP 2

Cultural Resources

The future of our people is based on our history, land, culture, and resources. We host a rich, complex, and dynamic culture full of our own distinct values, beliefs, and traditions. We will incorporate Traditional Ecological Knowledge into environmental management processes and protect our cultural resources so that activities on our land and the use of our resources benefit Sema:th People today and ensure prosperity for future generations.

Goal:

- We will continue to grow our culture, while learning from the past, to create a vibrant future.

Objectives:

- Preserve and protect our culture.
- Act as cultural leaders and educate our youth, membership and the public on Sema:th culture and knowledge.
- Pass on our traditions, skills, and knowledge for future generations.
- Enforce the Stó:lō Heritage Policy.

Environmental Operating Procedure No. 2	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisory Committee, Developers/Proponents, Band Members	Revision Date: July 25, 2013

Terminology

Stó:**lō** Heritage: all aspects of Stó:lō culture and lifeways - both tangible and intangible - of the past, present and future, including but not limited to: language, physical / spiritual landscapes; place names; ceremonial sites; burials and burial sites; spirited places; songs; dances; art; craft; design; religious / spiritual / ceremonial practices; places and materials; subsistence and material gathering practices and sites; oral histories including all sqwelqwel and sxwôxwiyám; traditional / historical knowledge; family names; archaeological sites, features and objects; historic sites, documents and objects. Stó:lō Heritage can be classified by 'type', such as Sxwôxwiyám, Xá:Xa, Ceremonial Regalia, etc., as presented in Section 4.0. Also referred to as 'Stó:lō Heritage Resources' in relation to resource management.

Stó:**lō** Intellectual Property: knowledge, the nature of use of which has been transmitted from generation to generation, which is regarded as Stó:lō and as belonging to Stó:lō individuals, families, communities or the Nation as a whole. Stó:lō Intellectual Property, though rooted in the past, is contemporary knowledge that changes with time. Stó:lō Intellectual Property includes: place names; oral history; family names; songs; dances; designs/ images / arts; language; knowledge.

Features: objects that form a permanent part of the site of which they are a part; objects that cannot physically be removed from the site of which they are a part - at least not without significant effort or without destroying the object (e.g., sqémél depressions; shell heaps; cache pits; earthworks; culturally modified trees; house frames / foundations; rock walls; pit-fall traps; trails; roasting pits; hearths; stone quarries; burial mounds / pits; monuments; roads / trails; etc.).

Artifacts: objects that can be readily removed from the site of which they are a part; moveable objects (e.g., chipped stone flakes, knives, spears and arrowheads; tin cans; glass bottles and jars; basketry; personal gear; groundstone hand-mauls; bone pins; antler wedges; glass beads; looms; instruments; etc.).

Ancestral Human Remains: the skeletal or otherwise physical remains of a deceased person or persons in all likelihood of Stó:lō ancestry.

*Terminology as found in the Stó:lō Heritage Policy Manual.

Legislation, Standards, and Policies

- Stó:l**ō** Heritage Policy, 2003 – As described in the Policy, the Stó:lō maintain ownership of and jurisdiction over all Stó:lō heritage sites and objects. On behalf of the broader Halkomelem-speaking community, Stó:lō Nation maintains jurisdiction over Stó:lō heritage sites and objects not otherwise linked directly to a family or individual. Stó:lō Nation recognizes and accepts the shared heritage interests of other traditionally Halkomelem speaking communities and organizations not directly associated with the Nation. Stó:lō Nation endeavours to establish heritage related Protocol Agreements, as needed, with such Halkomelem communities and organizations. Stó:lō Nation may also develop heritage related Protocol Agreements with non-Aboriginal governments and resource management agencies.
- *British Columbia Heritage Conservation Act* – British Columbia's archaeological sites are protected under the *Heritage Conservation Act* (HCA). This Act is the latest in a number of pieces of legislation focused on the protection of archaeological sites.
- BC Ministry of Forest Lands and Natural Resources Operations' (MFLNRO) Archaeology Branch Policy "Found Human Remains"

Best Management Practices

Development and activities must comply with applicable Sema:th, federal, and provincial regulations, permits, authorizations, conditions, and agreements with respect to cultural resources protection.

Application of the Stó:l**ō** Heritage Policy will direct actions as lands are developed and cultivate future use. It is recognized that the purpose of the Stó:lō Heritage Policy is to:

- Protect, preserve and manage Stó:lō heritage – in all its forms – in a manner consistent with Stó:lō values, beliefs and traditions;
- Cooperate with other organizations in the protection, preservation and management of Stó:lō heritage;
- Protect and preserve Stó:lō religious freedom in all its expressions;
- Maintain the integrity of the Stó:lō spiritual world;
- Maintain healthy relations between the contemporary Stó:lō community and Stó:lō ancestors – past, present and future;
- Maintain the integrity of Stó:lō history and heritage through the respectful treatment of Stó:lō knowledge, heritage objects and sites;
- Advance knowledge and understanding of Stó:lō heritage;
- Maintain continuity in Stó:lō heritage and the practice of cultural traditions in forms both old and new; and
- Advance Stó:lō cultural revival.

Strategy 1: Identify important cultural areas through land use planning

As part of the land use planning process, identify areas for cultural protection based on Traditional Ecological Knowledge, available data (e.g., existing TK Reports), and best practices (e.g., Stó:lō Heritage Policy). As the community grows it will be important to preserve, protect and enhance these significant sites.

Strategy 2: Develop a cultural baseline overview

Work collaboratively with the Stó:lō Research and Resource Management Centre (SRRMC), to develop a cultural baseline overview of Sema:th Lands. The baseline should include but is not limited to the identification and location of:

- Culturally significant areas (e.g., fishing locations); and
- Culturally significant points (e.g., culturally-modified trees).

Information gathered through the baseline overview will allow Sema:th to inform community members and developers of potential project impacts. It will provide additional information for Council to make better land use decisions regarding future development. Where adverse impacts are identified, this information can be used to assist in developing avoidance, enhancement, or mitigation strategies. Information gathered through this study can also be used to enhance cultural sites and provide opportunities for cultural innovation on Sema:th Lands.

Strategy 3: Promote cultural resources protection and enhancement

Stó:lō Nation requires that impacts to Stó:lō heritage resources be considered, assessed, and mitigated from all development-related disturbances and impacts. Heritage Resource (HR) studies should be undertaken as either Overview Assessments (HROA) or Impact Assessments (HRIA).

All heritage related studies must be conducted by researchers with an appropriate level of experience and training, under the conditions of a Stó:lō Heritage Investigation Permit (see Section 7.0 of the Policy).

Through the land development process, mechanisms are put in place to promote, endorse, and enforce the Stó:lō Heritage Policy (see Appendix I – EOP Process Cultural Resources Protection for Proposed Development). As part of this, Sema:th will include HROAs and HRIAs as appropriate and in consideration within the Sema:th land development permitting process.

A set of management strategies (related to construction activities) have been adapted from the Stó:lō Heritage Policy and the MFLNRO's Archaeology Branch Policy regarding "Found Human Remains" and have been included as Appendix II, Emergency Impact Guidelines.

Strategy 4: Create cultural design guidelines

Growth and development, such as new buildings, can impact cultural heritage and Sema:th's sense of history and of place. To help ensure that culture is preserved and protected, Sema:th will consider creating cultural design guidelines, for developers to follow (where appropriate), that outline cultural considerations for buildings and landscaping. These could include, but are not limited to:

- Built form;
- Signage;
- Massing (i.e., size of building);
- Density;
- Height;
- Exterior treatment;
- Landscaping;
- Parking; and
- Visual impact.

Strategy 4: Leverage relationships with other agencies

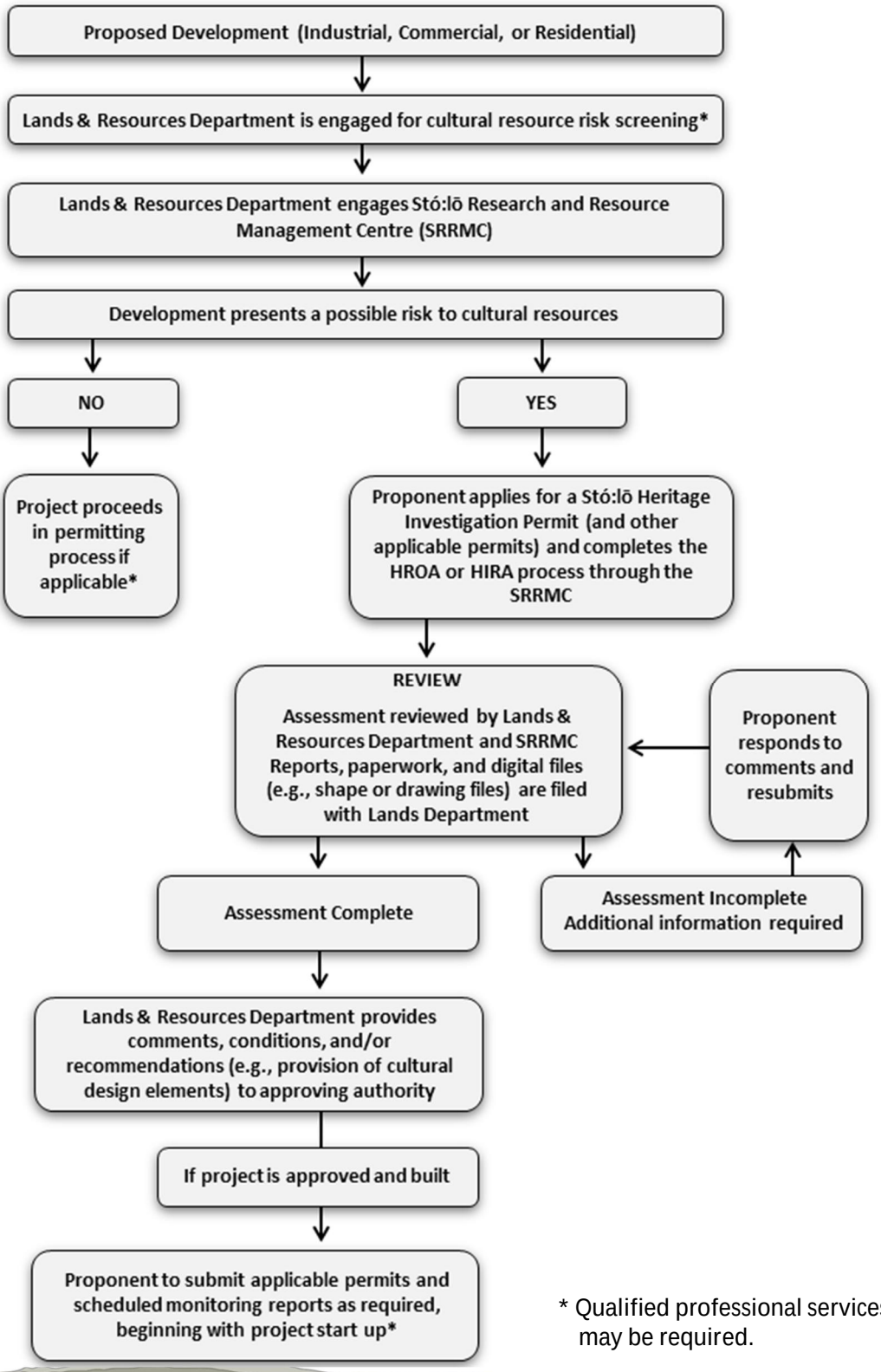
While Sema:th and the Stó:lō Nation have the main responsibility for protecting our cultural resources, there are also a number of local, provincial and national organizations that can support First Nation communities in the preservation of our heritage, through grants, funding and in-kind support (i.e., labour, research, etc.). To ensure we maximize the resources available, we will continuously develop and strengthen our relationships with other agencies also responsible for the protection and enhancement of cultural values and resources. We will take an active role in bringing about a forum of co-management and leadership with regard to all cultural resources.

Strategy 5: Education and awareness

Develop cultural awareness through education and training, with an emphasis on Traditional Knowledge and Land Use. This may include but is not limited to:

- Developing and building a Sema:th Cultural Resource Centre;
- Signage of key community features (e.g., creeks, community buildings);
- Workshops for Elders to share their knowledge;
- Working with local environmental groups to include indigenous species into environmental reclamation projects;
- Promoting the preservation and enhancement of culturally significant areas;
- Consulting with Elders when developing Sema:th policies or plans; and
- Hosting cultural celebrations.

Appendix I
EOP Process: Cultural Resource Protection for Proposed Development



* Qualified professional services may be required.

Appendix II
Emergency Impact Guidelines

In the event that archaeological, cultural, or heritage resources are encountered during site operations, the contractor shall immediately stop construction, notify Sema:th and comply with the policies and procedures identified in the Stó:lō Heritage Policy.

In the event that any item of particular archaeological, heritage, historical, cultural or scientific interest is found on the site, as between the contractor or the party who discovered the item(s) and Sema:th, such item(s) shall be and remain the property of Sema:th and/or the Stó:lō Nation.

Sema:th and their contractor will coordinate and work with the Stó:lō Research and Resource Management Centre (SRRMC) on behalf of the Stó:lō Nation.

Below are a set of management strategies (related to construction activities) that have been adapted from the Stó:lō Heritage Policy and the BC Ministry of Forest Lands and Natural Resources Operations' (MFLNRP) Archaeology Branch Policy regarding "Found Human Remains".

Management options will be reviewed and agreed upon between Sema:th and the SRRMC. Management options will take into account the Stó:lō Heritage Policy particularly related to:

- Section 5.3.5 – Material Culture Sites / Objects
- Section 5.3.6 – Stó:lō Ancestral Human Remains
- Section 5.3.6.1 – Incidental Discovery of Stó:lō Ancestral Human Remains
- Section 8.0 – Collection of Stó:lō Heritage Artifacts
- Section 8.1 – Incidental Finding and Collection

Cultural Sites Chance Find Management Strategy

The following emergency impact management guidelines apply to cultural, heritage and archaeological sites. Emergency management procedures for suspected human burial sites are presented separately below. The contractor shall be familiar with the Stó:lō Heritage Policy and MFLNRO's Archaeology Branch Policy regarding "Found Human Remains", recognizing that the appropriate course of action may differ depending on whether or not the remains are found in an undisputed archaeological context (i.e., with artifacts).

Initial Response by the Contractor

Step 1: The contractor shall immediately stop construction in the immediate vicinity of the cultural or archaeological site.

Step 2: The contractor shall contact Sema:th for further guidance. SSRMC will be contacted by Sema:th.

Step 3: Sema:th and/or SRRMC will advise the contractor on further action.

Please refer to Table 1 in the Stó:lō Heritage Policy.

