Semá:th
Sumas First Nation

Environmental Management Plan

Submitted to:

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Reading Halq'eméylem

The vowels in Halq'eméylem are:

a	As in English "fat", "bat" (when under ‘ or ` or before w or y) or as in English "sell" or "bet" (elsewhere).
e	As in English "sill", "bill" (when between palatal sounds l, lh, x, y, s, ts, ts', k, k') or as in English "pull" or "bull" (when between labialized sounds m, w, kw, kw', qw, qw', xw, xw)
i	As in English "antique", "beet" or "eel".
o	As in English "pot", "mop", "father" or "brother".
ō	As in English "no", "go", or "crow".
u	As in English "Sue", "soon", "moon" or "flu".

Most vowels can be followed by [y] or [w] in the same syllable:

aw	As in English "cow".
ay	As in English "sang".
ew	As in English "about".
ey	As in English "bait".
iw	As in English "peewee".
iy	As in English "beet"
c	As in English "Ah well" minus the last "ell".
oy	As in English "bite".
ow	As in English "bowl"
' or '	Almost all Halq'eméylem words have at least one stressed vowel (e.g., á or é). Some words have several stressed vowels. The stress marks indicate which parts of the word is said louder and higher. Stress (‘ or `) does not change the pronunciation of a vowel (qwá:l "mosquito" and qwà:l "talk" both rhyme with English "pal"). Stress means the vowel is pronounced fairly loud and with a higher melody than an unstressed vowel. High stress (shown by ‘ over a vowel) has the highest pitch, about four notes above a vowel without a stress mark. Mid stress (shown by ` over a vowel) has a medium pitch, about two notes above a vowel without stress.
:	Means that the sound before the colon is prolonged or dragged out twice as long as the sound without a following colon.

The only consonants which are pronounced like those in English are:

p	As in English "pill" and "spin".

Reading Halq'eméylem

The only consonants which are pronounced like those in English are:

t	As in English "tick" and "stand".
ch	As in English "church".
ts	As in English "rats".
k	
kw	As in English "inkwell" and "queen".
th	As in English "thin" but not voiced as in "this" or "the".
sh	As in English "shine"
s	As in English "sill"
h	As in English "hat".
m	As in English "man" and "bottom".
l	As in English "land" and "camels".
y	As in English "yes" and "say".
w	As in English "wood" and "how".

This leaves eighteen sounds, most of which do not occur in English.

q	Made by raising the very back of the tongue to touch the soft palate.
qw	Made just like the q but with rounded lips.

There are ten consonants written with an apostrophe: ch', k', kw', p', q', qw', t' th', ts', tl'. These are popped or glottalized consonants. Th occurs in English "width" and "breadth".

'	Glottal stop – it is found in a few words in English like "mutton" or "button" or beginning each "uh" in "uh-uh" (the sound meaning no) or the sound beginning "earns" in "Mary earns" when pronounced differently "Mary yearns".
lh	Made by putting your tongue in position to say an "l" but then blowing air (like an "h") around the sides of the tongue. This sound may be heard in English after "k" sound in a few words like "clean" (klhin) or "clear" or "climb".

There are four blown x sounds. These sounds are made by raising the tongue to narrow the passage of air till you hear the friction of the air.

x	Made with the middle of the tongue raised roughly in the same places as it is to make a y as in "yawn" but instead using your voice to blow air, producing a friction sound between the middle of the tongue and the front of the hard palate. English has this sound first in "Hugh" or "hew".

Reading Halq'eméylem

There are four blown x sounds. These sounds are made by raising the tongue to narrow the passage of air till you hear the friction of the air.

xw	Made with the tongue raised a little further back, by the middle of the hard palate (roof of the mouth), but it also requires rounded lips. It sounds like "wh" in some English words but with more friction on the roof of the mouth.
x̲	Made still further back, with the back of the tongue raised close to the soft palate (where the q is made). German has this sound in "ach" for example, and Scottish has it in "lock" meaning lake.
xw	Made in the same back place as x but it is also made with round lips. It is like a blown qw while x is like a blown q.

*This Halq'eméylem pronunciation guide was borrowed from You Are Asked to Witness: The Stó:lō in Canada's Pacific Coast History by Keith Thor Carlson.

Glossary

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.
Ammonia	A colourless pollutant with a pungent odour that also acts as a precursor to the photochemical reactions that produce secondary fine particulate matter. Ammonia is also associated with negative effects on human health and the environment. Major sources of ammonia include livestock waste, land application of manure, composting and fertilizer production.
Ancestral Human Remains	The skeletal or otherwise physical remains of a deceased person or persons likely 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.
Criteria Air Contaminants	While many different contaminants may be emitted to air, there are contaminants considered as "Criteria Air Contaminants" (CAC). These contaminants cause smog, acid rain, and other health hazards and while different jurisdictions may identify different CACs, they commonly include: oxides of nitrogen (NOX); sulphur dioxide (SO2); carbon monoxide (CO); volatile organic compounds (VOCs); ground level ozone, and particulate matter (PM – Total, PM10, PM2.5).
Critical habitat	Habitat that is necessary for the survival or recovery of a listed wildlife species.
Construction and Demolition waste	Waste derived from construction and demolition projects that includes materials such as bricks, concrete, gypsum, drywall and treated wood.
Deposit	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.
Endangered species	A wildlife species that is facing imminent extirpation or extinction.
Environmental Operating Procedure (EOP)	A set of best practices for dealing with environmental emergencies or mitigating risks to the environment.
Extirpated species	A wildlife species that no longer exists in the wild in Canada but exists elsewhere in the world.
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.).

Glossary

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, fine particulate matter (PM2.5) can be both directly emitted from an emission source (primary) or created through a series of photochemical reactions in the atmosphere (secondary) to form particulate.
Garbage or 'residual waste'	Materials that cannot be recycled, composted or diverted through other programs, such as diapers, sanitary products, cigarette butts and lint.
Ground-level Ozone (ozone)	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 saturated zones within soil pores and crevices in rock.
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 terrestrial (land-based) wildlife species: the area or type of site where an individual or wildlife species naturally occurs or depends on directly or indirectly 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 liquid medications; and waste oil, filters and containers.
Hydraulic oil	Oil that is used in the hydraulic systems of equipment such as excavators or backhoes.
Industrial, Commercial, and Institutional (ICI) sector	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 (LUP)	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 Semá: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.

Glossary

Municipal policies and bylaws	Can contain information on materials that 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 passed on to Semá: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, including 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.
Oraganic or "compostable" waste	Organic or 'compostable' waste includes a variety of organic materials that may include: 'green waste' – yard trimmings, grass, clippings, branches, etc.; food waste, biosolids, manure, hatchery waste, tissue paper, and food-soiled paper packaging, etc[1]. [1] A comprehensive list of organic materials accepted for curbside pickup can be found within the Waste Wise Brochure: https://bewastewise.com/sector/single-family-homes/
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.
Recyclables or 'blue box' materials	Materials including, but not limited to paper, envelopes, newspapers, magazines, flyers, cardboard, boxboard (e.g., cereal 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	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 generated by single family and multi-family residential households is referred to as "residential sector" waste.
Soil	Soil includes; unconsolidated mineral or organic material, rock, fill and sediment deposited on land. Soil does not include the following, which are applied to land for a beneficial purpose in compliance with the Organic Matter Recycling Regulation or an authorization given under the Act; sewage sludge, composted organic materials and products derived from the materials described in paragraph (e) or (f).[1] [1] British Columbia Contaminated Sites Regulation (March 2023)

Glossary

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	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 of the Stó:lō Heritage Policy (2003). Also referred to as 'Stó:lō Heritage Resources' in relation to resource management.
Stó:lō Heritage Policy (2003)	The Stó:lō maintain ownership of and jurisdiction over all Stó:lō heritage sites and objects. On behalf of the broader Halq'eméylem -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 Halq'eméylem-speaking communities and organizations not directly associated with the Nation. Stó:lō Nation endeavours to establish heritage related Protocol Agreements, as needed, with such Halq'eméylem 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	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	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.

Glossary

Underground storage tank (UST)	A storage tank located underground to contain chemicals, fuel, or septic materials.
Waste stream	The complete flow of waste from its domestic or industrial source through to recovery, recycling or final disposal.
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	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 the underlying aquifer(s).
Zero Waste Challenge	Zero Waste is a mindset meant to promote the adoption of more aggressive waste reduction policies aimed towards stopping waste before it is created and maximizing reuse and recycling programs. The term "zero waste" is a concept that promotes a future where landfills are no longer needed.

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

1.0 Introduction

Vision

During the 2022 Land Use Plan (LUP) update, Semá:th members confirmed that the following statement continues to reflect the vision for Sumas First Nation:

"Semá:th is a strong, vibrant, culturally rich and progressive community that balances the cultural, social, economic and environmental needs of the community."

S'ólh Téméxw te íkw'élò. Xólhmet te mekw'stám ít kwelát – "This is our land. We must look after everything that belongs to us". In Semá:th culture, a link exists between the past, present, and future. In our Halq'emeylem language we have the word tómiyeqw – 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 Semá:th People, undertook the development of our Environmental Management Plan (EMP).

We created the Semá: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 Semá:th Land Code was accepted. The Semá:th Land Code is an important and exciting step in Semá: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 Semá:th responsible for our acts or omissions in managing our lands. Under Land Code, Semá:th First Nation Council has the power to make laws in respect of the development, conservation, protection, management and administration of Semá:th Lands (Semá:th Laws). This Environmental Management Plan (EMP) will assist Semá: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 Semá:th to manage activities that have the potential to impact the environment and health of people on Semá:th Lands. As illustrated in Figure 1, Semá:th Lands are located on the south side of the Fraser Valley, east of the City of Abbotsford. Semá:th Lands refer to the land comprised of Upper Sumas Reserve #6 and is approximately 628 acres (~254

1.2 Scope *(Continued)*

ha). The EMP is also meant to apply to future Semá:th lands that may be added through the addition to reserve process.

1.3 Purpose

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

- Identify critical environmental issues and provide guidelines on how to respond to those issues.
- Provide guidance and next steps for the creation and implementation of Semá:th Environmental Protection Regime and laws.
- Minimize negative environmental impacts to the fullest extent possible on Semá:th Lands
- Provide a proactive rather than reactive environmental management regime.
- Incorporate environmental considerations into the decision-making process.
- Improve environmental protection and performance that goes beyond compliance with federal and other applicable laws, regulations, Best Management Practices, and standards.
- Protect Semá:th Lands and the environment for future generations.
- Incorporate Semá:th Traditional Knowledge into current environmental management practices.
- Facilitate continual environmental management improvement.
- Bring together the information, documentation and research that has been conducted on Semá:th Lands to ensure that sound environmental stewardship occurs.
- Promote the principles of sustainable development on Semá:th Lands.
- Increase the overall awareness of workers and neighboring municipalities regarding environmental issues and practices on Semá:th Lands.
- Increase environmental awareness and pride among Semá:th people.

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

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 physical copies of outdated documents while retaining electronic copies at the Lands Department Office.
- Store all EMP records in hard copy and/or on an electronic data records system for 5 years.

2.2 Bi-Annual EMP Review

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

2.2 Bi-Annual EMP Review *(Continued)*

- The success of the EMP implementation plan including recommendations for improvement; and
- The effectiveness of the document control and recommended changes.

2.3 Bi-Annual EMP Chief and Council Review

Semá:th Chief and Council and the Lands Manager will meet bi-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 bi-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 bi-annual review in response to significant regulatory changes, new land use processes, changes in industrial operations, and/or organizational adjustments. As required, the Lands 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

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 bi-annually in the EMP Review Meeting.
Lands Department The Lands 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.	**Lands Manager** **Maintain the Approved EMP** • Conduct or assign responsibilities for EMP/EOP reviews and inspections and related documentation. • Maintain current EOPs within the EMP. • Establish and implement EMP document control procedures. • Ensure that legal requirements relevant to the EMP are reviewed annually. • Maintain a central, electronic, and hard copy version of the EMP. • Prepare the bi-annual EMP Review Report. • Coordinate and participate in the bi-annual EMP Review meeting. • Prepare an annual budget for Chief and Council to review and approve for the implementation and maintenance of the EMP. • Ensure that adequate training of Semá:th staff is provided related to the implementation and requirements of the EMP. **Communicate the EMP** • Ensure that staff and contractors are aware of the EMP and EOP requirements and objectives. • Communicate the EMP goals, objectives, and EOPs both internally and externally, and as appropriate. • Liaise with, advise, and report back to Chief and Council on the status of project activities and any environmental issues. • Advise Chief and Council of any non-compliance and any emerging environmental issues and assist in addressing them. • Liaise with regulatory agencies as required. • Maintain a registry of complaints. **Environmental Compliance Officer** **Communicate the EMP** • Liaise with regulatory agencies as required. • Maintain a registry of complaints. **Review Compliance with the EMP** • Schedule and coordinate internal EMP and EOP reviews. • Implement or assign corrective action as required in response to inspection or monitoring results, audit findings, Chief and Council reviews or incidence reports. • Monitor contractors' compliance. • Periodically review monitoring reports to ensure required data is being collected. **Maintain EMP Related Documents (including but not limited to):** • Environmental permits, approvals and government agency correspondence related to the EMP.

2.6 Roles and Responsibilities (*Continued)*

Lands Department	**Environmental Incidences** • Agreements with fuel, chemical and waste contractors and suppliers for activities related to the EMP. • Facility site plans, records, checklists, audit reports and related documentation. Promptly investigate all reportable environmental incidences to ensure that appropriate reporting, response and other legal requirements have been met. • Able to stop work to ensure compliance with regulatory and/or EMP requirements. • Ensure environmental incidents are reported to the appropriate/applicable agencies and Chief and Council. • Retain the services of a qualified Environmental Professional to assess and mitigate risk associated with impacts to the environment. • Ensure that all stop work orders (SWO) are registered in the First Nations Lands Registry System.
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 Semá:th First Nation. • At the discretion of the Lands Manager, retain the services of a Qualified Environmental Professional to assess and mitigate risk associated with impacts to the environment.

3.0 Methodology

3.1 Development of the EMP (2013)

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

3.2 Literature Review (2013)

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, 1981
- Fire Protection Agreement – December, 1996
- Sumas First Nation Draft Highest and Best Use Study – December, 2012
- Sanitary Sewer Agreement – December, 1991

3.3 Community Engagement (2013)

Community input into the EMP is a critical component of the development of the EMP. To fully engage the Semá: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 included:

- Development and distribution of a community questionnaire

3.3 Community Engagement (2013) *(Continued)*

- Community open house
- Meetings, workshops, and presentations with the Semá:th Management Team

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

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

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

3.3.1 Community Questionnaire and Open House (2013)

A community questionnaire was developed and distributed to Semá:th members by the Lands Advisory Committee (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 member's knowledge and awareness surrounding environmental issues and management on Semá:th lands. Members were also asked to identify the resources they value most and discuss the biggest environmental threats to Semá:th lands. The questionnaire was open to members ages 14 years and older. A total of 96 questionnaires were completed by Semá:th members. The results of the survey were analyzed, and the findings were summarized in a memorandum that was later shared in a community newsletter.

3.3.2 EMP Meetings (2013)

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 Semá: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
- 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

3.3.2 EMP Meetings (2013) *(Continued)*

- 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
- Provide an open forum for discussion with Semá:th members through their Leadership to gather information from the community. This invaluable information ensures the EMP captures the community's goals and priorities for environmental management on Semá:th Lands.

Considering 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 environmental management priorities for the EMP were identified as follows (in no particular order):

- Air Quality Management
- Cultural Resources Protection
- Fuel Handling and Disposal
- Groundwater Protection
- Habitat Protection
- Plants and Wildlife
- Land Development
- Soil and Fill Management
- Solid Waste Handling and Disposal
- Surface Water Management

Descriptions of the top 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 Semá:th on environmental management issues.

3.4 Amendment of the Environmental Management Plan (2025)

In 2024, the Semá:th First Nation Lands Department reviewed the original Environmental Management Plan (EMP) and determined that major revisions were required. The timelines for the original Environmental Operating Procedures (EOPs) had long since passed and at this point, the Semá:th community had made major progress in their environmental laws and protective measures. Given the out-of-date nature of the original EMP, the Lands Department re-engaged the community and leadership to see how environmental priorities and concerns had changed. This was accomplished through a community engagement event, one-on-one interviews with respected knowledge keepers and Elders, and the distribution of surveys to community members.

The community engagement event was held on April 2, 2024, to better understand the community's environmental concerns and priorities. A total of 26 members attended and were given the opportunity to answer surveys, mark critical areas on maps, and ask Lands Department staff questions regarding the EMP amendment process. The questionnaire was open to members ages 18 years and older and was also made available at an Elder's lunch meeting prior to the community engagement event. A total of

3.4 Amendment of the Environmental Management Plan (2025) *(Continued)*

23 questionnaires were completed by Semá:th members and 6 one-on-one interviews were completed with knowledge keepers and Elders. The survey results and interview transcripts were analyzed with the help of the Stó:lō Research and Resource Management Centre The questionnaire and survey findings (summarized in a memorandum) are provided in Appendix C.

In addition to the review of existing Semá:th laws, policies, and regulations, the following documents were reviewed to build background knowledge of Semá:th lands:

- Sumas First Nation – I.R. No. 6 Supplemental Phase 2 ESA – Former Rotary Kiln, 2013
- Sumas First Nation – I.R. No. 6 Supplemental Phase 3 Environmental Site Assessment, 2014
- Confirmation of Remediation Former Kilgard Brick Plant 3087 Sumas Mountain Road, Abbotsford, BC (Draft), 2024
- Sumas First Nation – I.R. No. 6 Phase 3 Environmental Site Assessment, 2014
- Upper Stó:lō Fraser Valley Plant Gathering, 1981
- Upper Stó:lō Ethnobotany, 1982
- Sumas First Nation Land Use Plan, 2024

3.4.1 Environmental Site Assessments (ESAs)

To date, three major Environmental Site Assessments (ESAs) have been completed on Semá:th Lands to identify environmental concerns and areas of potential or known contamination located on or immediately adjacent to the reserve lands that represent a risk or future liability to Semá:th. While the three ESAs were included in the literature review that formed the original (2013) Environmental Management Plan, some of the ESAs were still in-progress or only reviewed in a draft form. The 2024 amendment included the final versions of all three ESAs as a part of the literature review, summarizing the findings and recommending areas to be prioritized for remediation.

A summary of the site assessments is presented below. Figure 3 in Appendix B identifies historic Areas of Environmental Concern (AECs) on and adjacent to IR 6.

A Phase I Environmental Site Assessment (ESA) was completed by Teranis Consulting Ltd. (Teranis, 2009) to establish the environmental conditions and identify Areas of Potential Environmental Concern (APEC) on Semá:th Lands prior to the implementation of the Land Code. Teranis identified a total of forty-four (44) 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 Sumas Environmental Services (SES) Soil Remediation Facility, former Rotary Kiln site, former Miners Camp and former sawmill.