Initial Action

Depending on the nature of the situation, one of the following responses is likely:

- Based on a telephone description of the incident, it may be decided that there are no further concerns, allowing construction to continue as planned; or
- A field visit by a SRRMC archaeologist may be required. In this case, Sema:th will notify the SRRMC. It is anticipated that suitable protocols for such situations will be established in consultation with all interested parties and as per the Stó:lō Heritage Policy.

Management Options

For all management options, the SRRMC will be consulted for input into developing appropriate procedure(s) and protocols at the earliest time possible. Potential options related to land development activities could include but are not limited to:

Option 1: Avoidance through partial or complete project redesign or relocation. This ensures minimal impact to the archaeological site or heritage/cultural site and is the preferred option from a cultural resource management perspective. It can also be the least expensive option from a construction perspective.

Option 2: Salvage or emergency excavation, if necessary. This "data recovery" option is site destructive and it can delay construction. Consequently, salvage or emergency excavation is generally not a preferred option.

Option 3: Application of site protection measures, including both temporary strategies and long-term solutions. Temporary strategies could include erecting fencing or barricades to protect the archaeological or heritage site, while longer-term solutions could include capping the archaeology site with fill. Appropriate protection measures shall be identified on a site-specific basis.

Chance Find Impact Management for Human Remains

Initial Response by the Contractor

If definite or possible human remains are encountered:

Step 1: The contractor shall immediately stop construction in the vicinity of the remains.

Step 2: The contractor shall immediately contact Sema:th for further guidance.

Step 3: Sema:th will advise the contractor on further action.

Initial Action

- Sema:th will contact the SRRMC and the RCMP;
- Sema:th or the RCMP will contact the Office of the Coroner;
- Sema:th representatives and a professional archaeologist or physical anthropologist from the SRRMC will visit the site as soon as possible; and
- If it is determined that the remains are Stó:lō and/or Aboriginal ancestry, the Stó:lō Heritage Policy will be followed.

Management Options

The Stó:lō Heritage Policy outlines the appropriate protocol for handling Stó:lō Ancestral and/or Aboriginal human remains and shall be followed. A human remains protocol shall be established prior to recommencement of any proposed construction. Two possible strategies are presented below, but others may, or could, be considered.

Option 1: Avoidance through partial or complete project redesign or relocation. This would ensure that the remains are protected from further disturbance.

Option 2: Salvage or emergency excavation to respectfully remove the remains for reburial as per the Stó:lō Heritage Policy.

The contractor shall be aware that removal of human remains and subsequent reburial might involve certain ceremonies or procedures that could delay construction. If the contractor has any concerns about possible archaeological, historic, or burial locations, Sema:th shall be contacted for direction.

EOP 3

Environmental Emergency Response

Environmental emergency response refers to the immediate response to an emergency that has the potential to negatively impact human health and/or the environment. Examples of environmental emergencies include earthquakes, oil spills and the release of hazardous substances in to aquatic or terrestrial habitat. An emergency response includes a team of government, industry, communities, and local organizations to respond to an environmental emergency as soon as possible to reduce impacts (Government of Canada, 2012). Environmental emergency response is key to preventing, preparing for, and mitigating situations that have the potential to negatively affect the environment and human health (Province of British Columbia, 2013e).

Goal:

- To be prepared to ensure the safety of community members and our lands in the event of an environmental emergency.

Objectives:

- Ensure community members are prepared for a 3-day window in the event of an emergency.
- Develop stronger linkages with other jurisdictions and to share resources.
- Educate the community to raise awareness about environmental emergency response.

Environmental Operating Procedure No. 3	EOP Revision: 01
Responsibility: Emergency Management Committee (Chief & Council, Band Manager, Emergency Program Coordinator)	Revision Date: July 25, 2013

Legislation, Standards, and Policies

- *Emergency Program Act* – requires that all Provincial ministries and agencies utilize the British Columbia Emergency Response Management System (BCERMS).
- *Indian Act* – Sema:th has not ratified treaty with the Federal and Provincial governments. The community is located on Federal Reserve land and is currently governed by certain Federal Acts including aspects of the *Indian Act*. As such, the federal and provincial government have entered into a Memorandum of Understanding (MOU) for the Provincial Emergency Program (PEP) to provide emergency management services.
- *Environmental Management Act* – replaces the old *Waste Management Act* and the *Environment Management Act* and brings provisions from both of those acts into one statute. The Act seeks to protect human health and the quality of water, land and air in British Columbia. The Act also enables the use of administrative penalties, informational orders and economic instruments to assist in achieving compliance.
- *Fisheries Act, 1985* – makes it illegal to harm fish habitats or fishing grounds. Environment Canada is responsible for the administration and enforcement of the *Fisheries Act* as it pertains to spills and environmental emergencies.
- *Canadian Environmental Protection Act* is administered by Environment Canada. Part 4 deals with pollution prevention; Part 5 deals with controlling toxic substances; and Part 8 deals with environmental matters related to emergencies.
- *Emergency Program Management Regulation* identifies the emergency management responsibilities of the Provincial Emergency Program (PEP) and other ministries.
- *Fire Services Act* is administered by the B.C. Office of the Fire Commissioner, which is part of the Ministry of Public Safety and Solicitor General. Section 25 of the Act outlines emergency powers of the B.C. Fire Commissioner.

*Note not all applicable Acts or Regulations are identified.

Potential Impacts

An environmental emergency is an occurrence or natural disaster that affects or threatens the environment and ultimately human health. Land can be impacted by hazardous substance spills (most commonly oil and fuel spills), earthquakes, floods, or landslides. Water can be impacted from spills upstream or through ground penetration to the aquifer.

The most likely environmental emergency on Sema:th Lands includes:

- Fuel spill (oil or gas);
- Earthquake;
- Landslide;
- Flooding;
- Drinking water contamination;
- Severe weather (snowfall or wind storms); and
- Power blackouts.

Best Management Practices

All emergency environmental response procedures must comply with applicable Sema:th, federal, and provincial legislation, regulations, and agreements. The following provides additional information on provincial structures that facilitate a coordinated (provincial) approach to environmental emergency response.

Sumas First Nation Emergency Plan (2011) This plan was developed to set out the procedures, roles and responsibilities for Sema:th Nation in the event of an environmental emergency.

British Columbia Emergency Response Management System (BCERMS) The *Emergency Program Act* requires that all Provincial ministries and agencies utilize the BCERMS. First Nations, who have not ratified treaties with the Federal and Provincial government are governed by federal statue, are not legally required to follow the BCERMS model but are strongly encouraged to incorporate this model into their emergency plans. The majority of municipalities and First Nations utilize BCERMS to ensure consistent emergency principles and coordinated response efforts. To facilitate the same level of services to First Nation communities PEP, Aboriginal Affairs and Northern Development Canada (AANDC), and First Nations Emergency Services (FNESS) utilize the BCERMS model to standardize delivery of emergency management and response efforts.

Provincial Emergency Coordination Centre The Provincial Emergency Coordination Centre (PECC) coordinates provincial resources and prioritizes and establishes provincial objectives in response to requirements at other levels. This level also serves as the coordination and communications link with the federal disaster support system. The Provincial Central Coordination level is activated when the key Ministry(ies) or the Director of the PEP considers it necessary to coordinate and direct overall provincial response to an emergency or disaster.

Strategy Approach

This EOP only provides strategies for utilizing the existing Sumas First Nation Emergency Plan, 2011. If specific information on environmental emergency response is required, the reader is to refer to and use the existing Sumas First Nation Emergency Plan.

Strategy 1: Maintain the Sumas First Nation Emergency Plan (2011)

In 2011, Sema:th created an Emergency Plan that provided a framework, information, and guidance on the following:

1. Emergency Contact List
2. Community Context
3. Emergency Plan Overview
4. Emergency Management Organization
5. Emergency Response & Recovery Structure
6. HRVA, Evacuation and Community Maps
7. Response Action Plans
8. Emergency Social Services
9. Recovery and Procedures (incl. Responsibilities)

To ensure that this document in maintained with the most current and relevant information/procedures and ensures consistency with the BCERMS processes, Sema:th will establish an annual review period.

Strategy 2: Promote the roles & responsibilities established in the Sumas First Nation Emergency Plan

Competency and ability to respond to environmental emergency incidents requires a complete understanding of each person's roles and responsibilities. It is critical that key personnel responsible for the Emergency Plan are trained in their duties and are informed and aware of their responsibilities as it relates to the Plan. This will include, but is not limited to:

- Educating all personnel identified in the plan to ensure that they are effective in their role;
- Training in the use of emergency response equipment, personal protection devices, and other emergency response resources to ensure ultimate response capabilities;

- Familiarizing staff with local agencies such as fire, police, ambulance, PECC; and
- Practicing emergency drills on a regular basis.

Strategy 3: Promote education and awareness

Develop environmental emergency response awareness in the community through a variety of tactics including, but not limited to:

- Providing copies of the Sumas First Nation Emergency Plan to community members;
- Displaying copies of the Sumas First Nation Emergency Plan at key community locations (e.g., Health Centre);
- Providing plain language summaries of key aspects of the Sumas Emergency Response Plan to community members;
- Posting emergency contact list at key community locations (e.g., Health Centre);
- Conducting community workshops on environmental emergency response;
- Circulating informational pamphlets on environmental emergency response and what to do in the case of an emergency (e.g., evacuation procedures);
- Conducting environmental emergency response drills; and
- Ensuring that every household has information on what should be in an emergency kit.

Strategy 4: Work with industries operating on or near Sema:th Lands

Work cooperatively with industries operating on or near Sema:th Lands where their activities poise a potential environmental risk (e.g., fuel spill). Retain copies of their environmental emergency plans/procedures and establish techniques and formal protocols on how to collaborate in the event of an environmental emergency.

Strategy 5: Harmonize with other jurisdictions and neighbouring First Nations

The Fraser Valley Regional District's (FVRD) Community Emergency Programs (CEP) are part of the district's coordinated efforts to ensure all of its communities and rural areas are prepared for and are able to deal with emergency events. The City of Abbotsford also has an established Emergency Program.

Sema:th will look for opportunities to collaborate with the FVRD and the City of Abbotsford and neighbouring First Nations to harmonize emergency response plans and to share emergency response resources.

EOP 4

Fuel Handling & Storage

A significant component of impacts to soil and groundwater on Sema:th Lands are associated with poor fuel handling and management of fuel storage tanks (in addition to fill sites and industrial activities) (Teranis, 2012). Indication of hydrocarbon impacts (strong odours and visible product in soil) was also identified at numerous locations. Proper fuel handling and storage procedures including response and mitigation measures are key to preventing the unnecessary release of fuel into the environment from commercial and residential sources.

Goal:

- We will prevent, minimize, and mitigate environmental impacts from fuel spills or leaks on Sema:th Lands.

Objectives:

- Ensure compliance with existing legislation and regulations.
- Educate members and generate awareness of proper fuel handling and storage.
- Generate awareness of what do in the case of a spill and who to call.
- Complete regular checks on fuel tanks.
- Ensure the fill station is properly equipped for spill management.

Environmental Operating Procedure No. 4	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisory Committee, Developers/Proponents, Band Members	Revision Date: July 25, 2013

Terminology

Above-ground storage tank (AST): any chemical or fuel (gas, diesel, or heating oil) storage tank located above ground. ASTs are commonly used to supply fuel to heat homes, store vehicle fuel or power generators.

Underground storage tank (UST): a storage tank located underground to contain chemicals, fuel, or septic materials.

Hydraulic oil: oil used in the hydraulic systems of equipment such as excavators or backhoes.

Heating oil: a type of fuel generally used to power a furnace for a home or other building.

Groundwater: water that is found below ground in the soil or in pores and crevices in rock.

Surface water: water that is on the surface, such as ponds, lakes, streams, rivers, creeks and oceans.

Legislation, Standards, and Policies

- *Canadian Environmental Protection Act*, 1999 (CEPA 1999)
- National Fire Code of Canada (2010)
- Environment Canada Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008)
- *British Columbia Environmental Management Act*
- British Columbia Contaminated Sites Regulation (B.C. Reg. 97/2011)

In 2008, Environment Canada's new storage tank regulations came into force to regulate aboveground and underground storage tanks and containers under federal jurisdiction. The regulations apply to specified tanks and tank systems on federal or First Nation lands. The regulations also apply to all the piping and other equipment associated with the tanks. The regulations, entitled *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008)* apply to all tanks that meet the following criteria:

- 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.

According to the Environment Canada, *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008)*, the following tank systems DO NOT fall under the regulations:

- Containers smaller than 230 litres;
- Indoor storage tanks;
- Pressurized tanks like those storing propane;
- Mobile tanks such as those on the back of pickup or other trucks;
- Outdoor, aboveground tanks that have a total combined capacity of 2500 litres or less and are connected to a heating appliance or an emergency generator; and
- Tanks regulated by the National Energy Board.

Regulated under the *National Fire Code of Canada,* the Canadian Standards Association (CSA) Standard B139, "*Installation Code for Oil-Burning Equipment*" code provides the basis of environmental control in design and operation of residential scale heating oil tanks and fuel systems.

Potential Impacts

Spills due to poor fuel storage and handling can result in harm to the environment and serious risks to human health including the risk of death or injury due to fire and explosion. Spillage of fuels, such as gasoline, diesel and heating oil, has the potential to contaminate sewers, drainage ditches, and surface water. Contaminated soils and groundwater can lead to issues with soil vapour and risks to human health and contamination of drinking water or groundwater used for livestock or crop irrigation.

Best Management Practices

Managing fuel tanks, fuel handling and fuel storage practices consistent with the Environment Canada Storage Tanks Regulations and the CSA Standard B139 provide Sema:th with a management process focussed on prevention of risks associated with existing systems.

Specification of designs to be compliant with Environment Canada Storage Tanks Regulations or CSA Standard B139 requirements in future fuel management systems will provide a mechanism by which appropriate environmental management provisions can be incorporated as a core component of the management design.

BMPs related to fuel handling and storage are included as Appendix I.

Strategy 1: Create an inventory of fuel storage tank systems

Under the Environment Canada Storage Tanks Regulations all regulated tanks should already be registered with Environment Canada. Utilize the findings of the ESAs and the Environment Canada tank registry to create an inventory that identifies and records the location and status of all fuel tank systems. At a minimum the inventory should seek to build on the existing information for regulated tanks and provide appropriate information for non-regulated tanks (e.g., residential heating oil ASTs).

The Lands & Resources Department will create and maintain the inventory and update it with information to record inspections and tank tests as required under the Regulations.

Strategy 2: Ensure existing and future fuel storage tank systems comply with federal codes

New tanks must be designed to be compliant with all federal regulations. All proposals for development or upgrade of fuel tank storage systems regulated under Environment Canada Storage Tanks Regulations must include certifications from a professional engineer, registered in BC, with direct experience of fuel storage tank design, to confirm that the systems are designed and will be operated compliant with the regulations.

Design and installation or upgrade of tank systems not regulated under the Environment Canada Storage Tanks Regulations should be completed by a certified Oil Burner Mechanic (OBM) and should be supported by certification of the OBM so that the system meets the requirements of CSA Standard B139.

Owners of all new and/or upgraded tank systems must provide supporting documentation to the Lands & Resources Department to show that they are compliant with Environment Canada Storage Tanks Regulations and CSA Standard B139. The Lands & Resources Department will update the inventory to include all new and/or upgraded tank systems.

Strategy 3: Undertake a regular inspection program

Through the fuel tank inspection process (see Appendix II, EOP Process: Fuel Tank Inspection), maintain a regular inspection program.

Strategy 4: Provide effective procedures for fuel spills and leaks

Through the spill response plan (Appendix III: General Response Plan), ensure that fuel spills and leaks are addressed in a manner that minimizes impacts to human health and safety and the environment.

Ensure that appropriate spill response kits are available at key locations in the community where fuel is stored and/or handled.

Strategy 5: Promote education and awareness

Develop fuel handling and storage awareness through education and training. This may include, but is not limited to:

- Organizing an annual small fuel container clean-up;
- Promoting awareness of where to dispose of waste fuel;
- Circulating copies of Appendix II, EOP Process: Fuel Tank Inspection and Appendix III: General Response Plan to owners of fuel tanks;
- Ensuring spill response kits are located in key areas in the community; and
- Training for Sema:th members on proper fuel handling and storage, and spill response.

Appendix I
Best Management Practices for Fuel Handling and Storage

There are a variety of BMPs related to fuel handling and storage. Below is a sample of BMPs that can be included into proper fuel handling and storage procedures.

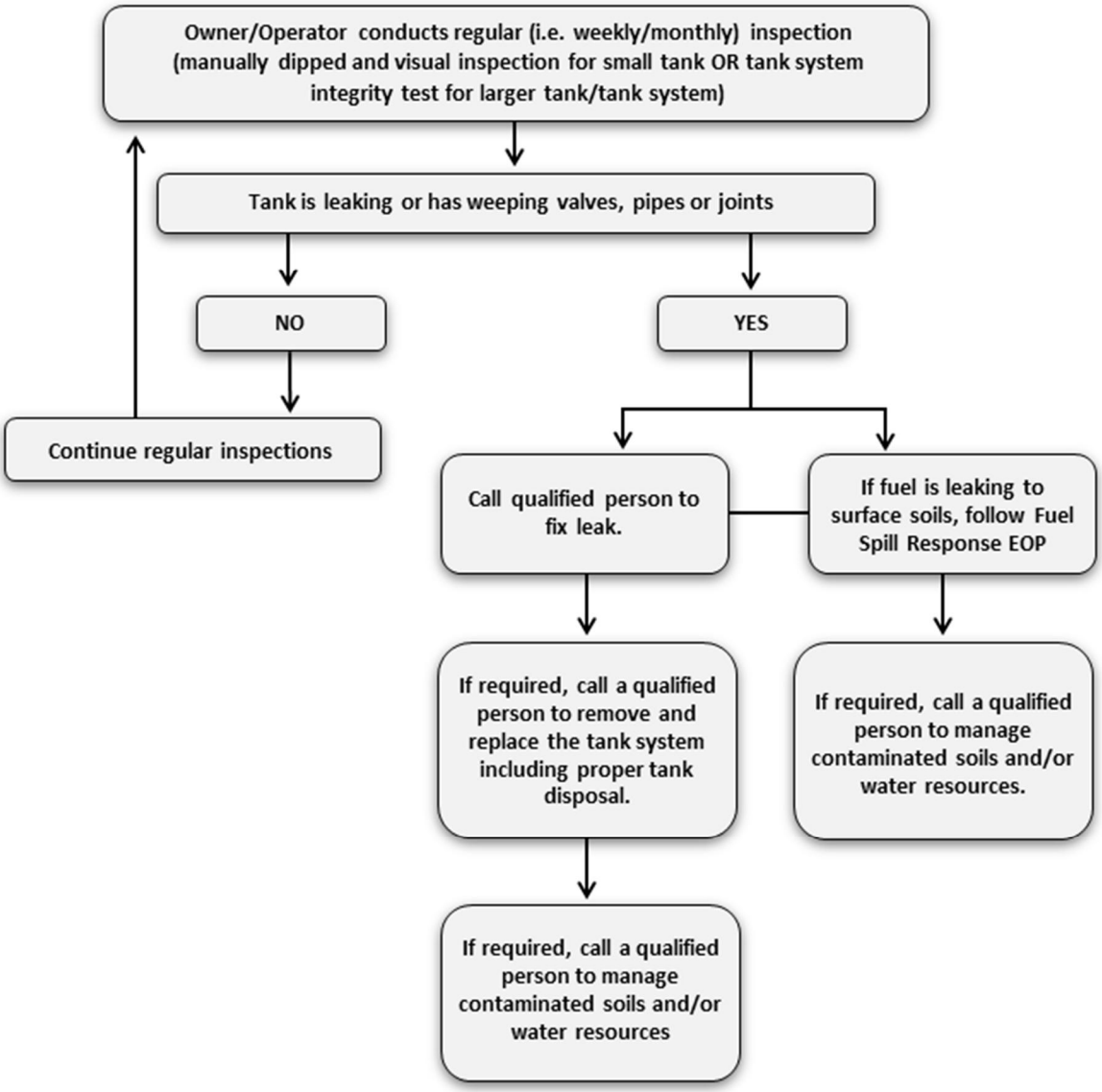
Fuel Tank Systems and Fuel Containers

- Containers shall be filled and capped so that under normal conditions there will be no leakage;
- Containers shall be appropriate for the product being contained;
- Product/WHMIS labels are required on containers identifying contents and hazards;
- Current Material Safety Data Sheets (MSDS) must be maintained in a location available to all people involved in fuel handling, storage and disposal;
- Tanks shall be well maintained and in good condition (free of rust, dents, and leaks);
- Storage locations must be vented and have appropriate fire extinguishers that are annually inspected with proper tags;
- Operators must conduct regular inspections of fuel tanks to ensure proper requirements are met;
- Post no smoking signs at all dispensing and fuel transfer sites;
- Fuel tanks should be located away from groundwater wells or surface waters;
- Store containers at least 3 m away from any building or in a building properly designed for storage;
- Store drums and containers in an upright position;
- Dispense fuel from upright drums and containers using an approved pump;
- All small containers <230 L (50 gallons), (jerry cans, pails, canisters, and drums) that are stored at or near homes should be kept away from roadways and pedestrians and out of direct sunlight. They should be protected from potential impact;
- Do not fill containers beyond their safe filling level (~90% full);
- Use the proper dispensing pump designed for the product being handled;
- Hoses and nozzles must be maintained in good repair and do not leak;
- Operators must stay with the nozzle at all times while dispensing fuel;
- Recover spills as appropriate; and
- Contact the Provincial Emergency Program (PEP) in the event of a fuel spill (1-800-663-3456).

Fuel Transport

- All vehicles transporting fuel must have an appropriate spill kit and the driver must be trained and knowledgeable in its use;
- Vehicles transporting fuels must meet requirements of the *Transport of Dangerous Goods Act* and BC Ministry of Transportation;
- If a combined fuel load is greater than 2,000 L (440 gallons) a shipping document must be filled out for the cargo, the driver must have proof of "Transport of Dangerous Goods (TDG)" certified training and the load must a TDG placard appropriate for the fuels being transported; and
- All loads must be secured to prevent tipping or fuel loss. Fuel drums being transported by truck must be stacked end on end and transported by vehicles with sides or side boards.

Appendix II
EOP Process: Fuel Tank Inspection



Appendix III
General Response Plan

In the event of a fuel spill the following procedures will be implemented:

1. Ensure safety.
2. Stop/contain the flow (when possible).
3. Secure the area.
4. Contain the spill.
5. Notify/report (PEP: 1-800-663-3456).
6. Contact the Lands & Resources Department.
7. Clean up.

1) Ensure Safety

1. Ensure personal/public, electrical and environmental safety.
2. Wear appropriate Personal Protective Equipment (PPE).
3. Never rush in, always determine the product spilled before taking action.
4. Warn people in the immediate vicinity.
5. Ensure no ignition sources are present if spill is a flammable material.

2) Stop the Flow (If safe to do so, and when possible)

1. Act quickly to reduce the risk of environmental impacts.
2. Close valves, shut off pumps or plug holes/leaks, set containers upright.
3. Stop the flow of the spill at its source.

3) Secure the Area

1. Limit access to the spill area.
2. Prevent unauthorized entry onto the site.

4) Contain the Spill

1. Block off and protect drains and culverts.
2. Prevent spilled material from entering drainage structures (i.e., ditches, culverts, drains).
3. Divert flow from water or other sensitive areas with non-reactive materials such as boom, gravel, sand bags, digging a trench, etc.
4. Use spill sorbent material to contain spill.
5. If necessary, use a constructed dam or any other method to prevent any discharge off-site.
6. Make every effort to minimize contamination.
7. Contain as close to the source as possible.

5) Notify / Report PEP

For spills in amounts requiring external notification, immediately report details of the spill to the Provincial Emergency Program (PEP) at 1-800-663-3456 (24-hour).

Spill reports to PEP must include:

- Name and phone of the person(s) responsible for the spill;
- Location, time and date of spill;
- Material spilled and quantity;
- Cause and effect of the spill;
- Action taken to contain the spill;
- Duration of occurrence;
- Weather conditions;
- Planned follow-up;
- Government agencies on the scene; and
- Persons or agencies advised.

6) Contact the Lands & Resources Department

Once the spill is contained, contact and report the spill details to the Lands & Resources Department and inform them of the issue at hand.

7) Clean Up

- Technical assistance is available from a QEP on clean-up procedures and residue sampling;
- All equipment and/or material used in clean-up (e.g., used sorbent, oil containment materials, etc.) must be disposed of in accordance with MFLNRO requirements;
- Accidental spills may produce hazardous wastes (e.g., material with > 3% oil) and contaminated soil. All waste disposals must comply with the *Environmental Management Act* and Regulations; and
- Contaminated soil must be treated and dealt with.

Appendix IV
Environmental Incident Reporting

Environmental Incident Report (EIR) should be prepared as soon as possible following an incident. The contractor will be responsible for completing the EIR. The target for reporting is within one (1) working day following the time of the incident.

An Environmental Incident is characterized as causing, or has the potential for causing one or more of the following:

- Adverse effect on fish, wildlife or other environmental resources;
- Adverse publicity with respect to environment; and
- Legal action with respect to violation of statutes or environmental damage.

Examples of Environmental Incidents include, but are not limited to:

- Spills of oil, fuel, PCBs, or chemicals;
- Discharge of deleterious substances into fish-bearing water;
- High or low flows that affect fish or fish habitat, wildlife or recreation; and
- Violation of environmental regulations, permits or approvals.

What Incidents are Reportable?

Any environmental incidents will be immediately reported to Sema:th and the appropriate government agencies. Please note that all spills to water must be reported immediately!

If in doubt as to whether or not to report a spill, err on the side of caution and report the spill.

How Do You Report a Spill?

Make sure you have the following information ready to report to the appropriate government agencies:

- Name and phone number of person reporting the spill;
- Name and phone number of person involved with the spill;
- Location and time of the spill;
- Type and quantity of material spilled;
- Cause and effect of spill;
- Details of action taken or proposed to contain the spill and minimize its effect; and
- Names of other persons or agencies that advised regarding the spill.

When Should a Spill Be Reported Externally?

Spills of the following substances must be report externally to PEP if the estimated amount discharged meets or exceeds the quantities list below. All spills that meet the below criteria must be reported within one (1) day of the incident. The Lands & Resources Department should always be notified immediately if a spill of any magnitude occurs on site.

Substance	Spill Quantity	Agency to Contact
Class 2.1 – flammable gas (e.g., propane)	≥10 kg or 10 min.	PEP
Class 2.2 – non-flammable gas (e.g., SF6, CO2)	≥10 kg or 10 min.	PEP
Class 3 – flammable liquids	≥100 litres	PEP
Class 8 – corrosive liquid acids and caustics (e.g., battery acid)	5 kg or litres	PEP
Class 9 – environmentally hazardous (e.g., PCBs, used ethylene glycol)	1 kg or litre	PEP
Oil and waste oil	≥100 litres	PEP
Other substances (e.g., new antifreeze, power-wash water)	200 kg or litres	PEP
Pesticides and herbicides	1 kg or litre	PEP
Any quantity of a deleterious substance released into a waterbody	All	DFO

EOP 5

Groundwater Protection

Water occurring beneath the ground surface amongst spaces between rocks and soil is referred to as groundwater. The water within these spaces is typically found within 100 m of the ground surface (Environment Canada, 2011). Although groundwater exists everywhere under the ground, some parts of the saturated zone contain more water than others. An aquifer is an underground formation of permeable rock or loose material which can produce useful quantities of water when tapped by a well and are often used as a source of drinking water.

Goals:

- We will protect our groundwater to make sure it is clean and potable for future generations.

Objectives:

- Evaluate the quality and quantity of groundwater that is available on Sema:th Lands, particularly that which is used as a source of drinking water.
- Monitor groundwater to track long-term trends in its quality and quantity and to assess the effectiveness of our groundwater management programs and to ensure a safe drinking water supply.
- Identify activities that could potentially impact groundwater, prioritizing drinking water sources.
- Identify locations where groundwater could be impacted, prioritizing drinking water sources.
- Educate the community to generate awareness about environmental stewardship and Sema:th Traditional Ecological Knowledge.

Environmental Operating Procedure No. 5	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisor Committee, Developers/Proponents, Band Members	Revision Date: July 25, 2013

Terminology

Aquifer: a geological formation of permeable rock, gravel, or sand containing or conducting groundwater.

Point and non-point sources of contamination*:* Contaminants can originate from a "point source" or "non-point source" – meaning they can come from a single source (or point) or, that they don't have one specific source and come instead from the cumulative effect of any number of factors or activities.

Multi-barrier approach*:* an integrated system of procedures, processes and tools that collectively prevent or reduce the contamination of drinking water from source to tap in order to reduce risks to public health.

Well or borehole*:* Groundwater is accessed through wells or boreholes which are dug or drilled into aquifers.

Watershed*:* A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place (US EPA).

Watershed management: Conservation Authorities define watershed management as "managing water resources within specific watersheds by knowing how much water is in the system, where it comes from, who is using it, how it is being contaminated and where it ends up. Watershed management takes into consideration all the outside activities that can influence the quality and quantity of our surface and groundwater."