A Phase II ESA (Teranis, 2012) and Supplemental Phase II ESA (Teranis, 2013) was completed by Teranis to confirm the presence or absence of contaminants within each APEC identified during the Phase I

3.4.1 Environmental Site Assessments (ESAs) *(Continued)*

ESA. The Phase II ESA identified contamination in soil and/groundwater within 31 Areas of Environmental Concern (AECs). A Phase III ESA and Supplemental Phase III ESA (Teranis, 2014) were completed to delineate contamination within each AEC. Details of the APECs and AECs investigated during each ESA component are presented in the following table:

Site Description	Phase 1 ESA APEC (2009)	Phase 2 ESA AEC (2012-2013)	Phase 3 ESA AEC (2014)	Contaminants of Concern Identified in Soil and/or Groundwater	Recommendations
Landfill site that reportedly received treated soil from SES Bioremediation Facility	1	1	1	Soil: Metals, hydrocarbons, polycyclic aromatic hydrocarbons (PAH) GW: Metals, PAH	Groundwater and surface water monitoring Human Health and Ecological Risk Assessment
Fill (residual treated soil) remaining on the former SES Bioremediation Soil Treatment Facility	2	2	2	GW: Metals, PAH	Quarterly groundwater and surface water monitoring Human Health and Ecological Risk Assessment
Fill located on Lot 11-5. Source and quality of the fill is unknown	3	3	-	None	None
Fill located on the north end of Lot 12	4	4	-	None	None
Fill located on Lot 11-4	5	5	-	None	None
Fill located west of Sumas Mountain Road, south of Kilgard Road on Lots 18-1 through 18-9	6	6	6	Soil: Metals, PAH GW: Metals	Human Health and Ecological Risk Assessment
Fill located south of the new Administration building on Lot 21-4	7	7	x	Soil: PAH	Delineate soil impacts Assess groundwater for potential impacts
Fill located on Lot 21-1, within the former wastewater treatment lagoon	8	8	8	Soil: PAH	Ecological Risk Assessment
Fill located on the south side of Kilgard Road on Lot 29-3 and Lot 29-4	9	9	-	None	None
Fill located on the south side of Kilgard Road on Lot 29-1 and Lot 29-2	10	10	-	None	None
Rotary Kiln Surficial soil (oil) staining below the Rotary Kiln and air quality (dust emissions)	11	11	-	Soil: Metals, hydrocarbons, PAH GW: Metals, hydrocarbons, PAH	Remediation and/or Human Health and Ecological Risk Assessment

3.4.1 Environmental Site Assessments (ESAs) *(Continued)*

Site Description	Phase 1 ESA APEC (2009)	Phase 2 ESA AEC (2012-2013)	Phase 3 ESA AEC (2014)	Contaminants of Concern Identified in Soil and/or Groundwater	Recommendations
Rotary Kiln Diesel AST and small waste dump located approximately 60 m west of the Rotary Kiln	12	12	-	Soil: Metals, hydrocarbons, PAH GW: Metals, hydrocarbons, PAH	Remediation and/ or Human Health and Ecological Risk Assessment
Brick Plant Diesel AST located west of the Vehicle Maintenance facility on the Brick Plant site	13	Brick Plant (AEC 13-18, 32, 35)	Brick Plant (AEC 13-18, 32, 35)	Soil: Metals, hydrocarbons, PAH GW: Metals	Human Health and Ecological Risk Assessment
Brick Plant Oil drums, pails and surface soil staining at the Vehicle Maintenance facility. Reports of oil saturated soil in the area of the vehicle maintenance pit	14	Brick Plant (AEC 13-18, 32, 35)	Brick Plant (AEC 13-18, 32, 35)	Soil: Metals, hydrocarbons, PAH GW: Metals	Human Health and Ecological Risk Assessment
Brick Plant Reported drum contents dump at the west end of the Brick Plant	15	Brick Plant (AEC 13-18, 32, 35)	Brick Plant (AEC 13-18, 32, 35)	Soil: Metals, hydrocarbons, PAH GW: Metals	Human Health and Ecological Risk Assessment
Brick Plant Underground gasoline storage tank located northwest of the Metal Work Shop	16	Brick Plant (AEC 13-18, 32, 35)	Brick Plant (AEC 13-18, 32, 35)	Soil: Metals, hydrocarbons PAH GW: Metals	Human Health and Ecological Risk Assessment
Brick Plant Metal fabrication and oil staining in the Metal Work Shop	17	Brick Plant (AEC 13-18, 32, 35)	Brick Plant (AEC 13-18, 32, 35)	Soil: Metals, Hydrocarbons, PAH GW: Metals	Human Health and Ecological Risk Assessment
Brick Plant Bunker C and solvent spills close to the Boiler House and chemical storage area located approximately 20 m west of the Boiler House	18	Brick Plant (AEC 13-18, 32, 35)	Brick Plant (AEC 13-18, 32, 35)	Soil: Metals, Hydrocarbons, PAH GW: Metals	Human Health and Ecological Risk Assessment
Brick Plant Brick Plant in general, including the former chemical and solvent storage located approximately 20 m west of the former Boiler House on the Brick Plant site and the Transformer building	32	Brick Plant (AEC 13-18, 32, 35)	Brick Plant (AEC 13-18, 32, 35)	Soil: Metals, Hydrocarbons, PAH GW: Metals	Human Health and Ecological Risk Assessment
Brick Plant Two (2) out of service AST's and miscellaneous materials storage.	35	Brick Plant (AEC 13-18, 32, 35)	Brick Plant (AEC 13-18, 32, 35)	Soil: Metals, Hydrocarbons, PAH GW: Metals	Human Health and Ecological Risk Assessment

3.4.1 Environmental Site Assessments (ESAs) *(Continued)*

Site Description	Phase 1 ESA APEC (2009)	Phase 2 ESA AEC (2012-2013)	Phase 3 ESA AEC (2014)	Contaminants of Concern Identified in Soil and/or Groundwater	Recommendations
Former service station with underground fuel storage tanks (likely gasoline and diesel) located on Lot 44 immediately north of the Pipe Plant	19	19	19	Soil: Metals, PAH GW: Metals, PAH	Human Health and Ecological Risk Assessment
ASTs in Works Yard	20	20	20	Soil: Hydrocarbons, PAH	Soil remediation
Discharges to Kilgard Creek from the Pipe Plant	21	-	-	None (metals in surface water considered to represent background concentrations)	None
Three (3) former AST's (gasoline, diesel and waste oil) and soil contamination identified at the former Band refuelling facility located on Lot 76	22	22	x	Soil: hydrocarbons, benzene, toluene, ethylbenzene, xylenes (BTEX), PAH GW: Metals, BTEX, hydrocarbons, PAH	Delineate soil and groundwater impacts to facilitate future remediation.
Vehicle maintenance and storage on residential property, Lot 55	23	23	23	Soil: Metals, hydrocarbons, PAH GW: Metals	Remediation and/or Human Health and Ecological Risk Assessment
Former UST (may still be present) and possibly former AST on Lot 42	24	24	x	GW: Metals, PAH	Conduct additional groundwater assessment to verify previously identified impacts.
AST (diesel) located on Lot 18 7	25	25	-	None	None
Metal fabrication and paint spraying at the Metal Box storage operation	26	26	26	Soil: Metals, BTEX, hydrocarbons GW: Metals	No further delineation or remediation recommended until cessation of onsite activities. Conduct further groundwater assessment to verify previously identified impacts.
Contamination of Marshall Creek and Sumas River due to upstream agricultural practices and urban development	27	-	-	None (metals in surface water considered to represent background concentrations)	None
Herbicide use on the BC Hydro ROW, particularly at the base of Hydro towers	28	28	28	Soil: Metals	None, inform BC Hydro of metals impacts
Fuel storage/vehicle repairs at the former Farmers Market and produce storage building	29	29	-	None (metals in soil considered to represent background concentrations)	None

3.4.1 Environmental Site Assessments (ESAs) *(Continued)*

Site Description	Phase 1 ESA APEC (2009)	Phase 2 ESA AEC (2012-2013)	Phase 3 ESA AEC (2014)	Contaminants of Concern Identified in Soil and/or Groundwater	Recommendations
Potential impacts (metals and PAH's) from traffic located on the Trans-Canada Highway	30	30	-	None (metals in soil considered to represent background concentrations)	None
Former Saw Mill located at the south end of Sumas Mountain Road	31	31	-	None (metals in soil and groundwater considered to represent background concentrations)	None
Household 'type' waste dump and burned garbage on road to gravel pit off Lower Sumas Mountain Road	33	33	x	Soil: PAH	Delineate soil impacts Assess groundwater for potential impacts.
Household 'type' waste dump at the entrance to the former SES Bioremediation Facility	34	34	x	Soil: PAH	Delineate soil impacts Assess groundwater for potential impacts
Household 'type' waste dump on the west bank of Kilgard Creek	36	36	36	Soil: Metals, PAH	Soil remediation and/or Human Health and Ecological Risk Assessment
Sediment from Marshall Creek is deposited on Sumas land	37	37	37	Soil: PAH	Ecological Risk Assessment
Fill of unknown quality was deposited south of Hwy 1 at multiple locations in preparation for development of a proposed golf course	38	38	-	None (metals in soil considered to represent background concentrations)	None
Drinking water quality and potential impact of farming practices on the community well	39	39	-	None	None
Scrap metal recycling operation	40	40	40	None (metals in groundwater considered to represent background concentrations)	Decommission groundwater monitoring wells in accordance with BC Groundwater Protection Regulation.
Historic waste disposal from the Brick Plant and Pipe Plant, on the west side of the ROW	41	41	41	GW: Metals	Conduct further groundwater assessment to verify previously identified impacts. Collect surface water samples from Marshall Creek immediately downgradient of the filled area on Lot 12 to assess potential impacts to surface water quality. Human Health and Ecological Risk Assessment

3.4.1 Environmental Site Assessments (ESAs) *(Continued)*

Site Description	Phase 1 ESA APEC (2009)	Phase 2 ESA AEC (2012-2013)	Phase 3 ESA AEC (2014)	Contaminants of Concern Identified in Soil and/or Groundwater	Recommendations
Underground Bunker C storage tank (20,000 gallon) and reported spill site	42	42	42	Soil: Metals, BTEX, hydrocarbons, PAH GW: Metals, hydrocarbons, PAH	Remediation and/ or Human Health and Ecological Risk Assessment
Former Miners camp (potential fuel storage and vehicle maintenance)	43	43	43	None (metals in groundwater considered to represent background concentrations)	Decommission groundwater monitoring well in accordance with BC Groundwater Protection Regulation.
Former service station with underground fuel storage tanks (likely gasoline and diesel) located northeast of the Sumas Mountain Road and Atkinson Road intersection	44	44	44	None (metals in groundwater considered to represent background concentrations)	Decommission groundwater monitoring well in accordance with BC Groundwater Protection Regulation.

X – was scored as NCSCS Class 3 "Low Priority for Action" and was not assessed during the Phase 3 as per ISC direction.

3.4.2 Remediation

Semá:th retained Ausenco Sustainability Inc. (Ausenco) to remediate contaminated soil and groundwater within the former brick plant site. Remediation works generally covered brick plant AECs 13 to 18 and 32 and 35. Remediation works were completed to meet risk based remedial targets and confirmatory soil sample results were compared to British Columbia Contaminated Sites Regulation (BC CSR) Standards in accordance with Semá:th requirements. The remediation work assumed that the site cannot be used for groundwater abstraction for drinking water use. Following completion of the remedial works, some contamination in soil and groundwater was still present and further site assessment and risk assessment was recommended.

3.4.3 Top Environmental Management Priorities for 2025

Through guidance from the community and knowledge gained from the literature review, the top environmental management concerns were re-assessed and identified as follows:

- Air Quality
- Groundwater
- Contaminated Fill & Soil
- Stormwater and wastewater
- Fisheries resources
- Plants & Wildlife
- Garbage Handling & Disposal
- Land Development
- Surface water

4.0 Environmental Management Priorities

Through consultation and review of background documents, a set of top environmental management priorities were identified for Semá: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 Management

Air quality is a measure of the condition of 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 and/or the environment. Poor air quality may be the result of emissions to the atmosphere from human activities (e.g., car emissions, industrial activities).

Semá:th First Nation is located in the Fraser Valley. The Fraser Valley is located in a confined airshed, which means 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 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 airshed and in turn affect the local and regional air quality. The buildup of pollutants in the airshed has the potential to negatively impact human health, visibility, and the environment.

Locally, the main sources of poor air quality within the Semá:th Lands are related to industrial operations, transport, wood smoke, secondary sources and agricultural activities. Community input identified air quality as a major concern with identified potential emission sources including Westlake Pipe & Fittings (adjacent to Semá:th Lands) and the quarries located on Sumas Mountain. 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 from other industrial activities. The particulate matter concentrations measured during the testing indicated quite low concentrations 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, quarries, industrial emissions, and local combustion sources). It should be noted that PM10 concentrations measured on Semá:th Lands were consistently more elevated than those recorded in Abbotsford.

The Lafarge Asphalt Plant was also identified by the community as a potential emission source and air quality concern. An Environmental Compliance Audit of the Lafarge Canada Inc. Asphalt Batching Plant on Semá:th Lands was conducted by SLR Consulting (Canada) Ltd in July 2024. The audit identified the plant is generally meeting the BC Asphalt Regulation requirements for stack testing and air emissions.

Managing the air quality associated with operations on Semá:th Lands (e.g., air emissions from industrial facilities, emissions associated with mobile sources) can help improve the air we breathe and allow for a healthier environment. While there are limitations for improving air quality in the Fraser Valley, and

4.1 Air Quality Management *(Continued)*

particularly on Semá:th Lands due to the regional impacts based on location and surrounding industry, we can still strive to minimise adverse emissions and act as stewards of the environment to promote air quality. Sumas First Nation aims to reduce the emission of airborne pollutants within the community and to protect the health of our community and environment from air pollution. To better monitor local industrial sources of emissions, SFN will explore options for air pollution sensors and monitoring equipment. Sumas First Nation will also continue to educate the community on the negative impacts to air quality from burning of waste, working to encourage proper management of solid waste. In addition, SFN will work to manage and develop walking trails and paths within the community, encouraging foot traffic and the reduction of carbon emissions.

4.2 Cultural Resources Protection

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.

Semá:th boasts a rich, complex, and dynamic culture full of our own distinct values, beliefs, traditions, and heritage. The future of Semá:th is important. The future of our people is based on our history, land culture, people and resources. Semá: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.

While Semá: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.

4.2.1 Fisheries Resources

Fisheries resources refers to animals that predominantly inhabit aquatic habitat and are harvested by people. The Semá:th People have inhabited Coast Salish Territory since time immemorial and have long since depended on the animals that inhabit our waters to sustain our people. Historically, the Semá:th People gathered near Sumas Lake and were able to harvest many different species of fish right at the front of our village. Since the draining of Sumas Lake between 1920 and 1924, the landscape has changed drastically.

4.2.1 Fisheries Resources *(Continued)*

Interviews with Knowledge Keepers and Elders revealed that current day members used to be able to harvest animals like crayfish (Pacifastacus leniusculus) and salmonids from the Marshall Lonzo Creek and Sumas River. Similar to the decline in access to beaver, muskrat and otters, the decreased access to aquatic species was attributed to pollution in our waterways and diminished water quality.

To restore and preserve fisheries resources, Sumas First Nation will work towards monitoring and restoring the creeks and rivers that run through Semá:th Lands (see Surfacewater Management EOPs and Habitat Protection EOPs). In addition, the Sumas First Nation Lands Department will work with the Governance and Natural Resources Department to monitor surfacewater quality off-reserve that ultimately feed into and affect waterways on-reserve.

4.3 Fuel Handling and Storage

Fuel, such as gasoline, 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 Semá: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 2013 community questionnaire suggested a lack of education and awareness related to proper fuel handling, spill response, proper storage and disposal.

The results of the 2023 questionnaire suggested that member's concerns had shifted to improper handling of fuel from industrial proponents working within the Semá:th community. Members also shared about witnessing multiple fuel spills from operators parking dump trucks along the side of Sumas Mountain Road. While the fuel management practices in the EOP will help guide industrial businesses operating on reserve, work is needed to prevent operators of industrial vehicles from spilling fuel and diesel on reserve. The Lands Department is committed to revisit the draft Environmental Protection Law, potentially introducing a fining system for negligent fuel spills caused by truck operators. The Lands Department also plans to create education and awareness programs related to proper fuel handling, storage, and disposal, and proper response plans for fuel spills.

4.4 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 use and consumption. This collection of water underground is called an aquifer and is the source of drinking water for Semá:th First Nation.

As described in the ESA's the depth of groundwater on Semá:th Lands is variable depending on subsurface stratigraphy and bedrock elevation. Based on water levels within identified streams and creeks and measurement of groundwater elevations during the Phase II and Phase III ESAs is typically within 5 m of ground surface across much of Semá:th Lands. Local groundwater flow is inferred to generally flow south towards the Fraser River. Based on inferred groundwater flow direction and local creeks, land use located to the north, northeast, and northwest is considered up-gradient and have the greatest potential to impact groundwater quality on Semá:th Lands.

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.

Semá:th's drinking water is supplied by groundwater wells and a water treatment system is located on the north side of Lakeview Drive. However, it is thought that some community members may obtain their drinking water from private abstraction wells. Sumas First Nation staff will work with community members to verify the number and location of private 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.

Semá:th currently has a drinking water (from groundwater abstraction well) 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.

Regular sampling was also recommended in the Phase III ESA (quarterly sampling) at several monitoring wells: former SES site (landfill and fill area), the brick plant waste dump, downgradient of the historic Bunker C UST and at the former rotary kiln site. 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.

Figure 4 in Appendix B, indicates the location of all intact existing environmental groundwater monitoring wells.

4.5 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 Semá: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.

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 Semá: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 Semá: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 Semá:th Lands will ensure impacts from development are minimized.

4.6 Plants and Wildlife

On October 22, 2022, a community engagement event was held by Sumas First Nation's Governance & Natural Resources Department to gauge which federally listed Species-at-Risk (SAR) were of greatest importance to community members. Of the SAR presented, the top three identified were barn owl (*Tyto alba*), red legged frog (*Rana aurora*) and western painted turtle (*Chrysemys picta*). After searching through publicly available data from the BC Conservation Data Centre, no records of critical habitat for any of these species within the Sumas First Nation Reserve were found. Regardless, measures described in the EOP will be taken to ensure that, if encountered, no federally listed SAR will be harmed during development of lands.

Despite the absence of federally listed species-at-risk within the Semá:th community, there are many culturally important plant and animal species believed to be at-risk. One-on-one interviews with

4.6 Plants and Wildlife (*Continued)*

community members also brought up concerns of reduced access to native plants including, but not limited to, stinging nettles (*Urtica dioica*), wild strawberries (*Fragaria vesca*), wild blueberries (*Vaccinium sp.*), huckleberries (*Vaccinium parvifolium*), devil's club (*Oplopanax horridus*), and skunk cabbage (*Lysichiton americanus*). Members shared how they used to be able to harvest salmonberry and thimbleberry shoots as children and referred to the plants as 'saskies'. Most attributed the reduced access to these traditional food and medicinal resources to competition with invasive plant species and a loss of habitat from development.

To address the loss of access to cultural food and medicinal resources, Sumas First Nation will work with developers to preserve and enhance riparian habitat along the Marshall Lonzo Creek and Sumas River. Sumas First Nation will continue to seek out funding opportunities to restore riparian habitat throughout the community and to regreen shared spaces. The EOPS aimed at habitat protection should also help with the recovery and protection of culturally significant plants and wildlife (See EOP 5 Habitat Protection).

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. 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 Semá:th First Nation Land Use Plan (2024; See Figure 2) includes land designations for residential use (e.g., housing), commercial (e.g., retail outlets), recreational (e.g., parks, trails and outdoor spaces that support exercise), community facilities (e.g., facilities that exist as a place for public use or gathering like the Longhouse or community hall), light industrial (e.g., developments designed for small scale manufacturing or storage of large appliances), and traditional use (e.g., areas for plant harvesting or hunting). Through the implementation of this EMP, we hope to facilitate and regulate responsible and sustainable development to ensure the long-term viability sustainability of Semá:th Lands.

4.8 Soil and Fill Management

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

4.8 Soil and Fill Management *(Continued)*

environmental health risks. To properly manage this concern, Semá:th has enacted the Semá:th Soil, Deposit, Removal and Transport Law (Amended 2020, Soil Law) which regulates soil that is transported to, deposited on, or removed from Semá:th Lands. This law defines soil as:

> "Soil" unless otherwise expressed specified in a provision includes:
>
> (a) unconsolidated mineral or organic material,
>
> (b) rock,
>
> (c) Clean Fill, and
>
> (d) sediment deposited on land,
>
> but does not include the following, which are applied to land for a beneficial purpose in compliance with Semá:th Law, the Organic Matter Recycling Regulation or an authorization given by Semá:th or another entity delegated or authorized in writing by Semá:th:
>
> (e) sewage sludge;
>
> (f) composted organic materials;
>
> (g) products derived from the materials described in paragraph (e) or (f);
>
> "Clean Fill" means Soil that:
>
> (h) Contains only mineral top Soil or does not contain woodwaste, construction waste, refuse, or any other material that may adversely affect the geotechnical quality of the fill; and
>
> (i) Is free of any substance which cause or contribute to contamination, hazard, or injury when in place.

Soil that is transported to, removed or deposited on Semá:th Lands must obtain a permit from Semá:th Lands Department in accordance with Semá:th Soil Law. The Semá:th Soil Law details Standard Permit Conditions and specifies that Soil to be deposited must meet Low Density Residential Land Use standards as set out in provincial law and adopted by Semá:th.

In addition to Semá:th Soil Law, amendments were made to the provincial Contaminated Sites Regulation (CSR) to no longer exempt First Nation reserves from the provincial soil relocation process. In addition to meeting Semá:th Soil Law's requirements, non-waste soils relocated to Semá:th Lands must also be conducted in accordance with the requirements under the CSR and the BC Ministry of Environment's soil relocation notification process.

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

Sites identified during the ESAs with contaminated soils are presented in Figure 3 in Appendix B.

4.9 Solid Waste Handling and Disposal

Solid waste is waste that is produced by residential, commercial, institutional, demolition, land clearing, or construction sources. 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.

The ESAs noted and the community consultation confirmed issues surrounding several "household" type waste dumps on Semá:th Lands, which included observations of burned garbage and improperly disposed garbage along roadsides and along creek banks. The 2013 questionnaire results suggested that the majority of members feel that waste and other materials were not being disposed of properly, suggesting a lack of education and awareness in the community. Results from the 2024 questionnaire indicated that solid waste management is still a major environmental concern for the community, largely due to continued illegal dumping of household waste on roadsides and on Semá:th Lands. Semá:th is committed to increasing access to waste sorting and removal services to the community and to increasing public awareness on proper handling and disposal of waste material. The EOP will provide information on how Semá:th plans to manage solid waste within the community and reduce incidences of illegal dumping of solid waste.

4.10 Stormwater and Wastewater

Stormwater is precipitation that cannot soak into the ground because of impervious surfaces (e.g., asphalt roads, sidewalks, etc.) but eventually runs into waterways. In 2023, the Semá:th community raised concerns over a lack of stormwater management infrastructure and negative impacts from runoff from the City of Abbotsford and industrial sources into our creeks and waterways. Many members commented on how the water within Kilgard Creek turns brown and turbid during heavy precipitation and attributed this to a combination of bank erosion and sediment runoff from quarries on Sumas Mountain. Sumas First Nation has since retained Urban Systems to develop a comprehensive Integrated Stormwater Management Plan (ISMP) which will include recommended next steps for addressing the community's local drainage issues.

Wastewater is water that has been used in a home, business or as a part of an industrial process. Typically, wastewater is treated before being released to percolate into the ground or into a watershed. All wastewater derived from houses within Semá:th Lands is directed into a wastewater collection system owned by Sumas First Nation and the City of Abbotsford. All household wastewater is eventually directed into the City of Abbotsford's sewage system for treatment. Semá:th leadership expressed concerns over the growing demand for wastewater collection services with increasing development and the limited capacity of Semá:th to meet these demands. Sumas First Nation is exploring funding opportunities to perform a sewer feasibility study to explore options for Semá:th to manage its wastewater. Industrial businesses operating on Semá:th Lands are responsible for the treatment of their own wastewater but

4.10 Stormwater and Wastewater *(Continued)*

Sumas First Nation is responsible for ensuring that contaminants are not being discharged into the environment without proper treatment.

4.11 Surface Water Management

Surface water refers to water that has accumulated on the ground surface. 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. 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 Semá:th Lands including Sumas River (Traditionally referred to as Stótelō, meaning "Little Creek"), Marshall Lonzo Creek (traditionally referred to as Seí:tslehōq, meaning "Sand Drifting"), 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 Semá: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.

Lastly ongoing land development and building and infrastructure construction including importation of fill soils requires the development and implementation of a construction environmental management plan (CEMP). The CEMP must include appropriate erosion and sediment control measures and best practices for the protection of surface water and groundwater on Semá:th Lands.

Based on a review of historic contaminated sites, current site operations and current and future site development, Semá:th has developed long term surface water quality monitoring program. See Figure 5in Appendix B for surface water monitoring stations and monitoring details.

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 Semá: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 Semá: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 Semá:th Lands, aware of the EMP and related EOPs.

EOP 1: Air Quality Management

Air quality is a measure of the condition of air around us. Poor air quality refers to air containing various pollutants that have the potential to be harmful to human health and/or the environment. If not managed effectively, emissions from industry, agriculture, transportation, and natural phenomena such as wildfires, can generate emissions that impact local and regional air quality.

British Columbia has established seven (7) Air Zones within the province including: Central Interior, Coastal, Georgia Strait, Lower Fraser Valley, Northeast, Northwest, and Southern Interior. Semá:th Lands are situated within the Lower Fraser Valley region.

The Fraser Valley is situated in a confined airshed, which means that the area is more likely to experience a buildup of contaminants (Fraser Valley Regional District, 2008). The confined airshed is created by the weather, wind, and geography of the valley. The airshed in the Fraser Valley is bordered by the Pacific coastline to the west and mountains to the north and east. These geographic features create the potential for air to become "trapped" within the Fraser Valley under certain meteorological conditions, enabling pollutants to accumulate.

Maintaining good air quality is essential to the ongoing health of Semá:th and our Lands. Poor air quality has the potential to impact the people within the community (e.g., increased respiratory illness) and the environment (e.g., damage to vegetation, climate change).

Managing air quality associated with operations on Semá:th Lands can help improve the air we breathe and allow for a healthier environment while enabling sustainable development of our lands. While air quality on Semá: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.

Goal

- Identify potential sources of air borne contaminants and improve air quality through prevention and mitigation measures.

Objective

Minimize impacts to the local airshed and/or improve regional air quality through the following practices:

- Form bilateral relationships with Metro Vancouver and the Fraser Valley Regional District (FVRD) to ensure development minimizes harmful air emissions and to ensure that management is consistent throughout our region.
- Identify baseline conditions based on the work completed by regional agencies to date.

Objective *(Continued)*

- Draw upon the existing regional air quality monitoring network to characterize/ monitor air quality in proximity to Semá:th First Nation Lands.
- Follow and enforce the applicable legislation, standards and policies. For example, the Prevention of Disorderly Conduct and Nuisance Law (2015), thereby preventing the burning of household waste and refuse that can release emissions including particulate matter and unregulated compounds.
- Create and enforce a process to manage air emissions from new development and land use.
- Educate members and generate awareness on air quality issues and management strategies for our community and neighbours.

Applicable Legislation, Standards, and Policies

Legislation (Acts and Regulations) and guidance that can be pertinent for air quality management on Semá:th First Nation lands may be divided into federal, provincial and Semá:th First Nation laws. These various laws are summarized below.

Semá:th First Nation

- Semá:th Prevention of Disorderly Conduct and Nuisances Law (2015).
- Semá:th Environmental Protection Law (Pending)

Federal

- Canadian Environmental Protection Act (CEPA)
- Canadian Environmental Assessment Act (CEAA)
- Canada-wide Standards for Particulate Matter and Ozone (CCME)
- Indian Reserve Waste Disposal Regulations, C.R.C., c 980

Provincial

Metro Vancouver and FVRD are responsible for the management of air quality within the lower mainland on provincial lands. It is important that Semá:th First Nation (and other Nations within the Fraser Valley) establish communications with these entities to ensure best practices are implemented in the development of First Nation Lands, outside provincial jurisdiction.

- British Columbia Environmental Management Act (Part 6 – Clean Air Provisions)
- British Columbia Environmental Assessment Act
- British Columbia Waste Discharge Regulation (B.C. Reg. 320/04)

Provincial *(Continued)*

- British Columbia Agricultural Waste Control Regulation (B.C. Reg. 131/92)
- British Columbia Organic Matter Recycling Regulation (B.C. Reg. 18/2002)
- British Columbia Asphalt Plant Regulation (B.C. Reg. 216/2019)
- 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

Fraser Valley is subject to the movement and accumulation of air emissions from the Lower Mainland and the northwestern United States. In addition to impacts from the principal sources of emissions from industrial, transportation, and agricultural sectors, seasonal emissions from wildfires within or from neighbouring airsheds can significantly impact air quality for the region and for Semá:th Lands.

From a federal perspective, air contaminants emitted or formed following emissions from these primary sectors include particulate matter (PM), ozone (O3), carbon monoxide (CO), sulfur oxides (SOX), nitrogen oxides (NOx), volatile organic compounds (VOCs), and ammonia (NH3). These pollutants are monitored at select locations throughout the Fraser Valley Basin, with the nearest station to Semá:th Lands being in Abbotsford.

Emissions within Semá:th Lands are relatively limited compared to the magnitude of adjacent sources on provincial land or rights-of-way. As of December 2025, industrial activity on Semá:th Lands is associated with quarries, a PVC pipe plant, a small asphalt plant and a compost facility (Limited to composting forestry residuals and untreated wood.. Emissions associated with these industries are primarily PM and VOCs. While there are limited emissions currently on Semá:th Lands, the community is substantially impacted by emissions from adjacent jurisdictions, with an array of other air contaminants.

It is important to understand that the dynamics of the Fraser Valley Basin can cause air pollutants to accumulate within the Valley and this concentration of pollutants can lead to an impact on human health, particularly when meteorological conditions are stable, and pollutants are not dispersed and diluted.

The accumulation of pollutants within the Valley Basin and subsequent interactions of contaminants to generate secondary pollutants, has potential to negatively impact human health, visibility, and the environment within the airshed. Management of emissions from regional sources is imperative tO maintaining a healthy airshed. For Semá:th to be able to manage and minimize the impacts of poor air quality on their community, it is imperative to have input with neighbouring jurisdictions on the management of emissions outside Semá:th Lands.

Strategy 1: Air Quality Management

The Fraser Valley Regional District (FVRD) first developed an Air Quality Management Plan (AQMP), in 1998 and revised this plan in 2021. The AQMP identifies key drivers of air quality within the region as being ground-level ozone, fine particulate (PM2.5) and precursors to both of these (e.g., ammonia, volatile organic compounds, oxides of nitrogen). Poor air quality within the FVRD affects human health, economic development, agricultural production, local ecosystems, and overall quality of life.

This AQMP (2021), is based on updated air quality data and trends, and provides a roadmap to reduce emissions and improve air quality of the region. However, the FVRD recognizes that this will require cooperation between all levels of government, neighboring jurisdictions, industry associations and input from scientific experts and community groups.

The FVRD AQMP may address regional air quality that will indirectly affect the Semá:th community; however, Semá:th First Nation will need to develop a process to address current and future emission sources on their lands. While the objective should be to minimize emissions from any source that could impact air quality, it will need to be based on adoption of activity specific permits. Permits could be adopted in a manner similar to other jurisdictions and specify requirements for emissions control and/or monitoring. Where permit processes of outside jurisdictions are dated, Semá:th plans to identify additional permit requirements that may better address management air quality on their lands.

Strategy 2: Manage Future Developments

To allow for the management of air emissions associated with future development (e.g., industrial, commercial, or residential) of Semá:th Lands, all development should be subject to a review and assessment (if applicable) of air emissions. Through the air quality assessment process emission sources and their potential impacts should be identified, quantified and potential mitigation measures (e.g. design specifications) proposed. The results and proposed mitigation measures from the air quality assessment process will be included in a site-specific Environmental Management Plan (EMP) and/or Construction EMP. These EMPs may need to include routine monitoring to confirm developments continue to meet their specified targets.

Strategy 3: Ongoing Monitoring

The Lands Department shall review site-specific process monitoring and/or scheduled monitoring reports from approved developments to assess for compliance with emissions and/or associated mitigation measures. Semá:th will work collaboratively with the Proponent and provincial or federal authorities (as necessary) to address any air quality monitoring issues.

Strategy 3: Ongoing Monitoring *(Continued)*

The Lands Department will coordinate information gathering that relates to air quality complaints on Semá:th Lands. Information such as time/date, location of concern, weather conditions, etc, will be recorded and verified by The Lands Department. With the advancement of air quality monitoring to enable real-time data collection of Criteria Air Contaminants (i.e., Contaminants that cause smog, acid rain, and other health hazards), Semá:th First Nation will consider investing in a process to monitor local air quality within the community and have the ability to mobilize equipment to a development that has received air quality complaints, to verify the on-site conditions. Consideration will also be given to incorporating suitable real-time monitoring within development permits for industrial facilities. This will provide third party reference data to confirm air quality between any prescribed monitoring events.

Strategy 4: Maintain and create walkways throughout the community to discourage use of vehicles

The Semá:th community experiences high levels of traffic on local roads that fall outside of our jurisdiction. By establishing walking trails throughout the community, we can more effectively incentivise members to walk to community events, instead of driving personal vehicles.

Strategy 5: Participate actively in regional air quality committees

Semá:th Lands have nearby commercial, industrial and agricultural activities that may affect the air quality but are outside SFN jurisdiction. By participating in regional committees, SFN will greatly input and ability to affect changes in air quality management and monitoring. Participation in these committees will also allow for Semá:th to draw upon the existing expertise and efforts of regional planning committees/agencies in defining baseline conditions and in developing and implementing real-time air quality monitoring.

The FVRD has declared working proactively with First Nations as a goal of their AQMP. Semá:th will work towards establishing better relationships with the FVRD and Metro Vancouver. To improve these relationships, the Lands Department and the Lands Advisory Committee will consider engaging the districts in a two-way dialogue surrounding the interests and concerns of Semá:th.

Identify the potential for the FVRD to establishing a real-time monitoring station on Semá:th Lands to provide additional airshed data to the network operated and maintained by FVRD and Metro Vancouver.

Strategy 6: Illegal burning of waste on Semá:th Lands

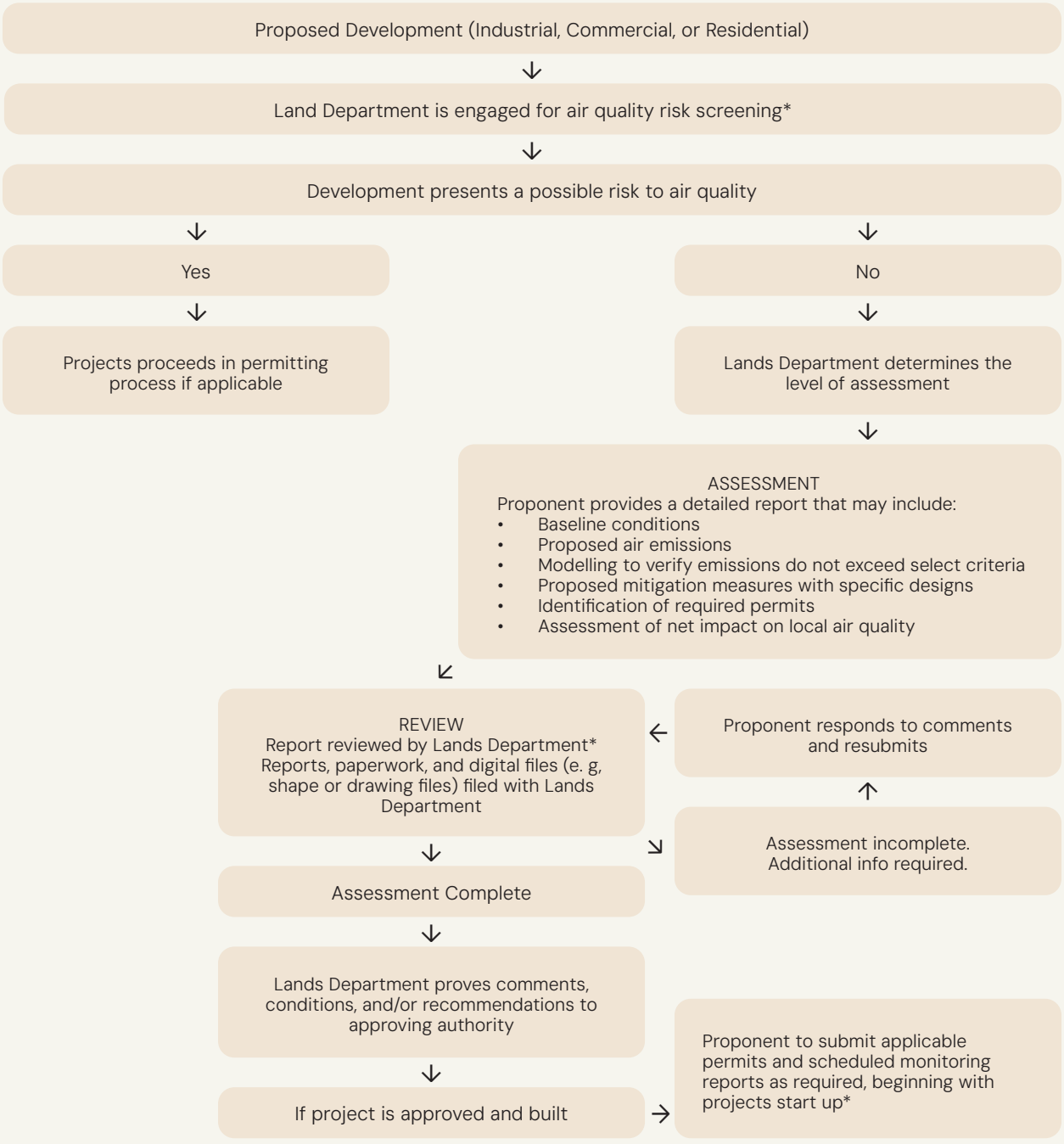
The burning of waste (e.g., household waste) can cause the emission of pollutants that may cause negative effects to human health or the environment. Burning of waste is prohibited under the Semá:th Prevention of Disorderly Conduct and Nuisances Law (2015). Therefore, burning of waste shall not occur on Semá:th Lands.