Legislation, Standards, and Policies

- *Water Protection Act*
- *Environmental Protection Act*
- Environment Canada's Federal Water Policy (1987)
- Canadian Environmental Quality Guidelines – The federal government works with the provinces and territories to ensure Canadians receive clean, safe, and secure drinking water. Municipalities receive their powers from the provinces and have ability to pass bylaws that can have an impact on water resources.
- The Guidelines for Canadian Drinking Water Quality – Set out the basic parameters all water systems should strive for in order to deliver the cleanest, safest, and most reliable drinking water to consumers. These guidelines apply to water destined for human consumption and are developed for select physical, chemical, microbiological, and radiological parameters. The most important guidelines deal with microbiological quality and help ensure the risk of exposure to disease-causing organisms in drinking water is minimized.

Potential Impacts

Impacts to groundwater can occur as a result of contamination, which can cause groundwater to be unsuitable for use. Groundwater contamination is associated with hazardous materials seeping through the ground to groundwater sources or aquifers. Contamination sources may include landfills, leaking gasoline storage tank or septic tanks, pesticide or fertilizer, and accidental spills that can negatively impact the quality of groundwater. Cleaning up contaminated groundwater can be very expensive and difficult. Groundwater on Sema:th Lands is an important resource to health and livelihood and should be protected to ensure a high quality of water for the community.

Contaminants can get into groundwater via surface run-off or percolation through the soil. Soil cover cleans and filters some contaminants but needs space and time to do so. To protect well water, it is necessary to keep possible sources of contamination away from wells and surface water. Point and non-point sources of contamination include, but are not limited to:

- Garbage (EOP 9);
- Storage tanks (fuel, chemicals) (EOP 4).
- Septic systems;
- Pesticides and herbicides;
- Vehicles;
- Fertilizer (land spreading); and
- Animal faeces (grazing cows, sheep, horses, birds); and
- Chemical spills.

Best Management Practices

All development must comply with applicable Sema:th, federal, and provincial regulations, permits, authorizations, conditions, and agreements with respect to environmental protection. Given that Sema:th utilizes groundwater as a primary drinking water source, this EOP primarily addresses groundwater management as it relates to drinking water.

Even though constitutional responsibility for First Nation lands rests with the federal government, the responsibility for drinking water programs is divided between the First Nation's Council, Health Canada, Department of Aboriginal Affairs and Northern Development Canada (AANDC), Environment Canada, provincial governments, municipalities (where agreements are in place), and community members.

Various federal government departments have added responsibilities that are not mandated through regulations but are, nevertheless, important to ensuring the safety of drinking water supplies. For instance, Health Canada develops the Guidelines for Canadian Drinking Water Quality in collaboration with representatives from provincial and territorial drinking water authorities and Environment Canada. These guidelines focus on public health outcomes. The provinces and territories establish their own drinking water quality requirements using these guidelines or other more stringent ones.

Canadian Council of Ministers of the Environment's (CCME) Guidance Document From Source to Tap outlines the multi-barrier approach to safe drinking water which includes: source water protection; drinking water treatment; drinking water distribution systems; management; and monitoring.

Additional environmental standards, guidelines and BMPs that could be applied are as follows:

Groundwater is accessed through the construction of a well or borehole. If the supply is used for drinking water it is essential that:

- The well is constructed to meet relevant quality standards (e.g., BC Ground Water Protection Regulation);
- A qualified contractor must drill the well and install the well pump;
- Protection measures are put in place to protect the well integrity and water quality;
- The well and pump are regularly inspected and maintained;
- A drinking water sampling and monitoring program is established and maintained to ensure the well water is potable; and
- The well is deactivated or closed when no longer in use.

The BC Ground Water Protection Regulation – deals with aspects of well construction that significantly enhance ground water protection; recommendations include:

- Well is constructed with surface seal (to prevent contaminants from the surface or shallow sub-surface entering the well.
- Well is constructed with secure well cap to prevent direct and unintended entry into the well of any water or undesirable substances at the surface of the ground, including floodwater, ponded water, and contaminants.
- Well is constructed with well casing stick-up to help flood-proof the well.

- Well head is graded to surface water away from the wellhead.
- A Well Identification (ID) Plate is installed.
- Controlled or stopped artesian flow mechanism is installed (to prevent wasting water).
- Pump is installed using qualified installer.
- Measures are implemented to protect the well.

Strategy 1: Develop a baseline assessment

Make use of existing reports and studies (e.g., ESAs), to conduct an inventory of all properties on the Sema:th Lands to identify potential sources of groundwater contamination, including but not limited to:

- Fuel storage tanks (EOP 4);
- Waste oil containers;
- Old vehicle batteries;
- Abandoned vehicles ;
- Waste storage areas (EOP 9);
- Waste burial areas (EOP 9);
- Septic systems / tanks;
- Chemical storage areas (e.g., pesticides, fertilizers, chlorine); and
- An assessment of herbicides and pesticides used.

All potential sources of contamination will be listed and mapped, and classified based on their associated risk to groundwater quality (high, medium, and low).

Strategy 2: Manage future developments

To allow for the management of potential emissions to groundwater associated with future development (e.g., industrial, commercial, or residential) of Sema:th Lands, all development should be subject to a review and assessment (if applicable) of potential emissions and risks to groundwater. Through the groundwater assessment process (Appendix I, EOP Process: Groundwater Management for Proposed Development), identify potential impacts, assess proposed mitigation (e.g., design specifications), and determine net effects.

Strategy 3: Develop watershed management plan

Develop and implement a watershed management plan to ensure groundwater is protected. This will require working with qualified professionals[1] (engineers, geoscientists and hydro geologists) to understand site specific information on the groundwater source(s) on Sema:th Lands, and

[1] Section 70 of the *BC Water Act* defines qualified professional.

its watershed area. This plan can be supplemented and updated using Reports and Assessments submitted through the groundwater assessment process for new developments (Appendix I, EOP Process: Groundwater Management for Proposed Development).

Measures will be developed to eliminate, limit or reduce the risk associated with potential sources of contamination, as identified and ranked in Strategy I.

Strategy 4: Implement groundwater protection measures

Measures identified in Strategy 3 will be implemented to protect groundwater quality. Implementation will occur on a phased basis, commencing with those sources of contamination classified as highest risk.

Protection measures will include both the inspection and maintenance of the drinking water well and pumping system and the management of risks associated with sources of contamination.

Protection measures for the drinking water well may include:

- Implementation of a regular inspection and maintenance schedule to ensure:
    - The wellhead or the surface seal is in good condition.
    - The vermin-proof cap is in good condition.
    - The well is operated in a manner that prevents the intrusion of salt water or contaminated water into the well, or into the aquifer from which the water is withdrawn (e.g., don't over-pump). The safe well yield can be determined from a pumping test conducted as part of Strategy 5.
    - The well stick-up is protected from physical damage.
    - The well is free from any junk, garbage or other items. Note it is illegal to put any junk in an active or abandoned well, e.g., pesticides or fertilizers, carcasses, human or animal waste, refuse, or materials from construction or demolition.

Methods to limit sources of pollution may include:

- Keep potential contaminants a safe distance away from well (e.g., a minimum 30 m / 100 ft from wellhead, but should be determined by the site-specific watershed management plan developed through Strategy 3).
- Responsible management of waste materials (EOP 9).
- Maintain Spill Kits at strategic locations (identified through baseline study, Strategy 1).
- Require bunding of all tanks (fuel, chemical).

- Conduct an annual assessment of fuel tanks to determine degradation of the tank structure or pipes (EOP 4).
- Inspect and maintain septic systems. Good maintenance measures will include having septic tanks pumped every 2 to 3 years and ensure it is not failing.

Strategy 5: Develop and implement drinking water management program

A drinking water management program which includes a sampling and monitoring schedule will be developed and implemented. Procedures will be established to protect human health, investigate non-compliances and prepare remedial action plans to deal with any exceedances in drinking water quality parameters that would affect human health. As a first step, regularly a process will be developed to ensure drinking water quality monitoring results are monitored and communicated to all drinking water users. Procedures for responding to exceedances in drinking water parameters will be developed.

To ensure an ongoing safe supply of drinking water, the management program will outline measures to protect both the quantity and quality of groundwater used as a drinking water source.

A well pumping test could be conducted, using qualified contractors[2], to determine well performance, well yield, the zone of influence of the well and aquifer characteristics (i.e., the aquifer's ability to store and transmit water, aquifer extent, presence of boundary conditions and possible hydraulic connection to surface water).

The sampling and monitoring schedule will detail the drinking water sampling frequency, location and parameters that will be monitored. Quality parameters to be aware of include the following and further information is provided in Appendix II, Sample of Groundwater Parameters:

- Total and Faecal Coliform Bacteria;
- Nitrate;
- Arsenic;
- Sodium; and
- Iron and Manganese.

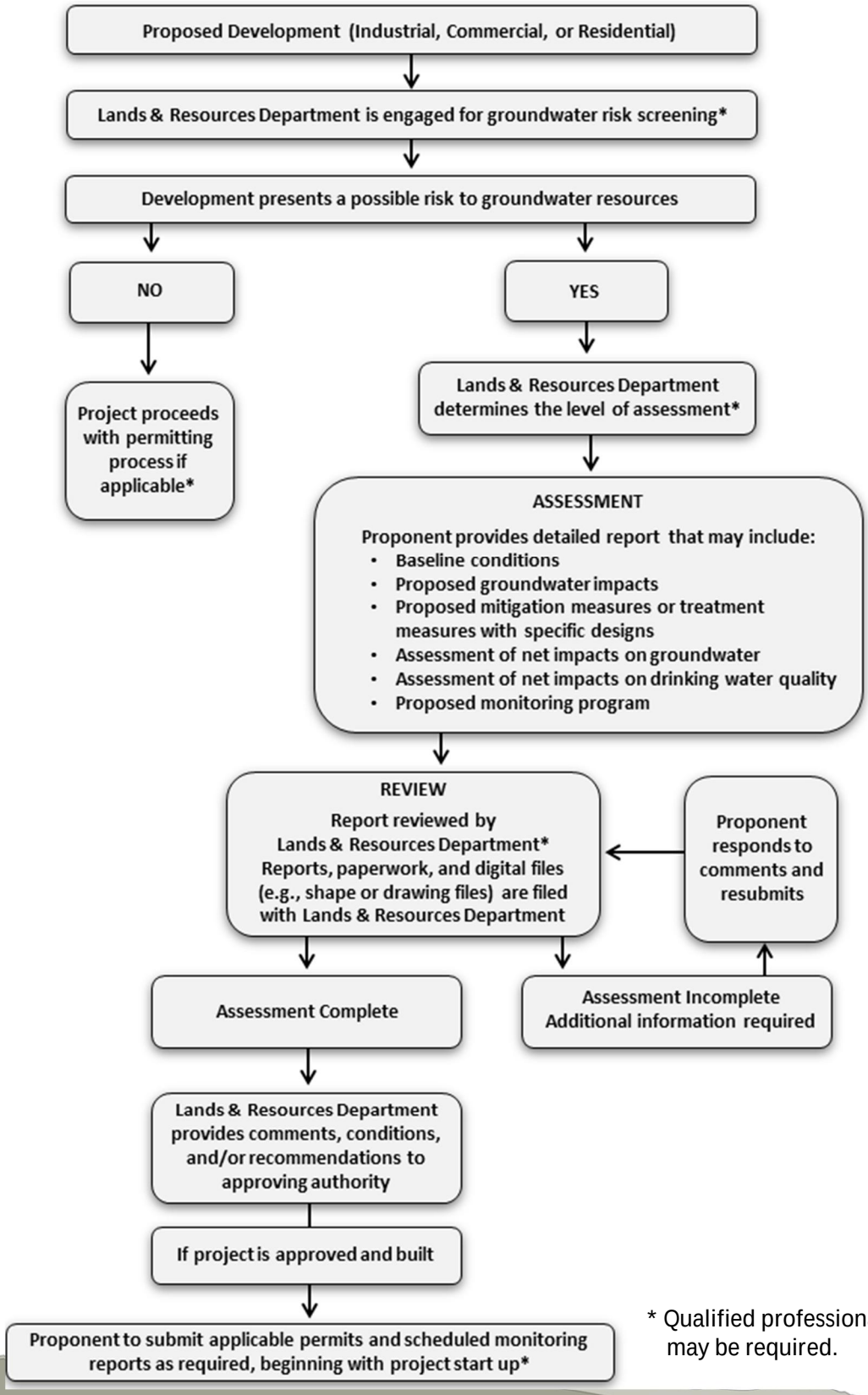
[2] Section 70 of the *BC Water Act* persons qualified to conduct a pumping test

Strategy 6: Adopt policies to enforce groundwater protection measures on commercial and industrial properties

Several commercial and industrial facilities exist on Sema:th Lands. Sema:th will consider the adoption of policies, supported where necessary by Bylaws, to ensure that measures to limit groundwater pollution (as identified in Strategy 1 and developed through Strategy 3) and the ongoing sampling and monitoring of drinking water (Strategy 5) are implemented on all commercial and industrial properties.

Appendix I

EOP Process: Groundwater Management for Proposed Development



* Qualified professional services may be required.

Appendix II
Sample of Drinking Water Parameters

Parameter	Details	Potential Sources
Total, Faecal and E. coli bacteria	Coliform bacteria are described and grouped, based on their common origin or characteristics, as either Total or Faecal Coliform. The Total group includes Faecal Coliform bacteria such as Escherichia coli (E .coli), as well as other types of Coliform bacteria that are naturally found in the soil. Faecal Coliform bacteria exist in the intestines of warm blooded animals and humans, and are found in bodily waste, animal droppings, and naturally in soil. Most of the Faecal Coliform in faecal material (feces) is comprised of E. coli, and the serotype E. coli 0157:H7 is known to cause serious human illness.	▪ Agricultural runoff ▪ Effluent from septic systems or sewage discharges ▪ Infiltration of domestic or wild animal faecal matter
Nitrate	Nitrate is a chemical compound of one part nitrogen and three parts oxygen that is designated the symbol "NO3." It is the most common form of nitrogen found in water. Other forms of nitrogen include nitrite (one part nitrogen and two parts oxygen – NO2) and ammonia (one part nitrogen and three parts hydrogen – NH3). Though nitrate is considered relatively non-toxic, a high nitrate concentration in drinking water is an environmental health concern because it can harm infants by reducing the ability of blood to transport oxygen. In babies, especially those under six months old, methaemoglobinaemia, commonly called "blue-baby syndrome," can result from oxygen deprivation caused by drinking water high in nitrate. Death can occur in extreme cases.	▪ Leaching of chemical fertilizers ▪ Leaching of animal manure ▪ Groundwater pollution from septic and sewage discharges.
Iron and Manganese	Iron and manganese are metallic elements present in many types of rock. Iron has the symbol "Fe" and manganese has the given symbol "Mn." Both are commonly found in water and are essential elements required in small amounts by all living organisms.	▪ The most common sources of iron and manganese in groundwater are naturally occurring, for example from weathering of iron and

Parameter	Details	Potential Sources
	Concentrations of iron and manganese in groundwater are often higher than those measured in surface waters. At concentrations found in most natural waters, and at concentrations below the aesthetic objective, iron and manganese are not considered a health risk. Water with a high concentration of iron or manganese may cause the staining of plumbing fixtures or laundry. Manganese solids may form deposits within pipes and break off as black particles that give water an unpleasant appearance and taste. Similarly, iron can collect and block pipes or fixtures and produce colour, taste and rust flakes in water. Both substances can increase the growth of unwanted bacteria that form a slimy coating in water pipes.	manganese bearing minerals and rocks. ▪ Industrial effluent, acid-mine drainage, sewage and landfill leachate may also contribute iron and manganese to local groundwater.