Efforts will be made to educate the community about the significance of open burning as a source of fine particulates. Develop community air quality awareness through education and programs including, but not limited to:

- Solid waste management resources
- Reducing household energy use.
- Avoiding power tools (e.g., gas-powered lawn mowers) when possible.

EOP 1: Air Quality Management

EOP Process: Air Quality and Managing 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 Semá: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.

Objective

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

Applicable Legislation, Standards, and Policies

Semá:th First Nation

- Semá:th Environmental Assessment Law (Pending)
- Stó:lo 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 Halq'eméylem -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 Halq'eméylem speaking communities and organizations not directly associated with the Nation. Stó:lō Nation endeavours to establish heritage related Protocol Agreements, as needed, with such Halq'eméylem communities and organizations. Stó:lō Nation may also develop heritage related Protocol Agreements with non-Aboriginal governments and resource management agencies.

Provincial

- British Columbia Heritage Conservation Act – British Columbia's archaeological sites are

Provincial *(Continued)*

- 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.

Best Management Practices

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

Application of the Stó:lō 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 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
- Advance Stó:lō cultural revival.

Strategy 1: Establish and protect cultural areas identified in the LUP

As part of the implementation of the Land Use Plan, identify and preserve areas for traditional use 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. Areas for cultural use will also be created by incorporating traditional plants in habitat restoration and regreening projects within the reserve.

Strategy 2: Develop a cultural baseline overview

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

Strategy 2: Develop a cultural baseline overview (Continued)

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

Information gathered through the baseline overview will allow Semá: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 Semá:th Lands.

Strategy 3: Promote cultural resources protection and enhancement

As per Section 8 (c) of Sumas First Nation's Subdivision, Development and Servicing Law (2015), development permit applications must meet the applicable requirements set out in the Stó:lō Heritage Policy. Sumas First Nation requires that impacts to Stó:lō heritage resources be considered, assessed, and mitigated from all development-related disturbances and impacts. Prior to any ground disturbance and/or the development of land within the Sumas First Nation reserve, it is required that the proponent have a Cultural Heritage Impact Assessment performed. 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 Stó:lō Heritage Policy).

A set of management strategies (related to construction activities) have been adapted from the Stó:lō Heritage Policy regarding "Found Human Remains" and have been included below as "Emergency Impact Guidelines".

Strategy 4: Create cultural design guidelines

Growth and development, such as new buildings, can impact cultural heritage and the community's sense of history and of place. To help ensure that culture is preserved and protected, Semá:th will create 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:

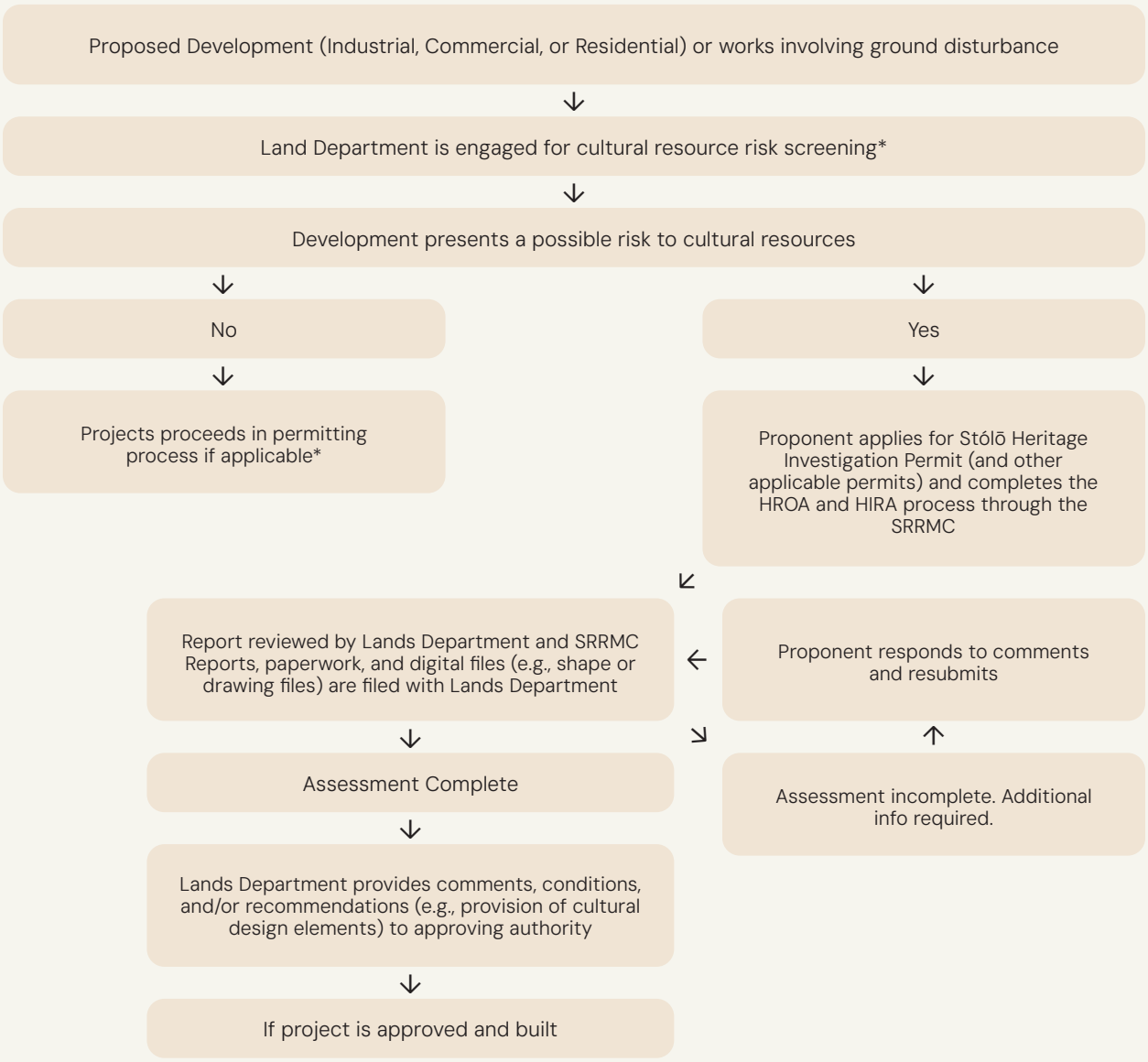
- Built form
- Signage
- Exterior treatment
- Landscaping
- Parking
- Visual impact

Strategy 5: Education and awareness

Develop cultural awareness through education and training, with an emphasis on Traditional Knowledge and Land Use. This may include:

- Developing and building a Semá:th Cultural Resource Centre
- Signage of key community features (e.g., creeks, community buildings)
- Promoting the preservation and enhancement of culturally significant areas
- Workshops for Elders to share their knowledge
- Consulting with Elders and respected Knowledge Keepers when developing Semá:th cultural design policy and other plans
- Hosting cultural celebrations.

EOP 2: Cultural Resources



*Qualified professional services may be required

Emergency Impact Guidelines

If archaeological, cultural, or heritage resources are encountered during site operations, the contractor shall immediately stop construction, notify Semá:th and comply with the policies and procedures identified in the Stó:lō Heritage Policy. Sumas First Nation reserves the right to issue a Stop Work Order should a contractor continue to carry out works despite encountering an archeological, cultural or heritage resource, as this would be a violation of the Stó:lō Heritage Policy. If any item of particular archaeological, heritage, historical, or cultural interest is found on the site, as between the contractor or the party who discovered the item(s) and Semá:th, such item(s) shall be and remain the property of Semá:th and/or the Stó:lō Nation.

Semá: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 Semá: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 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 Semá:th for further guidance. SSRMC will be contacted by Semá:th.

Initial Response by the Contractor *(Continued)*

Step 3: Semá: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, Semá: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:

Initial Response by the Contractor *(Continued)*

Step 1: The contractor shall immediately stop construction in the vicinity of the remains.
Step 2: The contractor shall immediately contact Semá:th for further guidance.
Step 3: Semá:th will advise the contractor on further action.

Initial Action

- Semá:th will contact the SRRMC and the RCMP
- Semá:th or the RCMP will contact the Office of the Coroner
- Semá: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, Semá:th shall be contacted for direction.

EOP 3: Fuel Handling and Storage

This document provides information to developers and site operators on required fuel management procedures to be employed during any land development activities and operations on Sumas First Nation lands. Proper handling, storage and disposal procedures for fuels, including spill response and mitigation measures, are required to prevent the release of contaminants into the environment, and the associated impacts on human health and environmental health.

Goal

Prevent, minimize, and mitigate environmental impacts from fuel spills or leaks on Semá:th Lands.

Objectives

The Fuel Handling and Storage EOP has been developed to provide guidance on operational procedures and best site management practices to achieve the above stated goal. This includes, however is not limited to:

- Providing guidance and direction to site developers and operators to ensure compliance with existing legislation and regulations.
- Inform and generate awareness of proper fuel handling and storage.
- Provide an action plan in the event of a fuel spill/leak.

Applicable Legislation, Standards, and Policies

Semá:th First Nation

- Semá:th Environmental Protection Law (Pending)

Semá:th First Nation

- British Columbia Environmental Management Act (Part 7 Division 2.1)
- British Columbia Contaminated Sites Regulation
- British Columbia Hazardous Waste Regulation
- Spill Reporting Regulation

Federal

- Canadian Environmental Protection Act
- National Fire Code of Canada
- Environment Canada Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations
- Toxic Substance List Canadian Environmental Protection Act

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 soil, sewers, drainage ditches, surface water and groundwater. 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.

Strategy 1: Address Mismanagement of Fuel in Environmental Protection Law

Community members have witnessed commercial semi-truck drivers parking on Sumas Mountain Road and spilling fuel in areas close to Kilgard and Marshall Lonzo Creek. To address this, SFN aims to continue working on the draft Environmental Protection Law and to devise a fining system for improper fuel management.

Management Practices to Mitigate Spills & Leaks

Inventory

Site developers and operators are required to provide an inventory of onsite fuel storage tanks. The inventory will include the following details:

- Number of tanks
- Location(s)
- Type - aboveground (AST) or underground (UST)
- Fuel type
- Volumes
- Upgrades, draining and maintenance schedule

Storage

Site developers and operators are required to mitigate any potential fuel spills or leaks from tanks or equipment by implementing the following storage practices:

1. Totes, drums or tanks used to store fuels should be stored in one designated location, where possible, and must also be constructed with sufficient spill containment to handle more than the maximum volume of liquids stored at the location. Containment measures of static fueling locations should also be constructed with impervious floors and spill containment bumps/lips.

EOP 3: Fuel Handling and Storage

Storage *(Continued)*

2. Secondary containment of static fuel tanks is defined as 110% of the largest container or 25% of the total volume of containers.
3. All fueling areas and fuel storage must be located more than 30m from any onsite or offsite surface water bodies; and, located away from groundwater wells or surface waters.
4. Well maintained and complete spill kits to manage waste oils, lubricants and fuels must be located within the fueling and fuel storage areas, and on all applicable machinery and equipment.
5. Ensure there are no drains in the storage area, or if present they are sealed to prevent spilled wastes from getting into the drainage system, or the drainage system is directly connected to an oil water separator (OWS).
6. Ensure fuels are stored in a separate, labelled and well-ventilated area.
7. Ensure the fueling and fuel storage areas do not flood during rain or snowmelt events.
8. Waste containers (such as waste oil and lubricant tubes) are to be storage in adequate leak proof bins and/or drums, and must be kept under cover to avoid precipitation from getting into the containers. If water gets into the containers and overflows, oil will float and spill out of the container and antifreeze will mix with the water.
9. Maintain a minimal inventory of hazardous materials on the site to ensure thresholds listed under the BC Hazardous Waste Regulations are not exceeded at all times.
10. Do not use underground storage tanks to store liquid hydrocarbon, volatile and/or solvent wastes (such as waste oil).
11. Drip trays are to be used on all out of use or overnight parked equipment and machinery.
12. Containers shall be filled and capped so that under normal conditions there will be no leakage.
13. Containers shall be appropriate for the product being contained.
14. Product/WHMIS labels are required on containers identifying contents and hazards.
15. Current Material Safety Data Sheets (MSDS) must be maintained in a location available to all people involved in fuel handling, storage and disposal.
16. Tanks shall be well maintained and in good condition (free of rust, dents, and leaks).
17. Storage locations must be vented and have appropriate fire extinguishers that are annually inspected with proper tags, where applicable.
18. Operators must conduct regular inspections of fuel tanks to ensure proper requirements are met.
19. Post no smoking signs at all dispensing and fuel transfer sites.
20. Store drums and containers in an upright position.
21. Dispense fuel from upright drums and containers using an approved pump.
22. Use the proper dispensing pump designed for the product being handled.
23. Hoses and nozzles must be maintained in good repair and do not leak.
24. Operators must stay with the nozzle at all times while dispensing fuel.

Fuel Transport

1. Mobile fueling of equipment and machinery from fuel trucks must be limited to designated area(s).
2. Vehicles transporting fuels must meet requirements of the Transport of Dangerous Goods Act and BC Ministry of Transportation.
3. 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.
4. 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.

Spill Response

In the event of a spill or release, accidental or otherwise, of fuels (or a toxic substance), as listed in the Spill Reporting Regulation (Column 1), the site developer or operator is required to follow the procedures listed below. When a spill has occurred:

1. Stop the Flow (If safe to do so, and when possible).
    a. Close valves, shut off pumps or plug holes/leaks, set containers upright.
    b. Stop the flow of the spill at its source.
2. Ensure no ignition sources are present if spill is a flammable material.
3. Act quickly to reduce the risk of environmental impacts.
    a. Secure the area to prevent cross contamination through tracking and spreading of spilled fluids by foot traffic or machines.
    b. Contain the spill with spill clean up equipment, such as adsorbent pads, booms, powder or granular materials, etc. These are included within spill response kits.
    c. prevent migration through the storm sewer system or drainage ditches.
4. Waste clean up materials must be placed in a suitable plastic or metal drum for subsequent disposal.
5. Notify Sumas First Nation's Land Manager and Environmental Compliance Officer and site developers/operators qualified professional.
    a. SFN will retain a suitably qualified and experienced environmental consultant, if required.

If the Spill volume is large, in addition to the above points:

6. Divert flow from water or other sensitive areas with non-reactive materials such as boom, gravel, sand bags, digging a trench, etc.

Spill Response *(Continued)*

7. If the amount of spilled material exceeds reportable levels listed in the Spill Reporting Regulation and/or the spill has impacted, or is likely to impact, a body of water, immediately report the spill to the BC Environmental Emergency Program (1-800-663-3456).
8. Retain the services of a suitably qualified and experienced spill response contractor.
9. Retain the services of a suitably qualified and experienced environmental consultant to assess the impact of the spill on the environmental condition of the property.
10. Prepare an End of Spill Report as per the BC ENV website and submit to the province as per the Spill Reporting Regulation. SFN are to be copied in on all appropriate correspondence to the province.

Clean Up & Remediation

1. Retain the services of a suitably qualified and experienced environmental consultant to assess the impact of the spill on the environmental condition of the property. All media (soil, groundwater, surface water and vapour) potentially impacted by the spill must be assessed and remediated.
2. All waste disposals must comply with the Environmental Management Act and Regulations
3. All contaminated media, equipment and/or material used in clean-up (e.g., used sorbent, oil containment materials, etc.) must be disposed of in accordance with The Ministry of Forests, Lands, Natural Resource Operations (MFLNRO) requirements.

Supporting Equipment and Resources

1. Suitable spill kits are to be maintained at designated areas throughout the site, specifically near fueling or fuel storage areas and used effectively during a spill or release. Spill kit use and material replacement will be conducted and documented on a routine and as required basis.
2. All onsite machinery (such as fuel trucks, excavators and heavy machinery) will be equipped with suitable spill kits and equipment operators trained in the use of the spill kits.
3. The location of spill kits will be identified and updated on site plans that are to be posted throughout the site.
4. Drip trays are to be used on all out of use or overnight parked equipment and machinery.

Oil-Water Separator

An oil-water separator (OWS) is a three chambered piece of equipment that is buried in ground. An OWS is required under the BC CSR under certain site conditions where there is potential for contamination

Oil-Water Separator *(Continued)*

of soil and groundwater due to onsite use of petroleum hydrocarbons or other oil-based pollutants. Specific requirements are outlined in the Environmental Management Act (EMA) and BC CSR. Industrial and commercial facilities may be required to install oil-water separators as part of their operating permits under the Environmental Management Act to comply with wastewater discharge limits. Any commercial (e.g. vehicle wash operations) or industrial operations (e.g. vehicle and equipment maintenance) on SFN are required to install an OWS.

OWS function in the following way. Site surface run-off is collected in catch basins which then direct the surface water run-off to the OWS, if applicable as per the above. Due to density differences between water and hydrocarbons, hydrocarbons float on the surface of the water. Hydrocarbons are then separated with the chambers of the OWS from the water portion of the surface water. The water is then released at the outflow point. An OWS should be able to achieve an effluent quality of 50mg/L of oil and grease (hydrocarbons) or less upon release of effluent, if working correctly. Note that an OWS does not address dissolved phase contaminants.