Source of information (Fact Sheets – Ground Water Quality):

http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/brochures_forms.html

EOP 6

Habitat Protection

The preservation and protection of habitat is of significant importance to maintain the ecological integrity of our lands, for future generations. By protecting habitat, the fish, wildlife, and plants that use this land are also protected.

Goal:

- To protect, preserve, and manage fish, wildlife, and vegetation and the habitat that sustains them in a manner consistent with our values, beliefs, and traditions.

Objectives:

- Ensure compliance with applicable legislation and regulations.
- Ensure protection of environmentally sensitive species and their habitats.
- Protect and enhance the biodiversity of indigenous flora and fauna.
- Identify and enforce appropriate riparian setbacks to ensure safe development.
- Educate the community to generate awareness about environmental stewardship and Sema:th Traditional Ecological Knowledge.

Environmental Operating Procedure No. 6	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisory Committee, Developers/Proponents, Band Members	Revision Date: July 25, 2013

Terminology

Critical Habitat: habitat that is necessary for the survival or recovery of a listed wildlife species.

Endangered Species: a wildlife species that is facing imminent extirpation or extinction.

Extirpated Species: a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the world.

Habitat (a) in respect of aquatic species: spawning grounds and nursery, rearing, food supply, migration and any other area on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic formerly occurred and have the potential to be reintroduced; and (b) in respect of other wildlife species: the area or type of site where an individual or wildlife species naturally occurs or depends on directly or indirectly in order to carry out its life processes or formerly occurred and has the potential to be reintroduced.

Migratory Bird: a migratory bird referred to in the Convention of the MBCA (1994), and includes the sperm, eggs, embryos, tissue cultures and parts of the bird.

Nest: the nest of a migratory bird and includes parts of the nest that holds eggs or offspring.

Species at Risk: an extirpated, endangered, or threatened species or a species of special concern.

Species of Special Concern: a wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.

Threatened Species: a wildlife species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.

Legislation, Standards, and Policies

- *Canadian Environmental Assessment Act*, 2012 (CEAA, 2012)
- *Fisheries Act*, R.S.C., 1985, c F-14
- *Species at Risk Act*, S.C., 2002, c. 29 (SARA, 2002)
- *Migratory Birds Convention Act*, S.C., 1994, c. 2 (MBCA, 1994)
- *British Columbia Wildlife Act*, RSBC 1996

Potential Impacts

All parts of an ecosystem, including physical, chemical, and biological components are interconnected – development and other activities can disrupt this relationship, resulting in temporary or permanent impacts to the environment. This may include impacts to:

- Fish and fish habitat (quality and quantity);
- Riparian vegetation – including alteration or removal of vegetation adjacent to streams, lakes, wetlands and other waterbodies;
- Wildlife and wildlife habitat; and
- Species at Risk – as designated under Schedule 1 of the SARA.

Best Management Practices

All development must comply with applicable Sema:th, federal, and provincial regulations, permits, authorizations, conditions, and agreements with respect to environmental protection. Additional environmental standards, guidelines and BMPs that could be applied are as follows:

Fisheries and Oceans Canada (DFO) Land Development Guidelines for the Protection of Aquatic Habitat (1993): contains guidelines to protect fish populations and their habitat from the damaging effects of land development activities. These guidelines apply primarily to salmon, trout and char, but are applicable to all fish species.

Provincial Standards and Best Practices for Instream Works (1994): assists in the planning and implementation stages for a proposed development by providing a series of performance guidelines and regulatory compliance standards.

DFO Freshwater Intake End-of-Pipe Fish Screen Guideline (1995): contains a set of guidelines to assist proponents in the design and installation of fish screens where freshwater is extracted from fish-bearing waters.

The BC Ministry of Environment Develop with Care 2012: Environmental Guidelines for Urban and Rural Land Development in British Columbia documents:

- Best Management Practices for Amphibians and Reptiles in Urban and Rural Developments in British Columbia (2004);
- Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia;
- Develop with Care: Species Factsheets – includes information related to land development and mitigation protocols for rare and endangered species; and
- South Coast Region Information Package – includes information on regional features, regionally significant species, and invasive alien species.

Regional Timing Windows of Least Risk: The BC MOE and DFO have developed a set of regional timing windows for activities that have the potential to impact fish and wildlife populations and their habitats. To reduce the risk of impacts, instream works and vegetation clearing are ideally limited to non-critical periods of the year, unless stringent, species-specific mitigation measures are initiated. Timing windows are as follows:

a) If works involve fish bearing streams, in-channel or bank work should be completed during the reduced-risk timing windows noted below:
   - August 1 – October 31 (rainbow trout, cutthroat trout, and steelhead)
   - July 15 – September 15 (Pacific salmon)

b) If works involve vegetation clearing, vegetation should only be removed from an area within the clearing timing window for the protection of nesting birds to ensure that activities will not result in the disturbance of bird nests, eggs, or young. Specific timing windows are noted below:
   - August 15 – January 30 (raptors – eagles, hawks, falcons, owls)
   - August 15 – January 30 (Heron)
   - August 1 – March 31 (other birds)

c) If works involve species at risk, there are no standard windows of least risk. For information on timing window requirements, a Qualified Environmental Professional (QEP), and/or provincial and federal regulators should be consulted prior to works being initiated.

Strategy 1: Identify important habitat areas through land use planning

As part of the land use planning process, identify areas for habitat protection based on Traditional Ecological Knowledge, available ecological data (e.g., federal species at risk), and best practices (e.g., riparian setbacks).

Strategy 2: Develop an environmental baseline overview

Work collaboratively with proponents [(through the development process) see Appendix I, EOP Process: Habitat Protection for Proposed Development] and other agencies (e.g., species at risk funding programs) to develop an ongoing environmental baseline overview of Sema:th Lands. The baseline should include, but is not limited to, the identification of:

- Existing aquatic resources, including the presence of fish and fish habitat;
- Existing terrestrial resources, including the identification of critical habitat for wildlife;
- Known occurrences and locations of species and critical habitat listed under Schedule 1 of the *Species at Risk Act*; and
- Traditional Ecological Knowledge.

The Lands & Resources Department will maintain a database of all relevant files (e.g., shape, drawing), maps, studies, and analytical results. The identification of environmental baseline conditions will assist in managing risks associated with the potential loss or impacts to habitat during various activities on Sema:th Lands, and act as an inventory for long-term monitoring.

Strategy 3: Promote habitat protection and enhancement

Through the habitat assessment process (see Appendix I, EOP Process: Habitat Protection for Proposed Development), identify potential impacts, assess proposed mitigation (e.g., habitat compensation and/or enhancement), and determine net effects.

Strategy 4: Ongoing monitoring

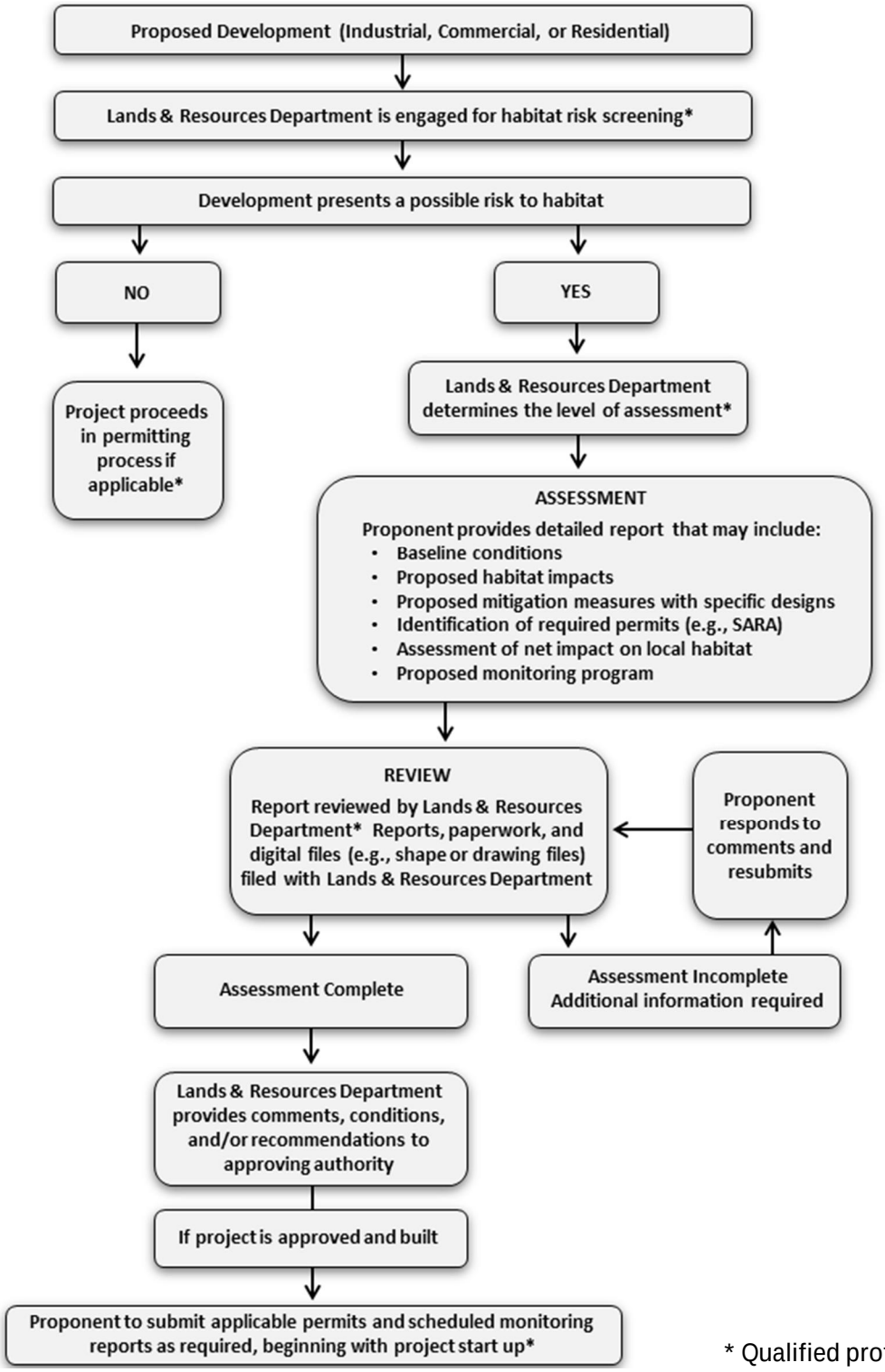
The Lands & Resources Department will review annual monitoring reports for approved developments and assess for compliance with associated mitigation measures (e.g., habitat compensation plans). Sema:th will work collaboratively with the Proponent to address any monitoring issues. When possible, Sema:th Environmental Monitors should be used for construction/environmental monitoring programs.

Strategy 5: Education and awareness

Develop habitat awareness through education and training, with emphasis on natural resources and Traditional Ecological Knowledge. This may include, but is not limited to:

- Collaborating with agencies to develop habitat enhancement programs;
- Promoting awareness of Traditional Ecological Knowledge (e.g., Elders workshops, signage, use of Stó:lō Traditional Plant Book);
- Providing community awareness on sensitive habitats or ecosystems within or adjacent to Sema:th Lands;
- Raising awareness to empower community members to identify and report environmental incidences (i.e., "Community Environmental Watch"); and
- Training for Sema:th members to work as environmental/ construction monitors, field assistants, etc.

APPENDIX I
EOP PROCESS: HABITAT PROTECTION FOR PROPOSED DEVELOPMENT



* Qualified professional services may be required.

EOP 7

Land Development

Land development refers to the alteration of land through activities such as grading, excavation, soil removal, construction, alteration or clearing of habitats (Queen's Printer for Ontario, 2013). This alteration of conversion of land is associated with modern communities that are constructed or reconstructed for people to live, work, worship, shop, play, and with other supporting land uses (Dewberry & Couture, 2008)

Throughout the land development process, it is important to maintain environmental and cultural values supported by the land and surrounding environment. Maintenance of environmental and cultural values during land development can be achieved through the use of environmental protection and stewardship practices (Province of British Columbia, 2013d).

Goal:

- We will develop our lands in a way that is compatible with Sema:th laws and ways.

Objectives:

- Develop a Land Use Plan that creates a desirable and workable future land use system.
- Create land use policies and laws that have a high regard to relevant social, economic, and environmental matters.
- Ensure development procedures are in place.
- Protect the environmental and cultural heritage of Sema:th Lands and People.
- Develop a sustainable, community-controlled economy.
- Create a land use decision making process that is transparent and fair.

Environmental Operating Procedure No. 7	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisory Committee, Developers/Proponents, Band Members	Revision Date: July 25, 2013

Legislation, Standards, and Policies

- *First Nations Lands Management Act* – provides First Nations the authority to create laws to control Nation lands, resources and the environment. This is a federal law and allows First Nations to create their own approach for making land allotments to individual Nation members, matrimonial real property interest or rights and "in cases of breakdown of marriage, respecting the use, occupation and possession of First Nation land and the division of interests in First Nation land".

Best Management Practices

A strong Land Development process will help create a coordinated approach to growth and development; providing a logical process whereby Council can make decisions about the direction of Sema:th's expansion; and providing others with an understanding of community needs.

A Land Use Plan is the principle land use planning document for a community. Its purpose is to produce a desirable and workable future land use system. The Land Use Plan is a general document that provides a set of overarching policies and maps which establish goals and provide guidance for the physical development of the community. Within the context of the Sema:th Land Use Plan, policies will have regard to relevant social, economic, and environmental matters.

The following steps outline an approach to the land use planning process:

- Identify long-term community vision;
- Recognize goals, objectives and strategies in the plan that can be measured against the vision;
- Undertake assessments to understand the environmental management and protection that is required;
- Create policies and land use designations considering the results of the community input and background review;
- Ensure compatible land use are proposed and controlled within the Land Use Plan;
- Create action plans;
- Include monitoring guidelines and strategies in order to evaluate the effectiveness of the Land Use Plan in the future; and
- Integrate the plan into the community[3].