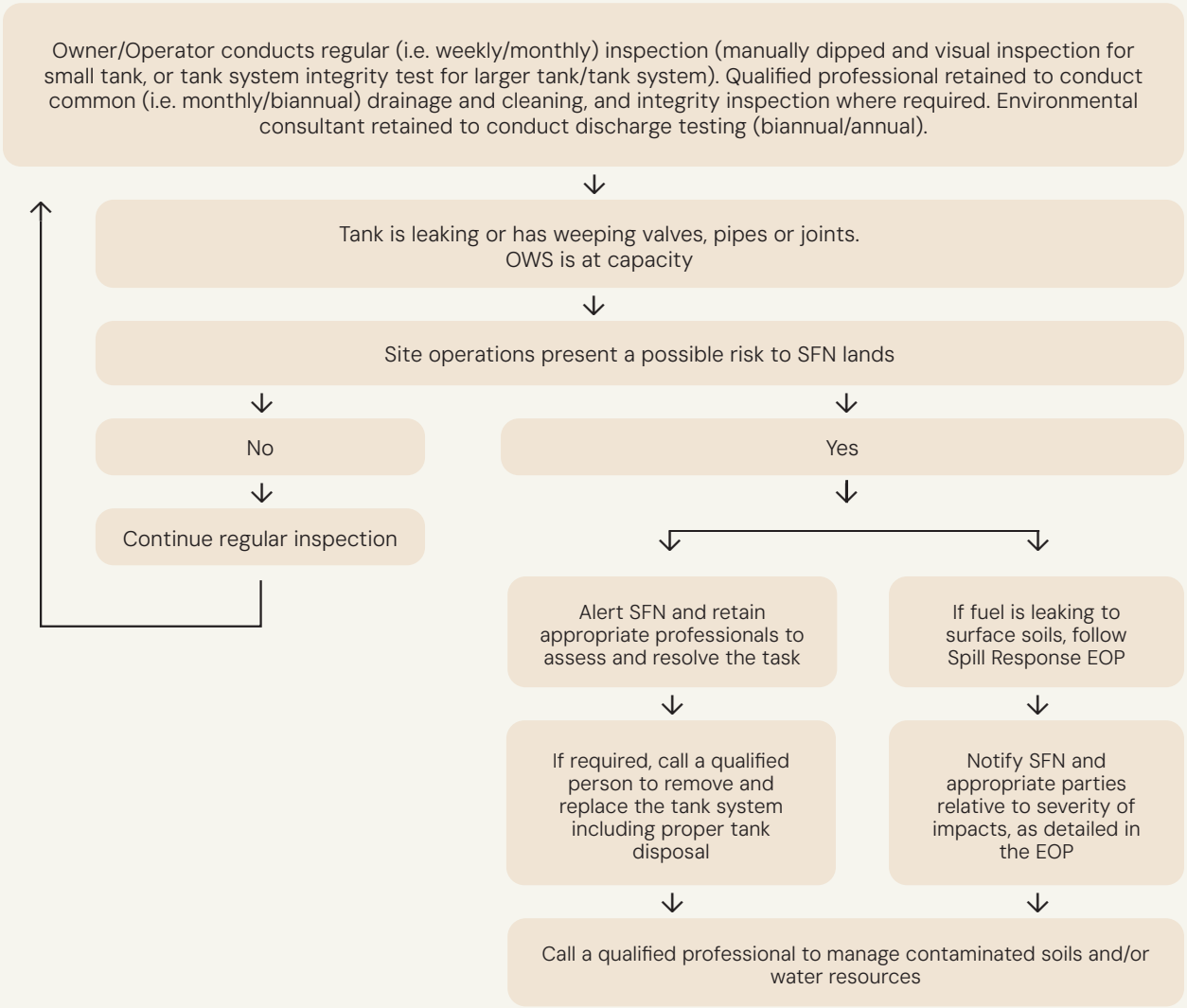
OWS Maintenance

An OWS does not function solely without any maintenance. Any site on SFN lands with a OWS is required to adhere to the following management practices:

a. Maintain a regular inspection schedule.
b. Never let the OWS overflow.
c. Ensure oil water separators (OWS) are cleaned out on a regular basis, at least every six months or more frequently subject to inspection findings and sediment /oil accumulation rates, utilising an industry recognised contractor.
d. Do not rely on an OWS as part of a spill control strategy. OWS's can be easily overwhelmed by a large spill of used oil/fuel resulting in a discharge of hazardous liquids to the environment or municipal sanitary drainage. In addition, an OWS cannot mitigate spills of water-soluble liquids such as glycols found in antifreeze (The primary spill defense should be containment and the application of prompt spill clean up).
e. Collect at least one water sample from the OWS outlet every 6-12 months (subject to performance) and compare the results to the applicable discharge standards (see below).

EOP 3: Fuel Handling and Storage

EOP Process: Fuel Tank and OWS Inspection



*Qualified professional services may be required

EOP 4: Groundwater Protection

Groundwater

Water found underground in soil and rock pore space is referred to as groundwater. The water within these spaces is typically found within 100 m of the ground surface (Environment Canada, 2011). Groundwater is ubiquitous, however some areas can be more saturated than others as a result of the relationship between porosity and permeability of and soil and rock structures. An aquifer is an underground formation of permeable rock which can contains large quantities of water, that can often be utilised as a source of drinking water via a well.

Contamination

Contaminated groundwater has the potential to be harmful to the environment, including ecological receptors, and humans through direct contact or consumption.

Groundwater contamination can take place as a result of contaminants percolating down through the soil/rock and into the groundwater table, or as a result of a buried source of contamination. In extreme cases, contaminated surface water can also impact groundwater via saturation or preferential pathways (for example wells). Potential sources of contamination to groundwater include contaminated soils, landfills (leachate), faulty fuel storage tank (AST/UST) or septic tanks, and fuel or chemical spills, amongst other activities.

Goal

Prevent and mitigate potential impacts to groundwater within Semá:th lands sources with the potential to negatively impact water quality.

Objectives

- Protect and evaluate the quality of groundwater that is available on Semá:th Lands, particularly that which is used as a source of drinking water through ensuring compliance with applicable legislation and regulations.
- Identify locations, operations and activities that have the potential to impact groundwater and produce guidance around prevention and mitigation measures.
- Provide emergency spill response plans where necessary.
- Educate the community to generate awareness about environmental stewardship and Semá:th Traditional Ecological Knowledge.

EOP 4: Groundwater Protection

Objectives *(Continued)*

- Develop a sampling and analysis program to assess groundwater quality spatially throughout the reserve and over time.

Legislation, Standards, and Policies

Listed below is legislation applicable to the protection of groundwater.

Sumas First Nation

- Semá:th Environmental Protection Law (Pending)

Federal

- Canadian Environmental Protection Act
- Canadian Environmental Assessment Act
- Safe Drinking Water for First Nations Act
- Environment Canada's Federal Water Policy
- Canadian Water Quality Guidelines for the Protection of Aquatic Life
- Canadian Environmental Quality Guidelines

Provincial

- Water Protection Act
- Environmental Assessment Act
- Environmental Management Act
- Public Health Act
- Drinking Water Protection Act
- Water Sustainability Act
- BC Approved Water Quality Guidelines
- BC Working Water Quality Guidelines
- BC Groundwater Protection Regulation
- BC Contaminated Sites Regulation

Regulations

Given that Semá:th utilizes groundwater as a primary drinking water source, this EOP primarily addresses groundwater as it relates to drinking water but also considers groundwater flowing to freshwater

Regulations *(Continued)*

environments and protection of aquatic life . All development must comply with applicable Semá:th, federal, and provincial regulations, permits, authorizations, conditions, and agreements with respect to environmental protection.

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.

Potential Impacts

Impacts to groundwater can occur as a result of contamination, which can cause groundwater to be unsuitable for use or potentially impact ecological receptors. Groundwater contamination can take place as a result of surface impacts percolating down through the soil/rock and into the groundwater, or as a result of a buried source of contamination. Potential sources of contamination include landfills, faulty fuel storage tank (AST/UST) or septic tanks, and spills that can negatively impact the quality of groundwater. Examples of point and non-point sources of contamination include, but are not limited to:

Examples of point and non-point sources of contamination include, but are not limited to:

- Garbage
- Storage tanks (fuel & chemicals)
- Septic systems
- Pesticides and herbicides
- Fertilizer (land spreading), including animal faeces (grazing cows, sheep, horses, birds)
- Vehicles (derelict and operational)
- Chemical spills
- Leaching of fluids from landfills and dumpsites
- Overabundance of naturally occurring substances in rocks and soil (iron, sulfide, manganese and arsenic

Groundwater Wells

As of June 2024, Chief and Council have decided that no further groundwater wells are to be installed for human consumption or use, besides environmental groundwater assessment wells. For groundwater wells already approved and installed, it is essential that:

- The well meets BC Ground Water Protection Regulations
- Protection measures are in place to protect the well integrity and water quality
- The well and pump are regularly inspected and mainatianed
- A drinking water sampling and monitoring program is established and maintained to ensure the well water is potable (with well water tested occasionally for possible organic and inorganic contaminants, and at least once a year for the presence of coliforms).
- The well is deactivated or closed when no longer in use.

BC Groundwater Protection Regulation

This regulation was developed to provide guidance on the installation of groundwater monitoring wells. Installation of any groundwater wells should strictly follow the process outlined within. Should a groundwater well cease to be used, it should be decommissioned following BC Groundwater Protection Regulation (2022).

Strategy 1: Groundwater Baseline Assessment & Continuous Monitoring

This regulation was developed to provide guidance on the installation of groundwater monitoring wells. Installation of any groundwater wells should strictly follow the process outlined within. Should a groundwater well cease to be used, it should be decommissioned following BC Groundwater Protection Regulation (2022).

- Identify and map groundwater resource information including:
    - Surface watershed areas
    - Aquifer protection areas
    - Wellhead protection areas
    - Private drinking water wells (Engagement with residents will be required)
    - Environmental investigation wells
    - Wetlands and
    - Surface water areas.
- Create an inventory of all properties and operations on the Semá:th Lands and map general land-use types to identify potential sources of groundwater contamination, including but not limited to:

Strategy 1: Groundwater Baseline Assessment & Continuous Monitoring *(Continued)*

    - Fuel storage tanks
    - Septic systems / tanks
    - Waste oil containers
    - Waste burial areas
    - Chemical storage areas (e.g., pesticides, fertilizers, chlorine)
- Conduct annual baseline assessments of groundwater by sampling all groundwater wells on Semá:th Lands.
    - A drinking water management program specific to groundwater wells used for drinking water, which includes scheduled sampling and monitoring, has been developed and will continue to be implemented. Procedures have been established to protect human health and initiate remedial action to deal with any exceedances in drinking water quality parameters that would affect human health.
- Drinking water quality monitoring results are communicated to all drinking water users.
- Newly installed should all undergo pump tests 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).
- Decommission all environmental groundwater monitoring wells in accordance with the requirements of the provincial Groundwater Protection Regulation.

Sampling & Analyses of Drinking Water

Drinking water wells should be sampled on a frequency outlined by First Nations Health Authority (FNHA). All wells should be analysed for biological parameters E. coli & total coliforms, in addition to other parameters, such as metals, anions and general parameters.

Strategy 2: Monitor Future Developments

All future development should be reviewed for potential risks to the groundwater, now and in the future. If applicable, groundwater monitoring wells will be installed, at the cost of the developer, to monitor the potential impacts of new developments. All environmental groundwater assessment wells must be installed by suitably qualified professionals.

Strategy 3: Implementation of Groundwater Protection Measures

Active Sites

Prevention and mitigation measures, such as those identified in other EOPs, and those that can be incorporated into the planning phase prior to any development will be identified and enacted.

Drinking Water Wells

Protection measures will include both the inspection and maintenance of drinking water well and pump systems; and, the management of risks associated with sources of contamination.

Protection measures for the drinking water wells 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 the area around the wellhead to minimize the water ponding close to the well entrance.
- Maintain Spill Kits at strategic locations (identified through baseline study, Strategy 1).
- Disinfect and pump and well occasionally.
- 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.

EOP 4: Groundwater Protection

Strategy 4: Enforcement of Groundwater Protection Measures

To protect Semá:th Lands from commercial and industrial operations, as part of any lease agreement, consideration should be given to enforce the installation of groundwater monitoring wells and routine (quarterly, biannual, annual) groundwater sampling to assess if there have been any negative impacts to the groundwater from commercial and industrial activities. This ensures site operators are held accountable for any potential contaminant releases as a by-product of onsite operations.

EOP 4: Groundwater Protection

EOP Process: Groundwater Management for Proposed Development

Proposed Development (Industrial, Commercial, or Residential)

↓

Land Department is engaged for groundwater risk screening*

↓

Development presents a possible risk to groundwater resources

↓

No

↓

Project proceeds with permitting process if applicable*

↓

Yes

↓

Lands Department determines the level of assessment*

↓

ASSESSMENT

- Proponent provides Construction Environmental Management Plan (CEMP) that details the following where applicable:
- Baseline conditions
- Proposed groundwater impacts
- Proposed mitigation measures or treatment measures with specific designs
- Assessment of net impacts on groundwater
- Assessment of net impact on drinking water quality

↙

REVIEW
Report reviewed by Lands Department* Reports, paperwork, and digital files (e. g, shape or drawing files) are filed with Lands & Resources Department

←

Proponent responds to comments and resubmits

↑

↘

Assessment incomplete. Additional info required.

↓

Assessment Complete

↓

Lands Department proves comments, conditions, and/or recommendations to approving authority

↓

If project is approved and built

→

Proponent to submit applicable permits and scheduled monitoring reports as required, beginning with projects start up*

*Qualified professional services may be required

EOP 5: Habitat Protection

The preservation of habitat and maintenance of habitat connectivity is critical to maintaining the ecological integrity of our lands for future generations. By protecting habitat, the fish, wildlife, and plants that occupy 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 native flora and fauna.
- Enforce riparian setbacks to ensure development will not harm aquatic habitat.
- Educate the community to generate awareness about environmental stewardship and Semá:th Traditional Ecological Knowledge.

Legislation, Standards, and Policies

Semá:th First Nation

- Semá:th Tree Protection Law (Pending)
- Semá:th Streamside Protection Enhancement Area (SPEA) Variance Policy
- Semá:th Bird Nest Protection Policy (Pending)
- Semá:th Environmental Protection Law (Pending)

Federal

- Canadian Environmental Assessment Act, 2012 (CEAA, 2012)
- Species at Risk Act, S.C., 2002, c. 29 (SARA, 2002)
- Migratory Birds Convention Act, S.C., 1994, c. 2 (MBCA, 1994; applies to all land)
- Fisheries Act, R.S.C., 1985, c F-14

Provincial

- British Columbia Wildlife Act, RSBC 1996

Potential Impacts from Land Development

Land development can negatively impact an ecosystem through:

- The release of sediment laden/turbid water into aquatic habitat during fill import;
- Hydraulic oil and/or fuel spills from industrial equipment on Site;
- the increase of airborne emissions, including greenhouse gases, from heavy industrial machinery;
- the loss of natural food and shelter resources for local wildlife; and
- the reduction of landscape connectivity through habitat loss.

Best Management Practices

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

1. 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.
2. 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.
3. 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 the following:

- 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

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

Best Management Practices *(Continued)*

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 31 – 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 federal regulators should be consulted prior to works being initiated.

Strategy 1: Identify important habitat areas

Preserve areas for habitat protection based on Traditional Ecological Knowledge, available ecological data (e.g., federal species at risk), best practices (e.g., riparian setbacks) and critical areas identified in the Land Use Plan.

Strategy 2: Develop an environmental baseline overview

Work collaboratively with proponents through the development process (see 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 Semá: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
- Traditional Ecological Knowledge.

The Lands 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 Semá:th Lands,

Strategy 2: Develop an environmental baseline overview *(Continued)*

and act as an inventory for long-term monitoring.

Strategy 3: Promote habitat protection and enhancement

Through the habitat assessment process (EOP Process: Habitat Protection for Proposed Development), identify potential impacts, assess proposed mitigation (e.g., habitat compensation and/or enhancement), and determine net effects. Continue to enforce the SPEA Policy and seek funds for restoration of riparian habitat along the Marshall Lonzo Creek, Kilgard Creek and Sumas River and for regreening of shared spaces with native plant species.

Strategy 4: Ongoing Monitoring

The Lands Department will review Environmental Audit reports for approved developments, at a frequency defined by the type of development and associated activities, and assess for compliance with associated mitigation measures (e.g., habitat compensation plans). Semá:th will work collaboratively with the Proponent to address any monitoring issues. When possible, Semá:th Environmental Monitors will monitor developments and construction projects to ensure compliance with Semá:th laws and permits.

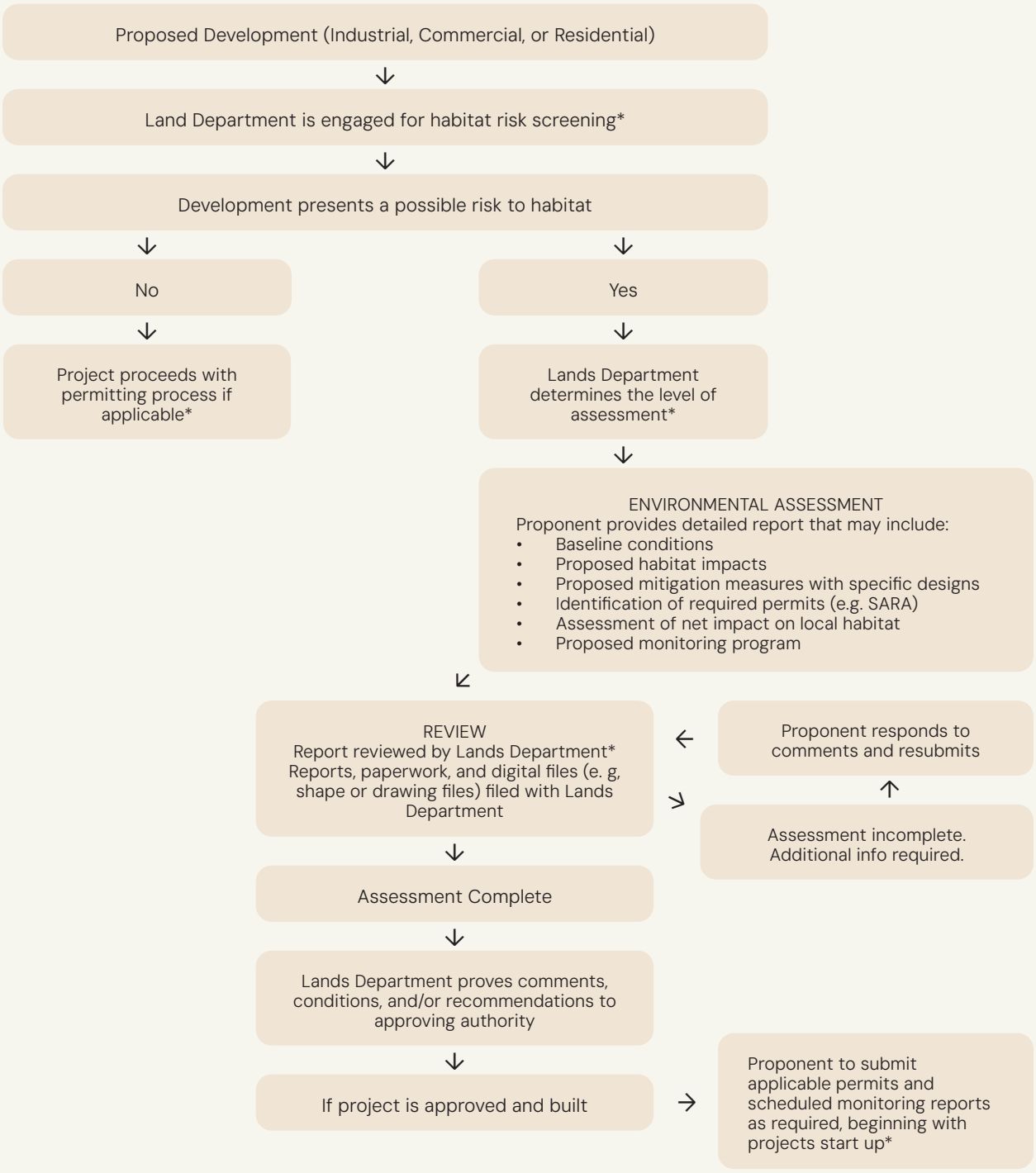
Strategy 5: Education and awareness

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)
- Installing signage for sensitive habitats or ecosystems within Semá:th Lands
- Raising awareness to empower community members to identify and report environmental incidences (i.e., "Community Environmental Watch")
- Training for Semá:th members to work as environmental/ construction monitors, field assistants, etc.