[3] Ecotrust Canada, 2009

BC Building Code 2012 – provides strong guidance for the construction of buildings; including extensions, substantial alterations, and upgrading of buildings to remove an unacceptable hazard and Is a requirement under Aboriginal Affairs and Northern Development Canada (AANDC) Terms of Reference. The BC Building Code applies to the core concepts of the National Building Code, along with elements specific to BC's unique development needs.

BC Fire Code 2012 – provides First Nations with a standard for acceptable level of fire safety within the community. It is not required by law that Nations follow the guidelines within the BC Fire Code; however, the Code provides standards which should be strongly considered.

BC Plumbing Code 2012 – a useful tool for the installation or designing of plumbing systems. It also applies to the extension, alteration, renewal and repair of existing plumbing systems. While the Code is not mandatory for Nations to adopt, it could be a useful tool and guide for plumbing practices unique to BC's development needs.

Strategy 1: Develop and implement the Sema:th Land Use Plan

Work with the community, legal counsel, and professional Planners to develop and implement the Sema:th Land Use Plan.

Strategy 2: Create and implement laws, policies and processes

To control land development under the Land Use Plan, a number of laws and policies will be proposed and implemented. These laws and policies will provide specific rules regarding the use of land and will pertain to the character, location, and use of buildings and structures. Sema:th will work to create and implement the following laws and policies:

- Zoning and land use laws;
- Provisions of the EMP;
- Subdivision, development, and servicing law;
- Development permits;
- Development standards and building code law;
- Environmental law considering riparian areas, floodplain, creek setbacks, and environmental management;
- Infrastructure and service agreements;
- Signage law;

- Fill law;
- Cultural development guidelines; and
- Other required development bylaws.

A flowchart to illustrate the land development process is provided in Appendix I, EOP Process: Land Development (to be drafted).

The following land development tools, processes and guidelines will also be included/considered:

- Land development process and development tools (i.e., guidelines and checklists) for developers to assist them with meeting the legal, environmental, and cultural requirements of Sema:th;
- Staff in the Sema:th Lands & Resources Department will be trained to oversee the land development and approval process; and
- Mechanisms will be in place to ensure that only certified professionals will be retained for site development and construction work.

Strategy 3: Monitoring and compliance

Monitor aspect of the land development process to assess whether the land development tools have been successful in achieving the goals and visions of Sema:th. Should certain aspects of the process prove to be unsuccessful, amendments to the laws and policies will be made to direct the future development of Sema:th Lands.

Components of the monitoring and compliance process should include:

- A scheduled review of the Land Use Plan and other laws to assess their effectiveness in implementing the vision of Sema:th; and
- Amendments to the Land Use Plan and other laws, where appropriate, to include new information, new innovations and approaches to sustainable development.

EOP 8

Soil Management

The use of contaminated soil and unregulated land filling has left a legacy of problems which can impact the health of our people and our environment. It is important to properly manage soil and fill brought to Sema:th Lands to ensure deposited material is not contaminated, thereby reducing the potential for human health or environmental risks.

Goal:

- All soil brought onto and/or used on Sema:th Lands meets environmentally acceptable standards (applicable laws and regulations), and is suitable for the current or future land use.

Objectives:

- Meet applicable standards, laws, and regulations.
- Draft, implement, and enforce a Sema:th Soil Deposit and Removal Law.
- Create a Soil Deposit and Removal Permitting Process to track the movement of soil into and out of Sema:th Lands.
- Develop harmonized soil and fill management plans with other jurisdictions.

Environmental Operating Procedure No. 8	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisory Committee, Developers/Proponents, Band Members	Revision Date: July 25, 2013

Terminology

Soil is defined as:

- Clay;
- Silt;
- Sand;
- Gravel;
- Cobbles;
- Boulders; or
- Peat.

Fill: refers to soil that has been removed from one area and deposited in another area, typically as a means to fill depressions and holes to make an area suitable for development.

Deposit: means the act of moving soil and other material and placing it upon a parcel or contiguous parcels of land on which such soil and other material did not exist or stand.

Removal: means the act of removing soil from the parcel or contiguous parcels of land on which it exists and shall include the removal of soil which has been placed into a stockpile or other storage on any land.

Legislation, Standards, and Policies

- *Canadian Environmental Protection Act*
- *British Columbia Environmental Management Act* (Section 55) – The British Columbia Contaminated Sites Regulations fall within this Act.
- City of Abbotsford's Soil Removal and Deposit Bylaw No. 1228, 2003 – The City of Abbotsford's Soil Removal and Deposit Bylaw No. 1228 - 2003 regulates the movement of soil within the City limits.
- Fraser Valley Regional District Soil Deposit and Removal Bylaw No. 0061, 1996 – Sections 723 and 799 of the *Local Government Act*, R.S.B.C. 1996, c. 323, authorize the Regional Board of the Fraser Valley Regional District to regulate the removal and deposit of soil in the Regional District.

Potential Impacts

Soil can become contaminated in many ways but the most common are the result of hydrocarbon spills and through industrial and agricultural activities. It is important to ensure that contaminated soils are managed in the most environmentally safe manner with due care for human health. It is equally important to ensure that contaminated soils are not brought into a community and used in future development sites.

Best Management Practices

The movement of soil/fill on, off, and within Sema:th must comply with applicable Sema:th, federal, and provincial regulations, permits, authorizations, conditions, and agreements with respect to environmental protection. Additional BMPs, environmental standards, and guidelines that could be applied are described below.

During any excavation work, the contractor must notify Sema:th if the following is observed:

- Unusual odour that may indicate the presence of contaminants (i.e., gas or oil);
- Stained soils which are darker and may have a "wet" appearance typically indicate the presence of a spill area. Contaminated soils may also have a distinct oily feel. Typically, staining (contamination) is accompanied by an odour; and/or
- If staining, odour, buried debris, or hydrocarbon sheen is observed associated with infiltrating groundwater, the contractor will immediately stop work and advise Sema:th of the suspected contamination.

Strategy 1: Develop a soil removal and deposit law

Develop, implement, and enforce a Soil Removal and Deposit Law to effectively regulate (control and monitor) the movement of soil on and off Sema:th Lands. The law will apply to Sema:th members, contractors, businesses, and anyone depositing or removing soil on Sema:th Lands.

Strategy 2: Develop and implement a soil management permitting process

Develop and implement a soil permitting process to minimize impacts to human health and the environment, and to regulate and manage the movement of soil or fill onto and within Sema:th Lands. The permit will consider the quantity and quality of the soil and fill and the existing or potential future use of the receiving site.

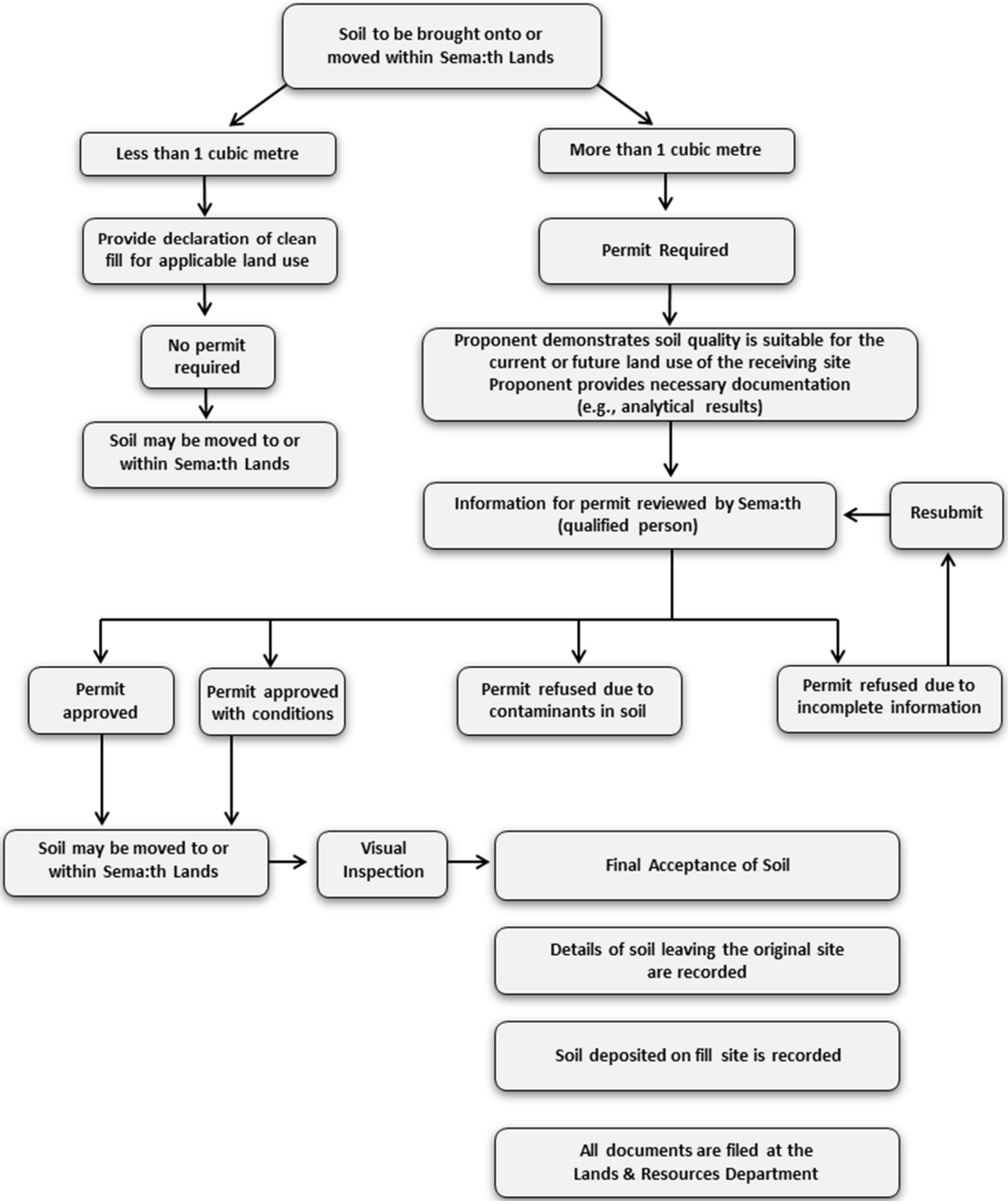
Strategy 3: Utilize soil management processes

Follow Appendix I, EOP Process: Incoming Soil and Within Sema:th Lands to control the quantity and quality of soil entering or moved within Sema:th Lands. Follow Appendix II, EOP Process: Outgoing Soil to control the quantity and quality of soil leaving Sema:th Lands.

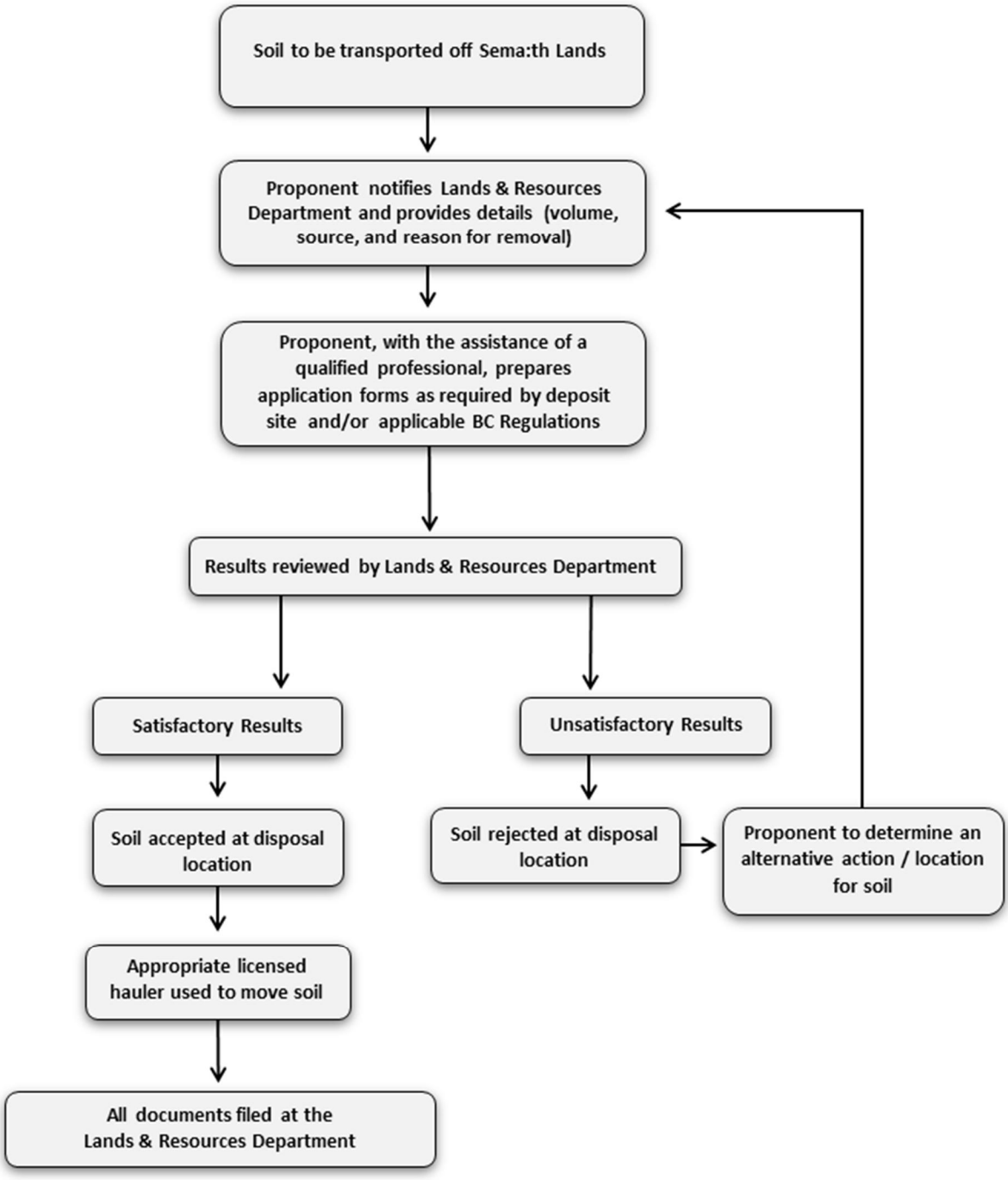
Strategy 4: Complete recommendations of the ESA

Work with the appropriate authorities to carry out the recommendations provided in the Environmental Site Assessment (ESA) with regards to contaminated soil. For example, the draft Phase III recommended that a human health and ecological risk assessment for chromium, nickel, and dissolved metals concentrations in soil in several areas on Sema:th Lands be carried out to determine if their concentrations pose a potential threat.

Appendix I
EOP Process: Incoming Soil and Within Sema:th Lands



Appendix II
EOP Process: Outgoing Soil



EOP 9

Solid Waste Handling & Disposal

Solid waste is produced by residential, commercial, institutional, demolition, land clearing, or construction sources. (Province of BC, 2013c). Integrated Solid Waste Management (ISWM) is a comprehensive waste prevention, recycling, composting, and disposal program. An effective ISWM system considers how to prevent, recycle, and manage solid waste in ways that most effectively protect human health and the environment. ISWM involves evaluating local needs and conditions, and then selecting and combining the most appropriate waste management activities for those conditions. The major ISWM activities are waste prevention, recycling and composting, and combustion and disposal in properly designed, constructed, and managed landfills. Each of these activities requires careful planning, financing, collection, and transport. (US Environmental Protection Agency)

Goal:

- We will lessen our environmental footprint by embracing the 'reduce, reuse, and recycle' approach to waste management.

Objectives:

- Educate members and generate awareness on reducing, reusing, recycling, and proper waste disposal.
- Develop and implement a community composting program.
- Enforce proper solid waste handling and disposal procedures.
- Reduce and eliminate illegal dumping.
- Work with developers and companies who promote and facilitate leadership in waste reduction.
- Become part of the “Zero Waste Challenge”.

Environmental Operating Procedure No. 9	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisory Committee, Developers/Proponents, Band Members	Revision Date: July 25, 2013

Terminology

Municipal solid waste: commonly known as trash or garbage generally refers to waste consisting of everyday items that are discarded by the public. It does not include industrial waste, agricultural waste, medical waste, radioactive waste or sewage sludge.

Residential Sector: Waste materials are often classified by source. Waste generated by single family and multi-family residential households is referred to as "residential sector" waste.

ICI (Industrial, Commercial and Institutional) sector: Waste materials are often classified by source. Waste generated through industrial, commercial and institutional activities is referred to as "ICI sector" waste.

Waste stream: Waste can also be classified by stream or material. Typical terminology used by the municipal waste stream is provided in Appendix I.

Legislation, Standards and Policies

- *Canadian Environmental Protection Act*, 1999 (CEPA 1999)
- Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations
- Interprovincial Movement of Hazardous Waste Regulations
- *British Columbia's Environmental Management Act (Part 3 – Municipal Waste Management)*
- British Columba Recycling Regulation (B.C. Reg. 132/2011)
- BC Waste Discharge Regulation (B.C. Reg. 320/2004)
- Fraser Valley Regional District Integrated Solid Waste Management Plan (Draft, April 18, 2011) – contains information on waste policies and goals and how waste materials will be managed in the region.
- Municipal policies and bylaws – can contain information on material bans; i.e., materials which are prohibited or banned from disposal at municipal landfills. Because waste generated on the reserve is collected and transported off-site for disposal, banned materials cannot be included in the garbage. Inclusion of these banned materials in the waste stream can result in fines and charges, which would be levied on the collection contractor and likely passed on to Sema:th Nation.

- British Columbia Extended Producer Responsibility (EPR) Programs BC's policies and programs are designed to have producers of designated products take responsibility of the full life-cycle management of their items, including costs, collection, recycling and final disposal. EPR programs shift responsibility to the producer and away from local waste authorities. It also provides incentives for producers to incorporate environmental considerations and waste reduction measures into the design of their products. EPR materials should be managed responsibly. A list of current EPR products available on the Recycling Council of British Columbia (RCBC) website: http://rcbc.bc.ca/education/product-stewardship/programs#Top

Potential Impacts

Waste materials introduced into the environment, through unauthorized burning, landfilling, burying, littering and storage, can cause pollution of the environment, including the land, air and water.

As stewards of the environment, Sema:th will take the necessary precautions and steps to ensure waste is managed responsibly on its lands. This includes responsible management of waste materials generated by residents and activities on the reserve, and the importation of waste materials onto Reserve lands.

Best Management Practices

This section will provide some guidance and management practices that will assist Sema:th in acting as stewards of the environment. Understanding the standards an activity/development must meet will allow Sema:th to carry out future development in a safe and sustainable manner.

Waste Management Hierarchy

The waste management hierarchy is a nationally and internationally accepted guide for prioritizing waste management practices with the objective of achieving optimal environmental outcomes. It sets out the preferred order of waste management practices, from most to least preferred.

The waste management hierarchy is generally referred to as the 6 R's of waste management:

- Rethink: to re-evaluate our current lifestyle and the way in which products are designed and produced in an effort to minimize/ reduce/eliminate waste.

- Reduce: to minimize the amount of material and energy used in a product's life cycle.
- Reuse: to use an existing product (that would otherwise become waste) for another purpose, without processing it.
- Recycle: to remove a product from the waste stream before it is disposed and to process it into a new product.
- Recover: to reclaim a material or product destined for the landfill for an alternate use.
- Residual management: to responsibly manage any remaining waste that cannot be reduced, reused, recycled or recovered, preferably using a triple bottom line approach.

Zero Waste Challenge

The term "Zero Waste" is a concept that promotes a future where landfills are no longer needed. The term is intended to encourage people to think more holistically about their waste and to view it as a resource instead of garbage destined for burial. Zero Waste is a mindset meant to propel change in the existing solid waste management system and to promote the adoption of more aggressive waste reduction policies aimed towards stopping waste before it is created and maximizing reuse and recycling programs.

Strategy 1: Understand current waste streams and quantities

A first step in any waste management program is to gain an understanding of current or existing waste quantities and sources. A thorough review and understanding of the current position is essential to understand "where we are now". In addition, the definition of a baseline year (or years) serves as the benchmark against which future progress can be measured.

'Typical' municipal waste streams generated on Sema:th Lands are summarized in Appendix I: Municipal Waste Streams. Follow Appendix II: EOP Process, Solid Waste Management for responsible management of municipal waste materials.

Sema:th will work with its waste collection contractor and other relevant parties (e.g., consultants) to define a methodology for tracking the quantity of waste generated on the reserve. Opportunities to more accurately determine the composition of the waste streams (such as waste compositions studies / waste audits) will also be investigated. Information on waste quantities and composition will be used to (a) define a baseline against which progress can be measured and (b) inform waste reduction, reuse and recycling programs going forward.

Strategy 2: Provide municipal household waste collection

Sema:th will ensure that waste collection services are provided by an authorized waste contractor and the collected waste must be disposed of at an appropriately licensed waste facility (e.g., Landfill, Transfer Station, Composting Facility and/or Material Recovery Facility).

A list of questions to ask potential waste collection contractors is provided in Appendix III: Questions to Ask When Selecting a Waste Collection Provider.

Strategy 3: Manage illegal dumping

Littering is an offence under the *BC Environmental Management Act*. Sema:th will enact a law which prohibits individuals from littering or dumping waste materials on Sema:th Lands.

Other proactive and reactive approaches (or a combination of) can be considered for adoption. As with Strategy 1, the first step should be to establish a more accurate picture of the current (baseline) situation; which will include the introduction of a process to record incidents of illegal dumping (date, time, location, items disposed, approximate quantity, etc.).

Proactive approaches:

- Waste attracts waste – keep areas clean and tidy;
- Access prevention measures – fencing, placement of large stones at 'hotspots';
- Signage – erect signage "Protection of our lands is important to us; please don't litter / dump waste";
- Patrols of volunteer groups; and
- Method for recording illegal dumping incidents – date, time, location, materials left, action taken.

Reactive approaches:

- Organize clean-up days;
- Adopt-a-Street;
- Utilize FVRD's Illegal Dumping Hotline 1-800-655-DUMP (3867) or call the RCMP. Callers are asked to make note of the 4W's when reporting an incident:
    - Where did the illegal dumping take place?
    - When did you notice the illegal dumping?
    - What materials were illegally dumped?
    - Who committed the illegal dumping?

Strategy 4: Prohibit illegal burning of waste

The burning of any household or hazardous waste is prohibited under the *Indian Reserve Waste Disposal Regulations* (Section 10) and will not occur on Sema:th Lands (EOP 1). Instead, waste shall be removed from the area and taken to the authorized recycling facilities or an authorized landfill.

Strategy 5: Prohibit illegal burial of waste

The illegal burial of waste is prohibited under the *Indian Reserve Waste Disposal Regulations* (Section 3) and will not occur on Sema:th Lands, except in accordance with a permit issued under Section 5 of the *Indian Reserve Waste Disposal Regulations*. Waste burial sites, especially in areas with lots of precipitation, can easily produce harmful leachate that can flow as surface water or migrate to the groundwater or other nearby surface water bodies. Instead, waste shall be removed from the area and taken to the authorized recycling facilities or an authorized transfer station or landfill.

Strategy 6: Create Education and Awareness Campaign

Develop community waste management awareness through education and outreach programs including, but not limited to:

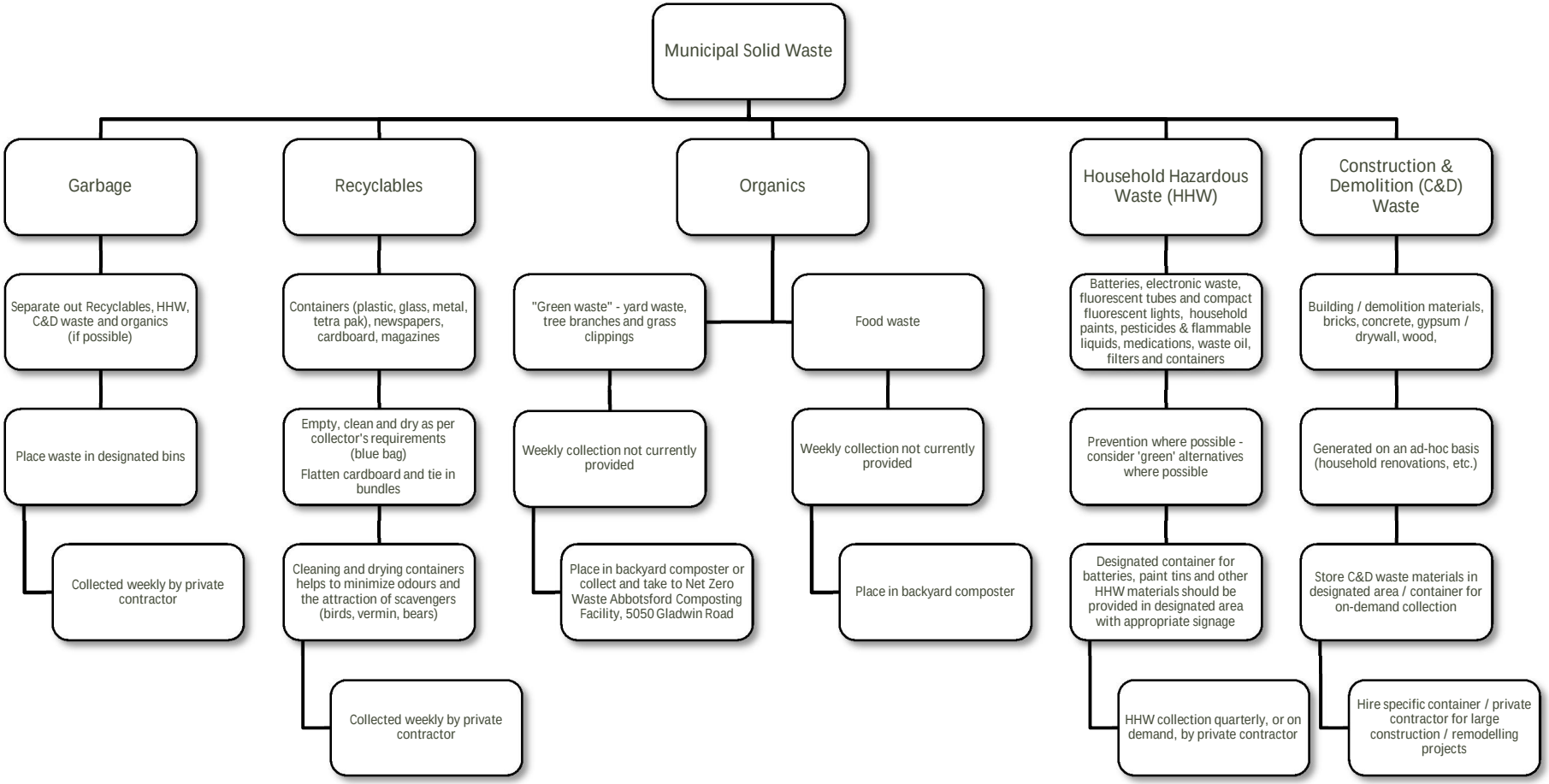
- Waste management hierarchy (Reduce, Reuse, Recycle);
- Zero Waste Challenge;
- Responsible management of waste materials (Appendix II: EOP Process, Solid Waste Management);
- Ban on burning of waste materials (Strategy 4); and
- Ban on unauthorized burial of waste materials (Strategy 5).

Appendix I
Municipal Waste Streams

Waste Stream	Typical Materials / Examples
Garbage or 'residual waste'	▪ Materials that cannot be recycled, composted or diverted through other programs include: ▪ Diapers ▪ Sanitary products ▪ Styrofoam ▪ Cigarette butts ▪ Lint
Recyclables or 'blue box / bag' materials	▪ Paper and envelopes ▪ Newspapers, magazines, flyers ▪ Cardboard ▪ Boxboard (e.g., cereal boxes) ▪ Milk cartons and juice boxes ▪ Containers – plastic, metal and glass
Organic or 'compostable' waste	▪ 'Green Waste' – yard trimmings, grass, clippings, branches, etc. ▪ Food waste scraps ▪ Tissue paper ▪ Food-soiled paper packaging
Demolition and Land Clearing (DLC) waste (also referred to as Construction and Demolition (C&D) waste)	▪ Building / demolition materials ▪ Bricks ▪ Concrete ▪ Gypsum / drywall ▪ Wood
Household Hazardous Waste (HHW)	▪ Batteries ▪ Electronic waste ▪ Fluorescent tubes and compact fluorescent lights ▪ Household paints ▪ Pesticides and flammable liquids, medications ▪ Waste oil, filters and containers

Waste Stream	Typical Materials / Examples
Extended Producer Responsibility (EPR) Materials	▪ Expired smoke alarms ▪ Cell phones ▪ Antifreeze, lubricating oil, oil filters and oil containers ▪ Rechargeable batteries and cell phones ▪ Electronic products and small appliances ▪ Light bulbs ▪ Medications ▪ Paint, flammable liquids, domestic pesticide and gasoline ▪ Thermostats ▪ Tires

Appendix II
EOP Process: Municipal Solid Waste Management



Appendix III
Questions to Ask When Selecting a Waste Collection Contractor

- What materials do you collect?
  - Garbage
  - Organics
    - Yard trimmings and grass clippings
    - Food waste
  - Recyclables
    - Single stream recycling – paper cardboard and containers mixed together
    - Three stream recycling – recyclables separated into three streams (newspapers, paper and cardboard, containers)
  - Other materials, for example:
    - White goods
    - Waste oil

- What types of containers do you provide?
  - Front load containers
  - Toters
  - Other

- What signage do you provide for our containers?
  - Symbols, text, pictures to educate users as to "what goes in what bin"

- What educational materials do you provide?
  - Brochures, pamphlets, etc. to educate users as to "what goes in what bin"

- Where do you take the waste you collect from our Reserve?
  - Garbage
    - Landfill - name, location
    - Transfer Station - name, location
  - Recyclables
    - Material Recovery Facility - name, location
    - Transfer Station - name, location

- What information can you provide us on the quantities of waste you collect from our Reserve?
  - Estimated based on collection frequency and bin size
  - Actual weights (on board scale or transfer station scale)

- What do your services cost?
  - Cost per lift
  - Cost per agreed collection schedule (e.g., weekly, bi-weekly)
  - Cost per on-demand pick up

EOP 10

Surface Water Management

Surface water refers to water flowing across or accumulating on the ground surface as a result of precipitation processes and most often due to the influence of rainfall and snowmelt. As water inundates and accumulates on the surface, it begins to flow towards creeks, streams, lakes, ditches, or installed storm sewer systems or reservoirs. Regionally, surface water originates in mountainous areas and then flows through creeks, streams, and as overland flow to larger creeks and streams in lowland areas.