EOP 5: Habitat Protection

EOP: Habitat Protection for Proposed Development



*Qualified professional services may be required

EOP 6: 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 with environmental protection and stewardship practices.

Goal

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

Objectives

- Follow the Land Use Plan (2024) 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 established development procedures are followed.
- Protect the environmental and cultural heritage of Semá:th Lands and People.
- Develop a sustainable, community-controlled economy.

Applicable Legislation, Standards, and Policies

Semá:th First Nation

- Sumas First Nation Draft Land Use Plan (2024)
- Semá:th Subdivision, Development and Servicing Law (2015)
- Semá:th Environmental Protection Law (Pending)
- Semá:th Environmental Assessment Law (Pending)

Federal

First Nations Lands Management Act – provides First Nations the authority to create laws to control Nation lands, resources and the environment. This allows First Nations to create their own approach for making land allotments to individual Nation members, matrimonial real property interest or rights and

Federal *(Continued)*

"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".

Provincial

BC Building Code (2018) – provides strong guidance for the construction of buildings; including extensions, substantial alterations, and upgrading of buildings to remove an unacceptable hazard. 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 (2018) – provides a standard for acceptable level of fire safety within the community.
BC Plumbing Code (2018) – 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.

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 Semá: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 Semá:th Land Use Plan, policies will have regard to relevant social, economic, and environmental matters. Once the community has ratified the Land Use Plan (2024), the Sumas First Nation Lands Department will follow SFN's Lands Development procedures to ensure that the LUP is followed.

Strategy 1: Implement the Semá:th Land Use Plan

Work with the community, legal counsel, and professional Planners to implement the Semá:th Land Use Plan. Include monitoring guidelines and strategies to evaluate the effectiveness of the Land Use Plan in the future.

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

Strategy 2: Create and implement laws, policies and processes *(Continued)*

pertain to the character, location, and use of buildings and structures.

Semá:th will continue to implement the following laws and policies:

- Land Use and Zoning Law
- Provisions of the EMP
- Subdivision, development, and servicing law
- Development permits
- BC Building Code
- Streamside Protection Enhancement Area (SPEA) Variance Policy

Semá:th will work to create and implement the following laws and policies:

- Signage Law
- Cultural development guidelines
- Environmental Protection Law
- Environmental Assessment Law
- Tree Protection Law (Pending, 2025)
- Zero Carbon Step Code

Strategy 3: Monitoring and compliance

Monitor aspects of the land development process to assess whether the land development tools have been successful in achieving the goals and visions of Semá: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 Semá:th Lands.

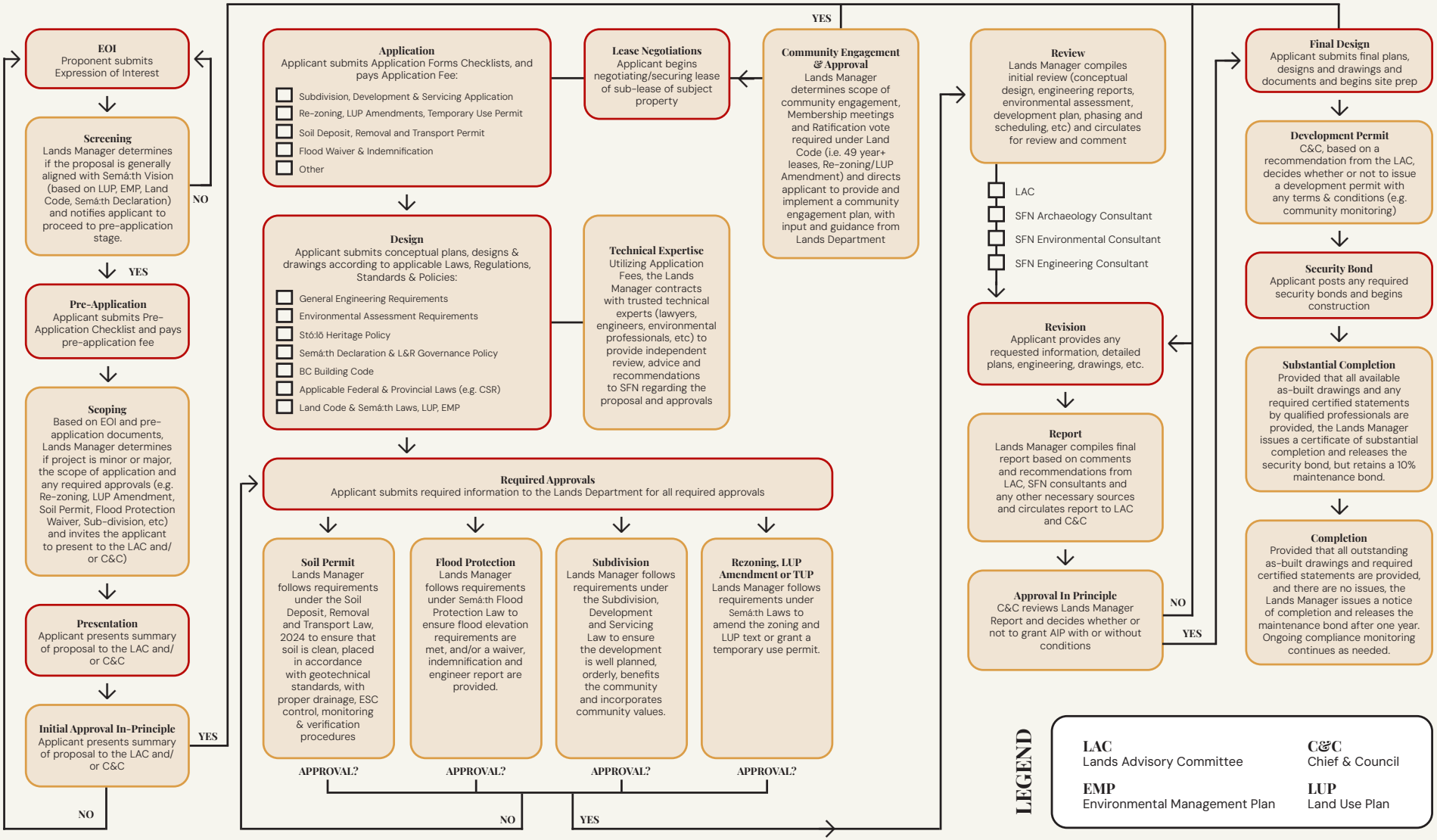
Components of the monitoring and compliance process should include:

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

Strategy 4: Site-specific Environmental Management Plans

All Industrial businesses operating on Semá:th lands will be required to create and follow a site-specific Environmental Management Plan (EMP). The EMP should describe site activities, the environmental risks they pose and the measures that staff on site will take to mitigate or eliminate environmental impacts.

EOP 6: Land Development



EOP 7: Soil and Fill 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 brought to Semá:th Lands to ensure deposited material is not contaminated, thereby reducing the potential for harm to human health or the environmental.

Goal

All soil brought onto and/or applied on Semá:th Lands must meet applicable environmental standards (applicable laws and regulations) and is suitable for the current or future land use.

Objectives

- Meet applicable standards, laws, and regulations.
- Enforce the Semá:th Soil Deposit, Removal and Transport Law (2024)
- Follow the Soil Deposit and Removal Permitting Process to track the movement of soil into, within and out of Semá:th Lands
- Develop harmonized soil and fill management plans with other jurisdictions.

Applicable Legislation, Standards, and Policies

Semá:th First Nation

- Semá:th Soil Deposit, Removal and Transport Law (2024)

Provincial

- British Columbia Environmental Management Act (Section 55)
- British Columbia Contaminated Sites Regulation (Part 8)

Potential Impacts

Soil can become contaminated in many ways but the most common are the result of hydrocarbon spills (for example, fuels such as diesel and gasoline, or lubricants and oils), and through commercial and industrial activities (particularly CSR Schedule 2 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 Semá:th must comply with applicable Semá: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 on Semá:th Lands, the contractor must notify Semá:th if the following is observed:

- Unusual odour that may indicate the presence of contaminants (i.e., fuel or oil);
- Stained soils which are darker and may have a "wet" appearance may indicate the presence of a spill area. Contaminated soils may also have a distinct oily feel and is often accompanied by an odour;
- Soil containing buried debris such as bricks, asphalt, roofing tile, ceramics, glass, metal, etc., and/or
- If staining, odour, or hydrocarbon sheen is observed associated with infiltrating groundwater, the contractor will immediately stop work and advise Semá:th of the suspected contamination.

Strategy 1: Enforce the Soil Deposit, Removal and Transport Law (2020)

Enforce the Soil Deposit, Removal and Transport Law to effectively regulate (control and monitor) the movement of soil on and off Semá:th Lands. The law applies to Semá:th members, contractors, businesses, and anyone depositing or removing soil on Semá:th Lands.

Strategy 2: Follow the soil management permitting process

Follow the 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 Semá:th Lands. The permit considers the quantity and quality of the soil and fill and the existing or potential future use of the receiving site.

Strategy 3: Create a list of acceptable off-reserve sites to send contaminated fill

In an effort to prevent contaminated fill from being transferred from Semá:th Lands to other reserves and communities, SFN will develop a list of acceptable places for contaminated fill to be sent to.

Strategy 4: Utilize soil management processes

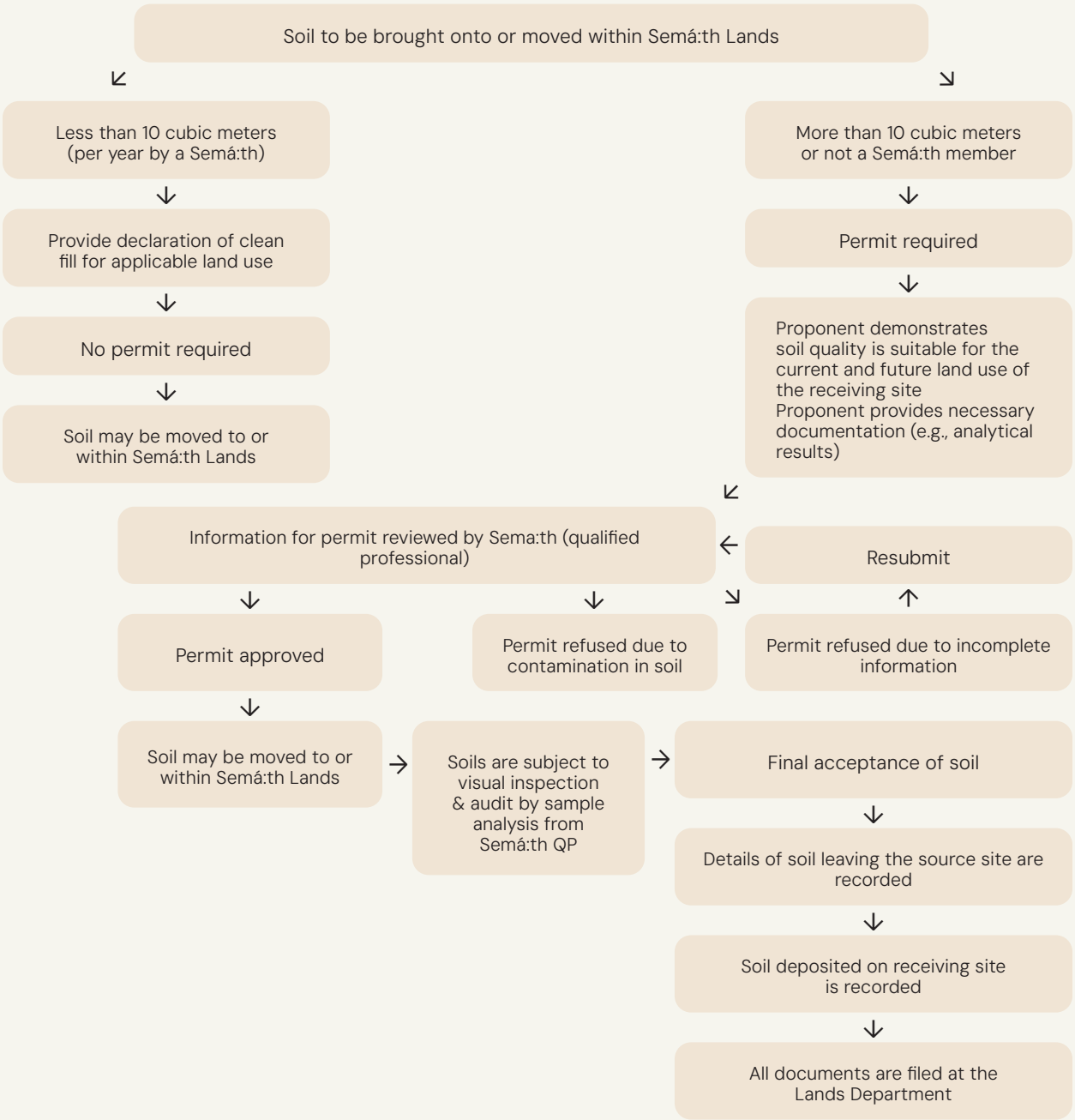
Follow EOP Process: Incoming Soil and/or Transfer Within Semá:th Lands to control the quantity and quality of soil entering or moved within Semá:th Lands. Follow EOP Process: Outgoing Soil to control the quantity and quality of soil leaving Semá:th Lands.

Strategy 5: Complete recommendations of the ESA

Work with the appropriate authorities to carry out the recommendations provided in the Environmental Site Assessments (ESA) with regards to contaminated soil.

EOP 7: Soil and Fill Management

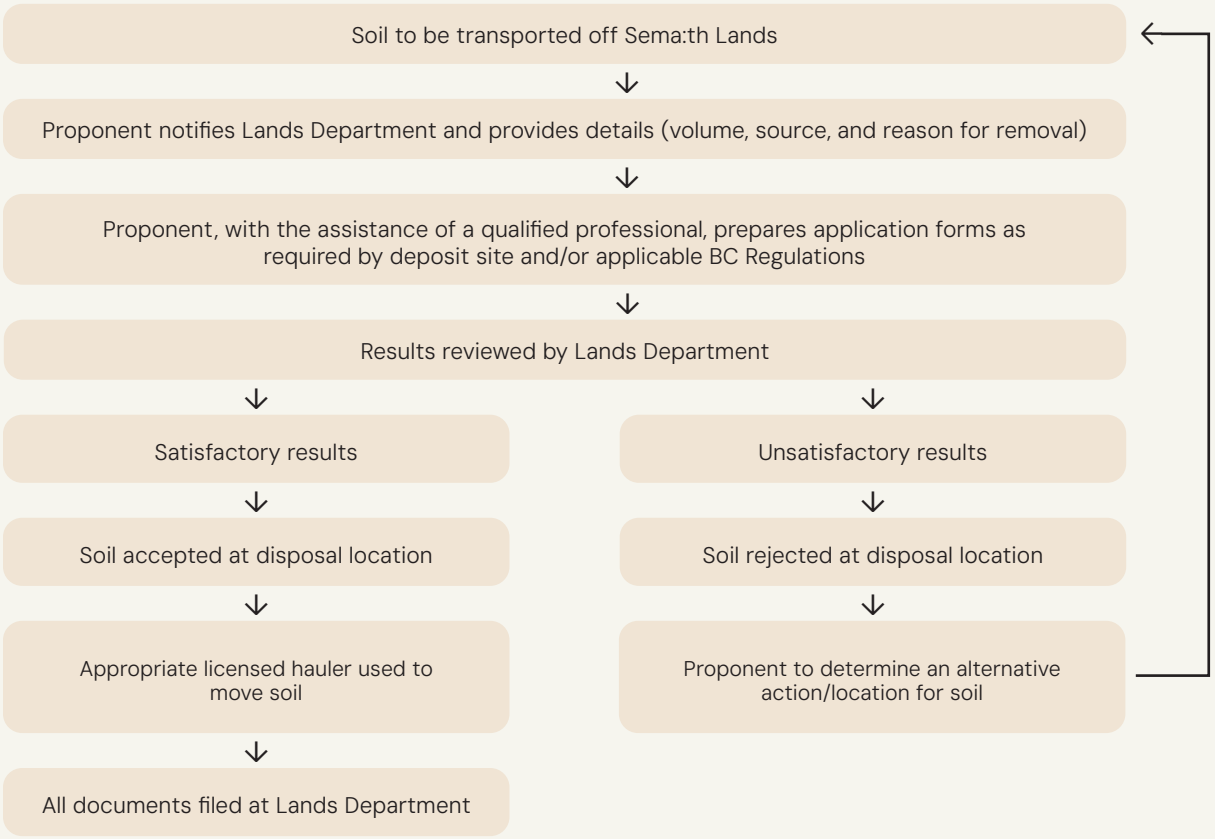
EOP Process: Incoming Soil and/or Transfer within Semá:th Lands



*Qualified professional services may be required

EOP 7: Soil and Fill Management

EOP Process: Incoming Soil and/or Transfer within Semá:th Lands



*Qualified professional services may be required

EOP 8: Solid Waste Handling and Disposal

Solid waste is produced by residential, commercial, institutional, demolition, land clearing, or construction sources. 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 of solid waste.
- Work with developers and companies who promote and facilitate leadership in waste reduction.
- Become part of the “Zero Waste Challenge”.

Applicable Legislation, Standards, and Policies

Semá:th First Nation

- Semá:th Prevention of Disorderly Conduct and Nuisance Law (2015)
- Semá:th Environmental Protection Law (Pending)

Federal

- Canadian Environmental Protection Act, 1999 (CEPA 1999; Part 7 Controlling Pollution and Managing Wastes)

EOP 8: Solid Waste Handling and Disposal

Provincial

- British Columba Recycling Regulation (B.C. Reg. 132/2011)
- BC Waste Discharge Regulation (B.C. Reg. 320/2004)
- British Columbia Extended Producer Responsibility (EPR) - A policy 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. Extended Producer Responsibility (EPR) Materials include expired smoke alarms, antifreeze, lubricating oil, oil filters and oil containers, paint, flammable liquids, domestic pesticide, thermostats, and tires.

Other

- Fraser Valley Regional District Integrated Solid Waste Management Plan (October 2015) – 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 passed on to Semá:th Nation.

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, Semá: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 Semá:th in acting as stewards of the environment. Understanding the standards an activity/development must meet will allow Semá: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 Semá:th Lands are summarized in "Municipal Waste Streams". Follow "EOP Process: Solid Waste Management" for responsible management of municipal waste materials.