Goal:

- We will keep our waterways clean for the protection of all living things.

Objectives:

- Ensure compliance with applicable legislation and regulations.
- Evaluate the quality and quantity of surface water on Sema:th Lands.
- Monitor surface water quality to track long-term trends and to assess the effectiveness of surface water management programs.
- Educate the community to generate awareness about environmental stewardship and Sema:th Traditional Ecological Knowledge.

Environmental Operating Procedure No. 10	EOP Revision: 01
Responsibility: Lands Manager, Lands Advisory Committee, Developers/Proponents, Band Members	Revision Date: July 25, 2013

Terminology

Base Flow: Portion of (stream) flow that comes from groundwater or other delayed sources.

Peak Flow: The maximum instantaneous discharge of a stream at a specific location. Corresponds to the highest stage of a flood.

Legislation, Standards, and Policies

- *Fisheries Act* (1996)
- *BC Water Protection Act* (1996)
- Environment Canada's Federal Water Policy (1987)
- Canadian Environmental Quality Guidelines

Potential Impacts

Surface water can be negatively impacted through contamination from human and natural sources. Human-caused contamination can occur through the release of hazardous materials to surface water from residential, industrial, and commercial operations. For example, water within a creek which runs through an agricultural area can be negatively impacted if pesticides and fertilizers are released into the creek. Pesticides and fertilizers may cause detrimental impacts to the aquatic life of the creek, reducing the creek's productivity, and reducing the quality of the surface water.

Natural sources of surface water contamination include bacteria, viruses, or toxins within the water which are naturally occurring. If the water is consumed by wildlife or humans, they may become ill.

Surface water quantity impacts are often due to peak flow increases, reduction in baseflows and general loss of infiltration to groundwater resources.

The following major surface water bodies collect surface water and flowing through or adjacent to Sema:th Lands:

- Sumas River – The Sumas River is a 32 km long tributary to the Fraser River. Impacts to this river are largely from influences from adjacent agricultural activities and runoff.
- Marshall Creek – Marshall Creek flows west through Sema:th Lands on the north side of Highway 1, originating as a branch off of Sumas River, found west of Lakeview Drive. Marshall Creek flows west for approximately 6 km then crosses south to confluence with Sumas River again, approximately 1.5 km west of Whatcom Road.
- Kilgard Creek – Discharges south from McKee Peak through Sema:th Lands to its confluence with Marshall Creek near the south end of Sumas Mountain Road.

Best Management Practices

All development must comply with applicable Sema:th, federal, and provincial regulations, permits, authorizations, conditions, and agreements with respect to surface water protection. Additional BMPs, environmental standards, and guidelines that could be applied are described below.

Canadian Council of Minister of the Environment (CCME) and the BC Ministry of Environment (MoE) have a series of guidelines that act as benchmarks to identify the safe level of substances for the protection of a given water use. For example, the water quality guidelines are specified as a single maximum value to protect aquatic life where the BC water quality guidelines are specified as two values: one to protect aquatic life from short-term lethal effects and the other to protect from long-term sub-lethal effects.

Best practices for the protection of surface water, ensure compliance with the following guidelines:

- BC Approved Water Quality Guidelines (2006 Edition);
- A Compendium of Working Water Quality Guidelines for BC;
- Ambient Water Quality Guidelines;
- CCME Water Quality Guidelines for the Protection of Aquatic Life; and
- CCME Water Quality Guidelines for the Protection of Agricultural Water Uses.

General BMPs for the protection of surface water quality include, but are not limited to:

- All surface water leaving a work area (e.g., construction site) must meet or exceed CCME and BC Water Quality Guidelines for the Protection of Freshwater Aquatic Life;
- Areas of exposed soil must be properly contained and/or covered to prevent the mobility of sediments into receiving surface water bodies;
- Soils or other loose materials should not be stockpiled adjacent surface water body without proper management;
- Stormwater runoff from roads and hard surfaces may contain grit, sediment and petrochemical residues. Road runoff should go through a solids interceptor prior to its discharge into watercourses.

Additional guidelines, protocols, and BMPs for designing and implementing a water quality monitoring program include:

- BC Resource Information Standards Committee (RISC) guideline documents for Designing and Implementing a Water Quality Monitoring Program in BC;
- RISC Guidelines for Interpreting Water Quality Data;
- CCME Protocols Manual for Water Quality Sampling in Canada; and
- US Environmental Protection Agency State Monitoring and Assessment Program Guidelines.

Common water quality issues and their associated pollution sources that are likely to be encountered are provided in Appendix I.

Strategy 1: Develop a baseline surface water overview

Work collaboratively with proponents (through the development process – see Appendix II, EOP Process: Surface Water Management for Proposed Development) and other agencies (e.g., Environment Canada) to develop an on-going baseline overview of surface water resources on Sema:th Lands. Previous studies will also contribute to the overview (e.g., Ambient Water Quality Monitoring in Kilgard Creek, 2001). The baseline should include but is not limited to the identification of:

- Existing surface water conditions to determine overall health including hydrological regime (i.e., quantity);
- Specific pollutants and sources of pollution (i.e., point and non-point sources); and
- Designated uses (e.g., fishing, swimming, suitable for fish and other aquatic organisms) and whether surface water resources are meeting applicable requirements.

The Lands & Resources Department will maintain a database of all files (e.g., shape, drawing), maps, studies, and analytical results at the Lands & Resources Department Office.

Strategy 2: Promote surface water protection and enhancement

Through the surface water assessment process (see Appendix II, EOP Process: Surface Water Management for Proposed Development), Sema:th will promote protect and enhance by identifying potential impacts, assessing proposed mitigation, determining net effects, and providing relevant recommendations and comments to promote surface water protection and enhancement measures.

Strategy 3: Ongoing monitoring

The Lands & Resources Department shall review annual monitoring reports for approved developments and assess for compliance with associated mitigation measures. Sema:th will work collaboratively with the proponent to address any monitoring issues.

Strategy 4: Fuel spill response

In the case of a spill threatening a water source refer to EOP 7 Process: General Spill Response.

Strategy 5: Participate in watershed management initiatives

Sema:th Lands have nearby activities (e.g., residential and commercial development) that may affect our surface water resources but are out of our jurisdiction. By participating in regional committees, we will be more likely to affect change in the best interest of our resources.

Participation in these committees will also allow for Sema:th to draw upon the existing efforts of regional watershed management planning and assist us in defining baseline conditions and developing and implementing water quality and quantity monitoring programs.

Strategy 6: Consider policies to enforce surface water protection

Sema:th will consider the adoption of policies, supported where necessary by bylaws. An example includes the City of Abbotsford's Erosion and Sediment Control Bylaw (No. 1989-2010) that was established to help reduce the amount of sediment-laden water entering the drainage system. This bylaw requires the implementation of BMPs on construction sites to ensure that discharge water quality standards are met.

Strategy 7: Education and awareness

Develop surface water resources awareness through education and training, emphasis on natural resources and Traditional Ecological Knowledge. This may include, but may not be limited to:

- Collaborating with agencies to develop surface water protection programs;
- Promoting awareness of Traditional Ecological Knowledge (e.g., Elders workshops, signage of creeks);
- Providing community awareness on surface water resources within or adjacent to Sema:th Lands;
- Raising awareness to empower community members to identify and report environmental incidences (i.e., "Community Environmental Watch"); and
- Training for Sema:th members to work as environmental/ construction monitors, field assistants, etc.

Appendix I
Common Activities, Pollutant Sources, and Associated Surface Water Quality Parameters

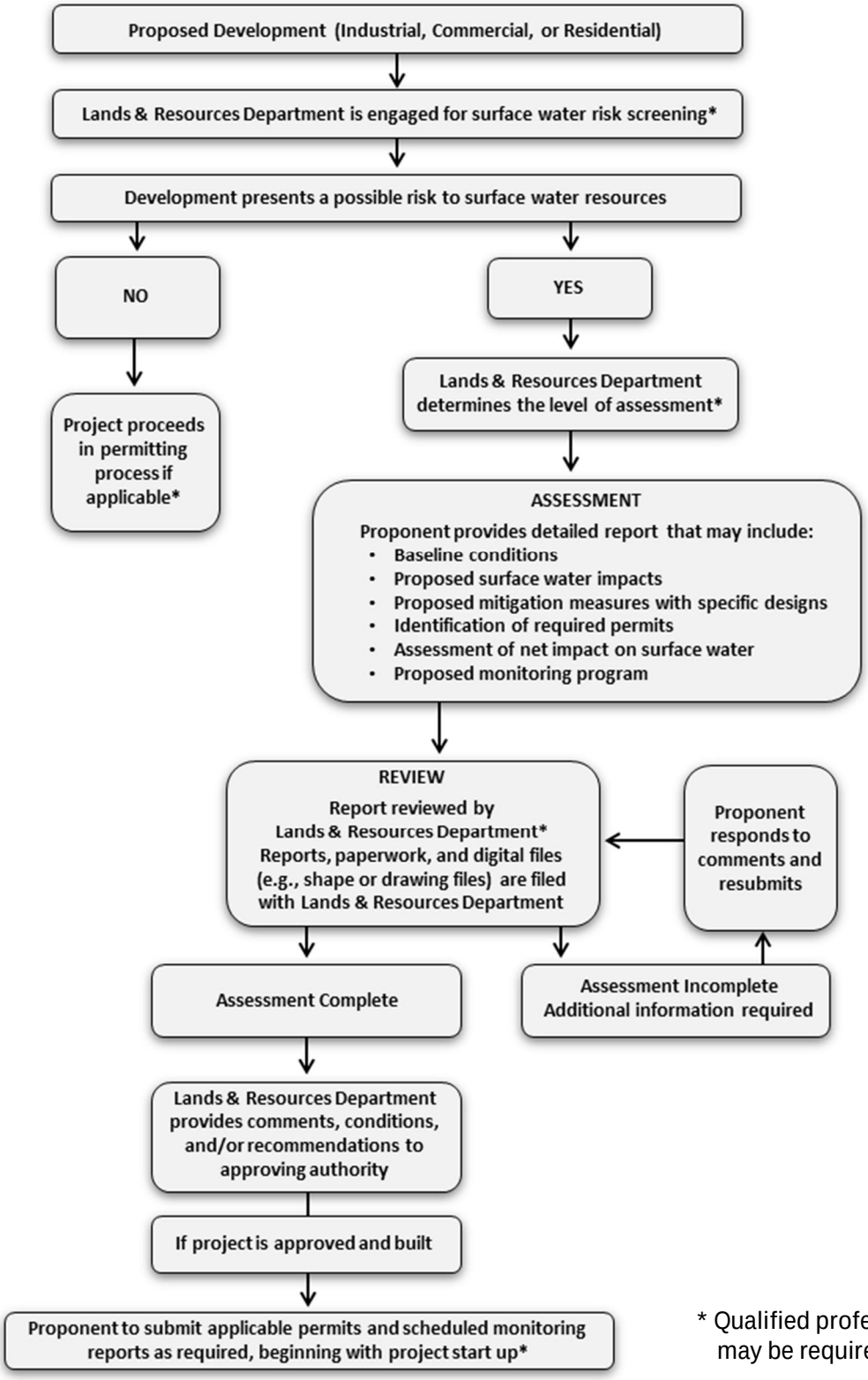
Land Use/Monitoring Activity: Agricultural Runoff	
Priority Parameters: ▪ Turbidity; ▪ Total suspended solids (TSS); ▪ Nitrates; ▪ Temperature; ▪ Phosphorus; ▪ Dissolved oxygen; and ▪ Microbiological parameters (E. coli, faecal coliforms). Secondary Parameters: ▪ pH; ▪ Conductivity; and ▪ Nutrients.	Potential Sources of Pollution: ▪ Effluent from septic systems or sewage discharges; ▪ Runoff of organic contaminants (e.g., manure and biosolids); ▪ Runoff of chemical and organic fertilizers and pesticides; ▪ Excess accumulation of heavy metals (e.g., selenium) from irrigation; and ▪ Soil erosion and sedimentation.
Land Use/Monitoring Activity: Industrial Effluent Discharge	
Priority Parameters: ▪ Temperature; ▪ Conductivity; ▪ pH; ▪ Turbidity; ▪ TSS; and ▪ Total and dissolved metals. Secondary Parameters: ▪ pH; ▪ Conductivity; ▪ Dissolved oxygen; and ▪ Nutrients.	Potential Sources of Pollution: ▪ Effluent from industrial activities (e.g., acids, toxic metals, dyes, etc.); ▪ Oil spills; and ▪ Urban runoff of grease and toxic chemicals.

Land Use/Monitoring Activity: Urban Runoff	
Priority Parameters: ▪ Turbidity; ▪ Phosphorus; ▪ Nitrates; ▪ Temperature; ▪ Conductivity; ▪ Dissolved oxygen; ▪ Biochemical oxygen demand; ▪ Total and dissolved metals; and ▪ Hydrocarbons. Secondary Parameters: ▪ pH; ▪ Dissolved oxygen; and ▪ Nutrients.	Potential Sources of Pollution: ▪ Stormwater runoff; ▪ Snow melt; and ▪ Construction-related activities or land development.

Source of information: http://water.epa.gov/type/rsl/monitoring/vms50.cfm

Appendix II

EOP Process: Surface Water Management for Proposed Development



* Qualified professional services may be required.

APPENDIX B

Implementation Schedule

DRAFT IMPLEMENTATION TIMELINE FOR SEMA:TH EMP

| | Month and Year | | |