Semá:th will work with its waste collection contractor and other relevant parties (e.g., consultants) to

Strategy 1: Understand current waste streams and quantities *(Continued)*

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

Semá:th will ensure that waste collection services continue to be provided by an authorized waste contractor and that collected waste will be disposed of at an appropriately licensed waste facility (e.g., Landfill, Transfer Station, Composting Facility and/or Material Recovery Facility). Semá:th will expand curbside waste collection services to include the collection of organic materials. Residents will also be supplied with community garbage bins twice a year to handle larger household waste (e.g., damaged furniture, large appliances, etc.). It will remain the responsibility of residents to take all Household Hazardous Waste to an appropriate facility off-reserve for collection.

Strategy 3: Manage illegal dumping of solid waste

Littering is an offence under the BC Environmental Management Act. Semá:th will continue to enforce the Prevention of Disorderly Conduct and Nuisance Law (2015) which prohibits individuals from littering or dumping waste materials on Semá:th Lands. Sumas First Nation's Archeological and Environmental Monitor will continue to document all incidences of illegal dumping, reporting dumping of solid waste on roadsides to the City of Abbotsford for removal, and alerting the Lands Manager of any areas with unusually high levels of illegal dumping activity.

Other proactive and reactive approaches (or a combination of) can be considered for adoption.

Proactive approaches:

- Waste attracts waste – remove illegally dumped waste from SFN lands and take off-reserve to an appropriate facility.

Access prevention measures – Limit access to areas identified as 'hotspots' for illegal dumping of waste through the installation of barriers (e.g., fences and gates, large boulders, concrete barriers).

Proactive approaches:

- Organize clean-up days.
- Report illegally dumped waste to City of Abbotsford, when appropriate.
- Mandate that commercial and industrial tenants remove litter from work yards.

Strategy 4: Prohibit illegal burning of waste

The burning of any household or hazardous waste is prohibited under the Prevention of Disorderly Conduct and Nuisance Law (2015) and the Indian Reserve Waste Disposal Regulations (Section 10) and will not occur on Semá:th Lands (EOP 1). 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 Semá: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 the distribution of community newsletters and informational brochures and through the organization of educational events within the community. Education and outreach will be focused on responsible management of waste materials (i.e., how to sort waste, appropriate facilities for HHW, eco-friendly cleaning products).

Municipal Waste Streams

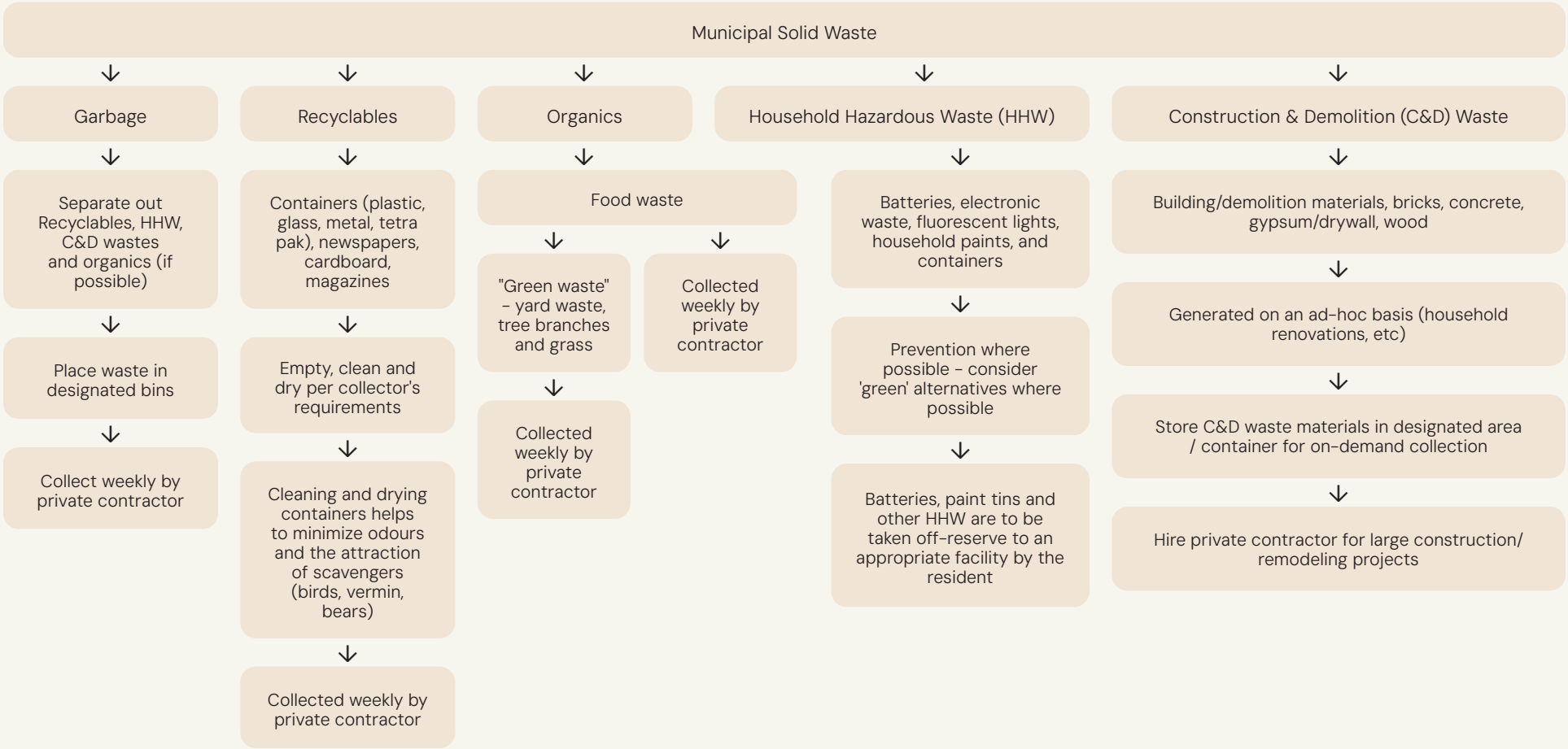
Waste Stream	Typical Materials / Examples
Garbage or 'residual waste'	Materials that cannot be recycled, composted or diverted through other programs include: • Diapers • Pet waste (e.g., used litter) • Non-reusable clothing & footware • Plastic straws & cutlery • Cigarette butts • Painted or treated wood
Recyclables or 'blue box / bag' materials	• Paper and envelopes • Newspapers, magazines, flyers • Cardboard • Boxboard (e.g., cereal boxes) • Containers – plastic, metal and glass
Organic or 'compostable' waste	• 'Green Waste' – yard trimmings, grass, clippings, branches, etc. • Food waste scraps • Food-soiled paper packaging • Soiled paper towel

Municipal Waste Streams *(Continued)*

Waste Stream	Typical Materials / Examples
Construction and Demolition Waste	• Building / demolition materials • Bricks • Concrete • Gypsum / drywall
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
Extended Producer Responsibility (EPR) Materials	• Expired smoke alarms • Antifreeze, lubricating oil, oil filters and oil • Containers • Paint, flammable liquids, domestic pesticide and gasoline • Thermostats • Tires

EOP 8: Solid Waste Handling and Disposal

EOP Process: Municipal Solid Waste Management



EOP 9: Surface Water Management

Surface water refers to any water body at ground level including lakes, rivers and creeks. 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

Maintain, improve and restore all waterbodies on Semá:th Lands.

Objectives

- Protect and evaluate the quality of surface water that is available on Semá:th Lands, particularly that which is vital to ecology, through ensuring compliance with applicable legislation and regulations.
- Identify locations, operations and activities that have the potential to impact surface water and produce guidance around prevention and mitigation measures.
- Provide emergency spill response plans where necessary.
- Educate the community to generate awareness about environmental stewardship and Semá:th Traditional Ecological Knowledge.
- Develop a sampling and analysis program to assess surface water quality spatially throughout the reserve and over time.
- Improve aesthetic values of water bodies through control measures such as Erosion Sediment Control (ESC).

Legislation, Standards, and Policies

All development must comply with applicable Semá:th, federal, and provincial regulations, permits, authorizations, conditions, and agreements with respect to surface water protection.

Semá:th First Nation

- Semá:th Environmental Protection Law (Pending)

Federal

- Fisheries Act
- Environment Canada's Federal Water Policy

EOP 9: Surface Water Management

Provincial

- BC Water Protection Act
- BC Environmental Management Act
- BC Water Sustainability Act
- BC Approved Water Quality Guidelines (AWQGs)
- BC Working Water Quality Guidelines (WWQGs)

Key Waterways

The following major surface water bodies collect surface water and flow through or adjacent to Semá:th Lands:

- Sumas River (Stótelō) – The Sumas River is an approximately 32 km long tributary to the Fraser River.
- Marshall Creek (Seí:tslehōq) – Marshall Creek flows west through Semá:th Lands; on the north side of Highway 1 and west of Lakeview Drive, branching off from Sumas River and rejoins with Sumas River to the south.
- Kilgard Creek – Discharges south from McKee Peak through Semá:th Lands to its confluence with Marshall Creek near the south end of Sumas Mountain Road

Potential Impacts

Impacts to surface water can occur as a result of contamination, both from human and natural sources. Human caused contamination is commonly associated with releases of contaminative substances; for example, a fuel spill or deleterious substances from an industrial operation or sewage overflow. Natural sources of contamination include bacteria and algal blooms, naturally occurring toxins and animal faeces. Agricultural activities can also impact surface water environments. Pesticides and fertilizers may cause reducing conditions in lakes and rivers, thereby impacting the ecology.

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

Best Management Practices to Protect Surface Water

Site developers and operators are required to mitigate any potential fuel spills or leaks from tanks or equipment by implementing the following practices:

- All surface water leaving an operational site or development (e.g., construction site) must meet BC AWQGs and/or WWQGs prior to release.

Municipal Waste Streams *(Continued)*

- All operational sites and developments must adopt erosion sediment control measures (ESC) where applicable (see Strategy 6).
- Areas of exposed soil must be properly contained and/or covered to prevent the mobility of sediments into receiving surface water bodies, for example utilising silt fencing around soil stockpiles and at preferential flow pathways and plastic polyliner to cover soil stockpiles.
- Soils should not be stockpiled adjacent to surface water body without proper management.
- Nearby trails and roads should be designed to slope properly to prevent foreign material entering the surface water during rainfall events.
- 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, where applicable.
- All fueling areas and fuel storage must be located more than 30m from any onsite or offsite surface water bodies.
- Well maintained and complete spill kits (including noodles) to manage waste oils, lubricants and fuel releases into surface water environments must be located adjacent surface water bodies.

Strategy 1: Surface Water Baseline Assessment

- Identify and map surface water resource information including:
    - Surface watershed areas : rivers, creeks and lakes
    - Wetlands
    - Fish bearing water bodies
- Create an inventory of all properties and operations on the Semá:th Lands and map general land-use types to identify potential sources of surface water contamination, including but not limited to:
    - Fuel storage tanks
    - Septic systems / tanks
    - Waste oil containers
    - Waste burial areas
    - Chemical storage areas (e.g., pesticides, fertilizers, chlorine)
    - Agricultural areas
- Establish monitoring and sampling stations and conduct annual sampling.
- Establish designated use areas, if applicable; such as swimming or fishing.

Strategy 2: Promote Surface Water Protection and Enhancement

Through the surface water assessment process, Semá:th will promote, protect and enhance surface water by identifying potential impacts, assessing proposed mitigation, determining net effects, and providing relevant recommendations and comments to promote surface water protection and enhancement measures.

All future development should be reviewed for potential risks to the surface water, now and in the future, if applicable.

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 Semá: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 3: Ongoing Monitoring

The Lands Department shall review annual surface water monitoring reports for approved developments and operational sites for compliance, and review associated mitigation measures that have been put in place, if applicable. Semá:th will work collaboratively with the site operator/developer to address any monitoring issues.

Ongoing monitoring my include stations specific to approved developments and operational sites, in addition to the station locations selected for annual monitoring purposes.

Strategy 4: Fuel Spill Response

In the case of a spill threatening a water source refer to EOP 3: Spill Response.

Strategy 5: Enforcement of Surface Water Protection Measures

To protect Semá:th Lands from commercial and industrial operations, as part of any lease agreement, consideration should be given to enforce the monitoring and sampling of surface water potentially impacted from on-site activities to assess if there have been any negative impacts to the groundwater from commercial and industrial activities. This ensures site operators are held accountable for any potential contaminant releases as a by-product of on-site operations.

Semá:th will consider the adoption of policies, supported where necessary by laws. 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

Strategy 5: Enforcement of Surface Water Protection Measures *(Continued)*

implementation of BMPs on construction sites to ensure that discharge water quality standards are met.

Strategy 6: Erosion and Sediment Control Measures

Management of erosion and sediment, also known as Erosion Sediment Control (ESC), should be utilised to minimize the delivery of sediment (potentially containing contaminative parameters) into surface waters (including lakes and rivers). Onsite operations and ongoing developments site specific Environmental Management Plans (EMP) should be reviewed to ensure they contain specific ESC measures.

Strategy 7: Build Capacity within Lands Department

Sumas First Nation Lands Department staff will pursue training on how to identify failed ESC measures and learn how to measure the turbidity of water samples to ensure compliance with all applicable laws and policies. Equipment will need to be purchased to allow staff to perform this testing in future.

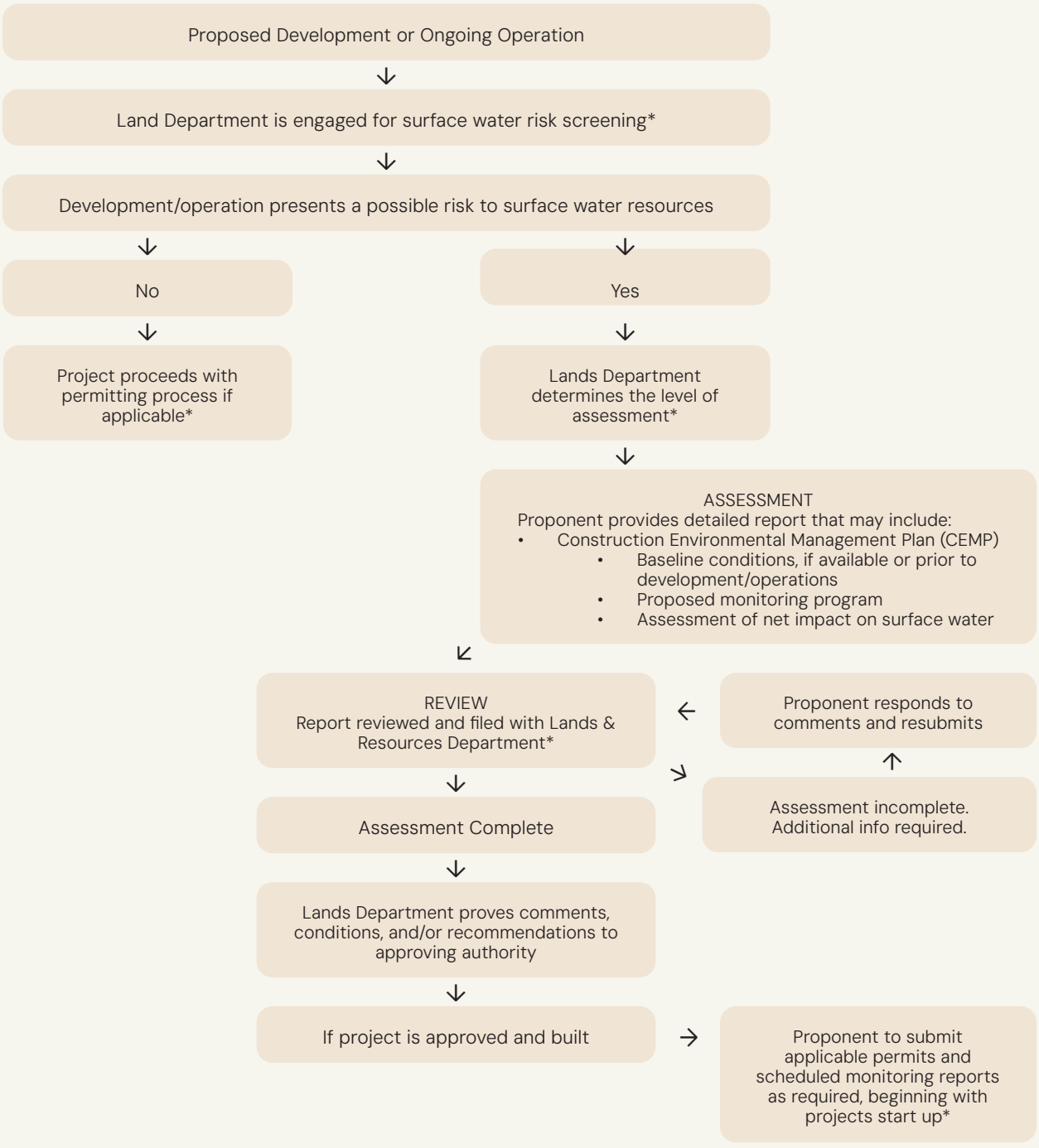
Strategy 8: Education and Awareness

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 (e.g., Lower Fraser Fisheries Alliance, Stó:lō Research and Resource Management Centre) to develop surface water protection programs
- Promoting awareness of Traditional Ecological Knowledge and surface water resources
    - Elders workshops
    - Installation of sensitive ecosystem signage near creeks
- Raising awareness to empower community members to identify and report environmental incidences (i.e., "Community Environmental Watch")
- Training for Semá:th members to work as environmental monitors, field assistants, etc.

EOP 9: Surface Water Management

EOP Process: Surface Water Management for Proposed Development



*Qualified professional services may be required

Figure 1: Map of the Upper Sumas Reserve #6

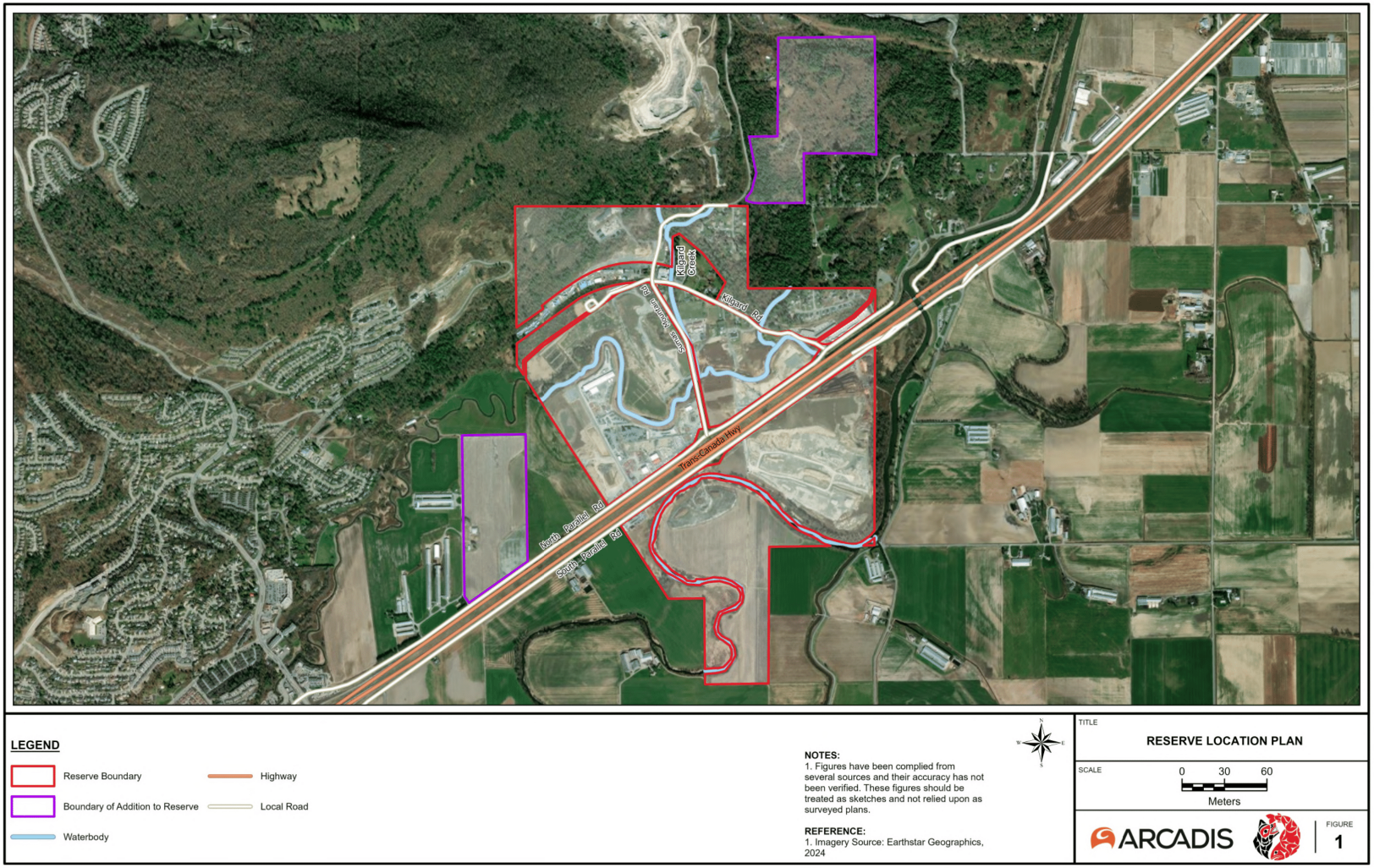


Figure 2: Land Use Designations as described in the Semá:th Land Use Plan 2024

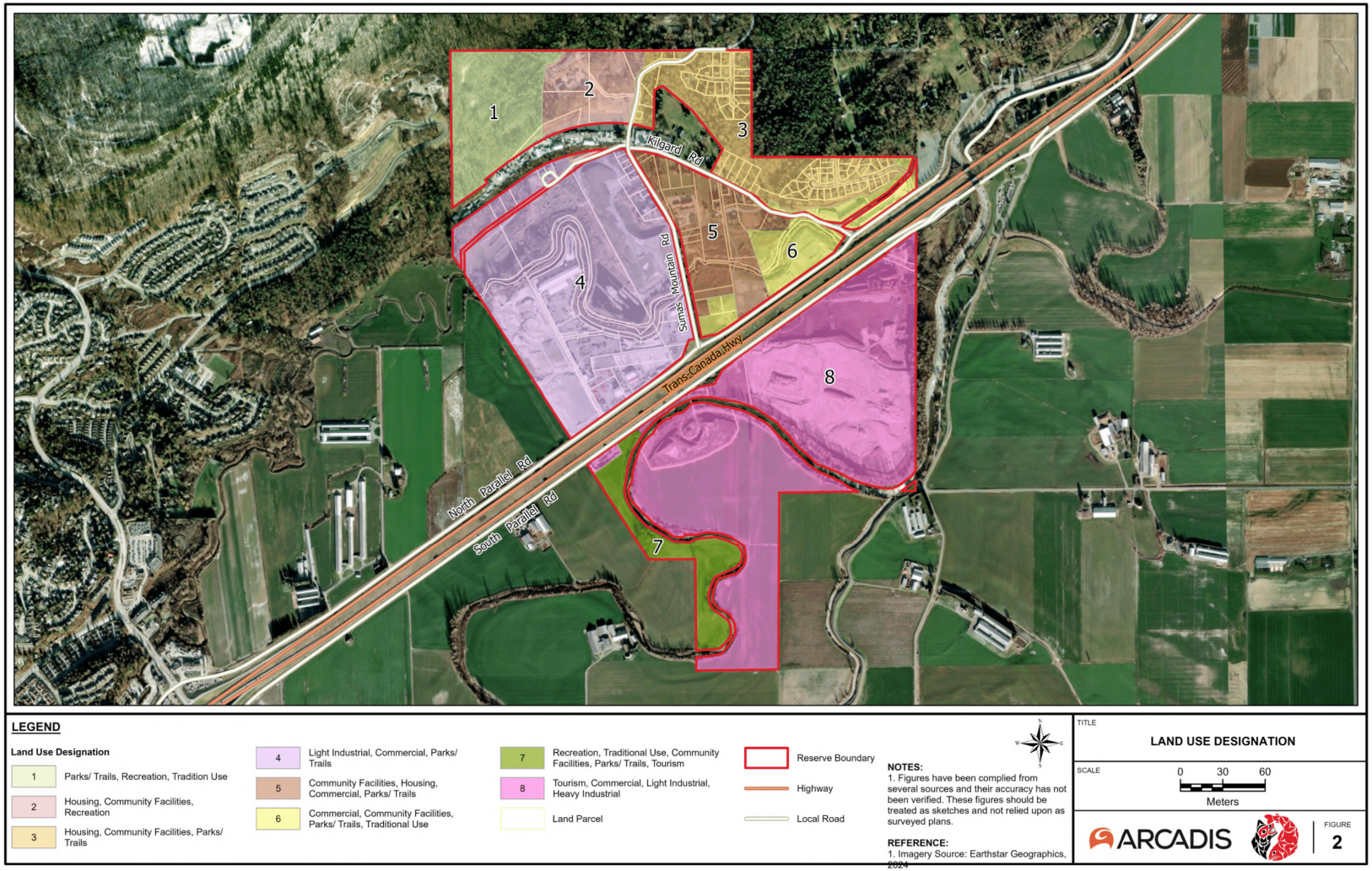


Figure 3: Historic Areas of Environmental Concern

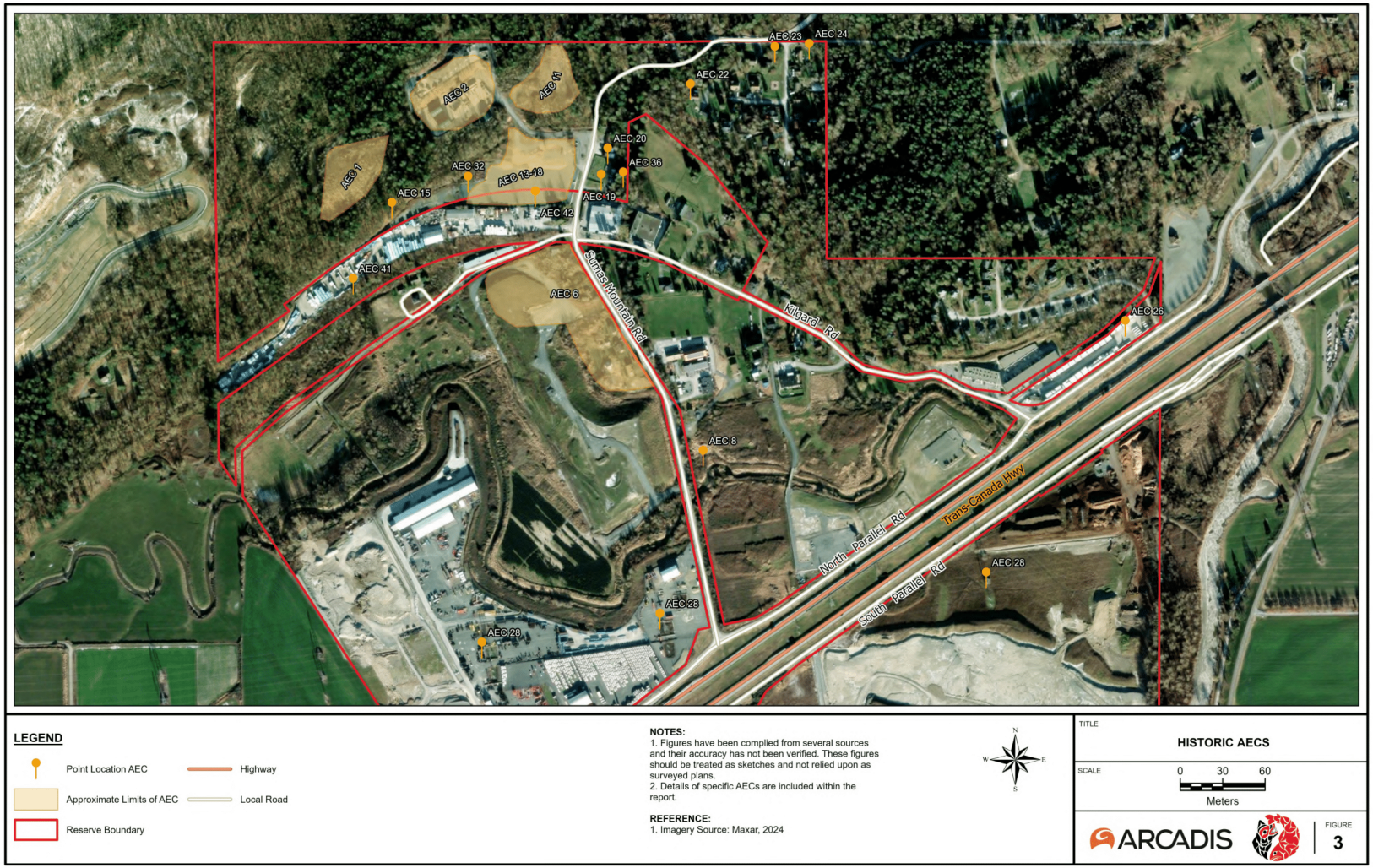


Figure 4: Existing Groundwater Monitoring Well Locations

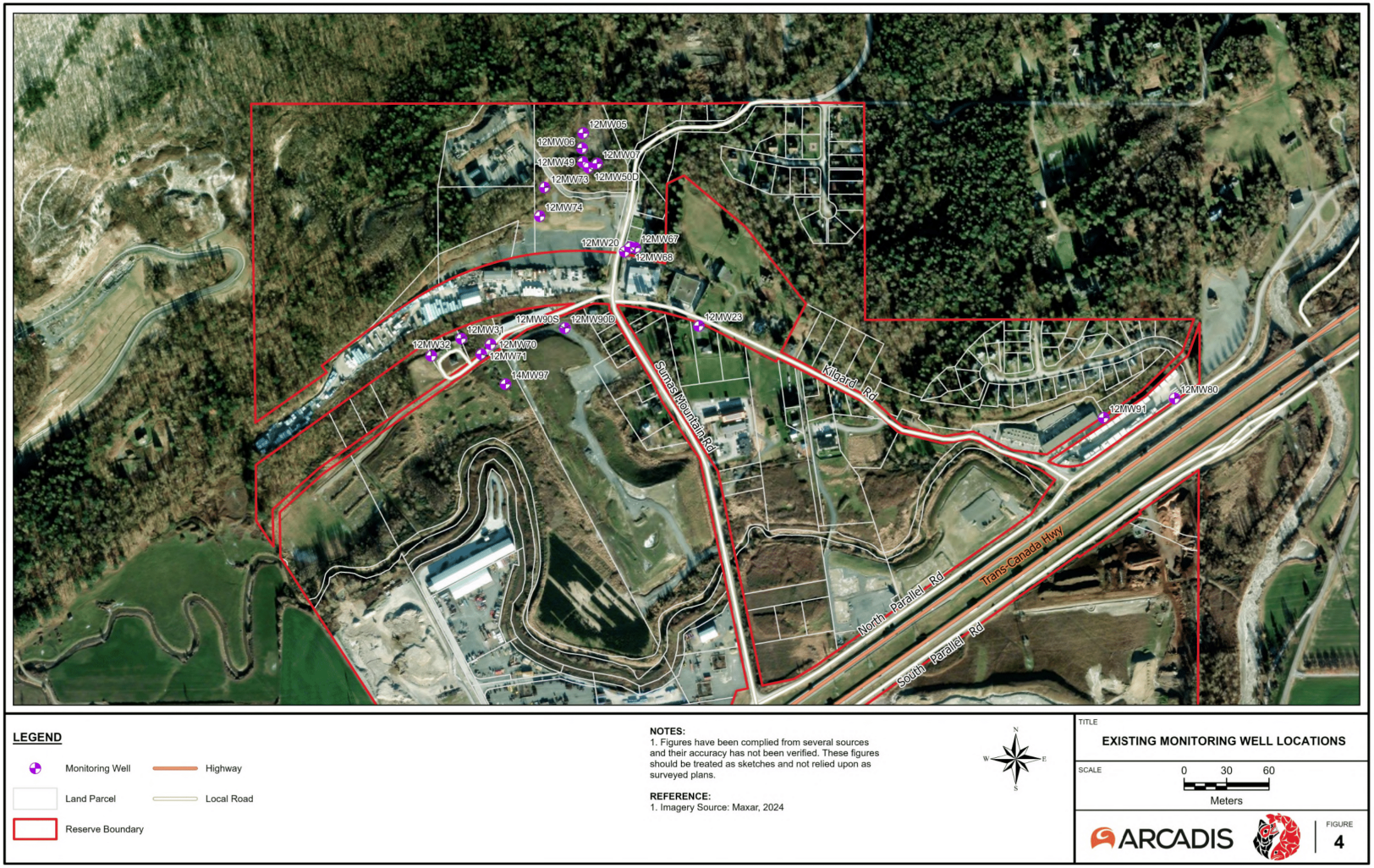
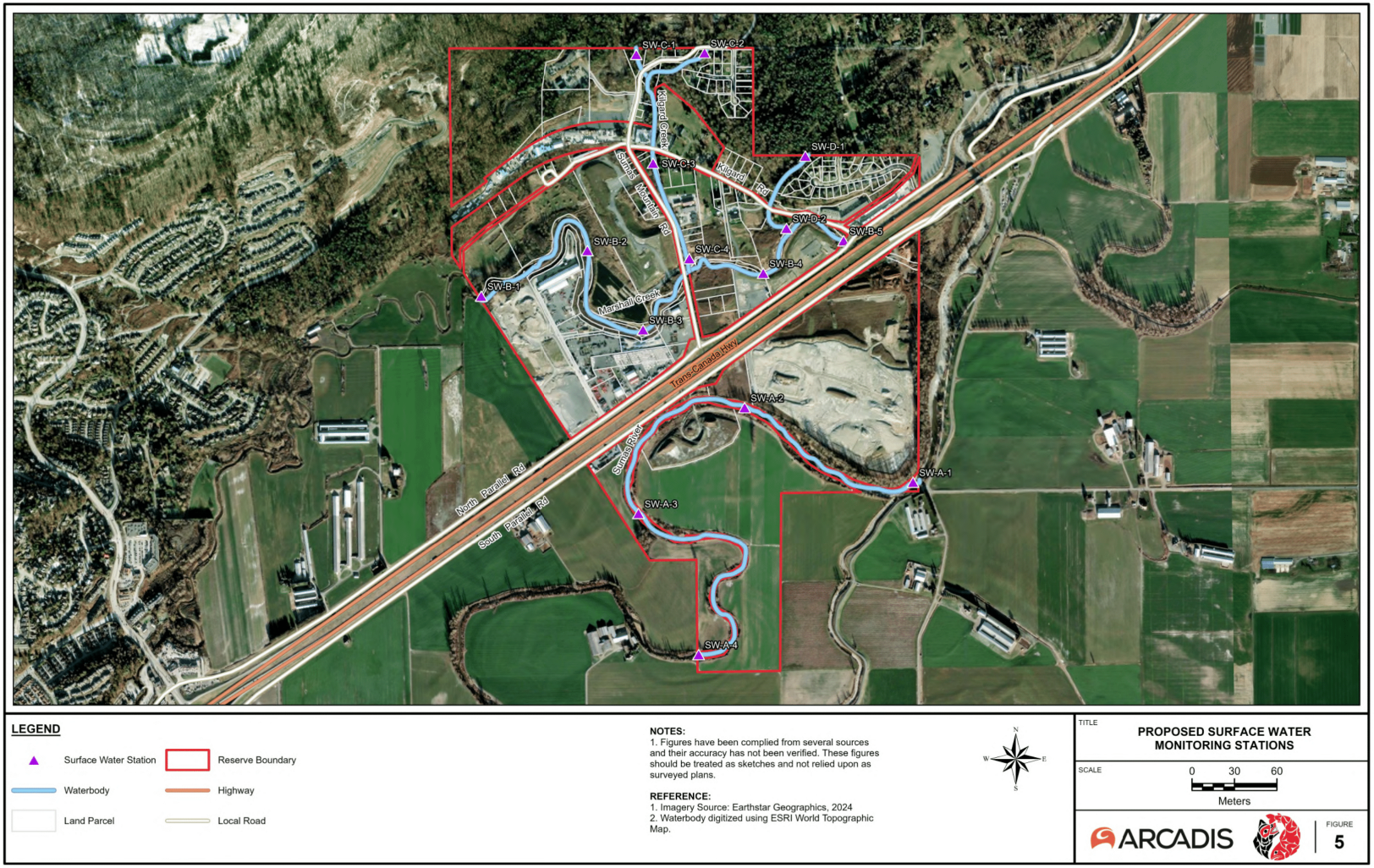


Figure 5: Surface Water Monitoring Stations



Community Engagement EMP Questionnaire

1. What do you consider to be the **biggest threat(s) to the environment** within Sumas Lands?

2. What do you consider to be the **biggest threats to water quality** on Sumas lands?

3. What do you consider to be the **biggest threats to air quality** on Sumas lands?

4. What do you consider to be the **biggest threats to soil quality** on Sumas lands?

Community Engagement EMP Questionnaire

5. What are the **environmental resources** (e.g. water, wild plants and animals, ecosystem services) **you value most** on Sumas Lands?

_____

_____

_____

6. Are you aware of the current **environmental regulations** on Sumas Lands?

☐ YES ☐ NO ☐ UNSURE

7. If you answered NO, would you like to be informed of environmental regulations on Sumas Lands? If so, please tell us how you would like to be informed

☐ SFN WEBSITE ☐ EMAIL ☐ OTHER

8. Please circle your top 5 environmental management issues on Sumas Lands.

☐ Fuel Handling and Storage	☐ Groundwater	☐ Fisheries Resources
☐ Contaminated Soil and Fill	☐ Air Quality	☐ Stormwater Management
☐ Garbage Handling & Disposal	☐ Surface Water	☐ Land Development
☐ Waste Water Management	☐ Plants & Wildlife	☐ Other: _____

Optional: please fill out if you would like to learn more about environmental regulations on Sumas Lands

Name: _____ Contact: _____