**Example Outline for a Source Protection Plan –**

**Upland Watershed**

Executive Summary

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**DEFINITIONS/ BASIC STATISTICAL INFORMATION**

# Part 1: Source Water Assessment

1.0 Introduction

1.1 Background

Describe the reason for preparing the Source Protection Plan (e.g. requested/required by health authority) and the location of the study area (include map).

1.2 Purpose and Scope

Describe the purpose of the source water assessment and the overall Source Protection Plan. Identify the scope of the assessment (e.g. covers modules 1, 2, 7 and 8).

1.3 Approach

Describe the approach used to complete the source water assessment.

1.4 Licensed Stakeholders and Interested Parties

List the provincial agencies, First Nations, and licensed stakeholders in the watershed(s) with decision-making authority. Also list the parties with interests in or adjacent to the watershed(s).

1.5 Technical Committee

Describe the technical committee representation and meeting process.

2.0 Water Source Characterization (Module 1)

The intent of Module 1 is to delineate the catchment area and provide a description and assessment of the natural features of the water source and catchment area. The headings below are provided as examples. Other topics, such as mining development, may be relevant to the Source Water Assessment.

2.1 Watershed Characteristics

2.1.1 General Physical Characteristics

Describe the general physical character of the study area. Include area, intake elevation, elevation range, and aspect of the watershed(s).

2.1.2 Geology and Geomorphology

Describe the different rock, sediment and terrain types distributed across the study area.

2.1.3 Terrain Stability (Landslides and Snow Avalanches)

Describe the relief, aspect and slope class distribution. Describe slope stability characteristics and the likelihood of landslides or avalanches.

2.1.4 Debris Flow and Debris Flood Potential

Describe the potential for debris flow and debris flood in the study area.

2.2 Watershed Hydrology

Describe the hydrometric stations, hydrology, and hydrologic hazards in the study area.

2.3 Water System Characteristics

2.3.1 Water Licences and Intakes

List the licensed Points of Diversion and describe their characteristics, such as licensed use (e.g. Waterworks), date licences were obtained, and location and features and condition of the intakes and diversion works.

2.3.2 Water Distribution Infrastructure

Describe the distribution infrastructure and network.

2.4 Forest Health and Riparian Vegetation

Describe the biogeoclimatic subzones and the overall health of the forest cover and riparian vegetation. Discuss any forest or riparian health issues.

2.5 Forest Development

2.6.1 Forest Licensees

Describe the forest licensees operating within, or near, the study area.

2.6.2 Forest Development (Past, Present and Future)

Describe forest development activities in the study area, including cutblocks, roads and road crossing sites.

2.6 Wildfire

2.5.1 Historic Wildfires

Describe any historic wildfires and their impact on the study area.

2.5.2 Wildfire Hazard and Mitigation

Describe the potential for wildfires and how they would impact the watershed(s). List any wildfire plans or strategies related to the watershed(s),and describe any mitigation efforts underway or required in the watershed(s).

2.7 Recreation Use

Describe recreation use in the study area, including motorized (e.g. ATVs), non-motorized (e.g. mountain biking), hiking, skiing and other activities.

2.8 Source Water Quality

Discuss raw and treated water quality data and monitoring efforts for the study area.

2.9 Water Availability

Discuss water consumption and demand, including any potential water supply shortcomings and how they will be dealt with.

2.10 Climate and Predicted Climate Changes

Discuss climate change projections for the region and potential impacts to the water source.

3.0 Potential Drinking Water Hazards (Module 2)

The intent of Module 2 is to conduct an inventory that identifies and describes land uses, human activities and other potential contaminant sources that could affect source water quality.

3.1 Potential Hazards Associated with Forest Development

Describe how forest harvesting can impact watershed hydrology and affect source water quantity and quality. Also describe how roads and skid trails can impact the watershed.

3.2 Potential Hazards Associated with Wildfires and Declining Forest Health

Describe how wildfire and declining forest health (due to mountain pine beetle, for example) can impact water quality and quantity.

3.3 Potential Landslide/Geohazard Impacts on Supply Infrastructure

Describe how natural events such as landslides inside or outside of the watershed(s) could impact drinking water infrastructure.

3.4 Potential Hazards Associated with Recreation

Describe how recreation use in the study area can impact source water quality and quantity.

3.5 Potential Hazards Associated with Climate Change

Describe how the potential changes in climate could impact watershed hydrology and water quality.

3.6 Summary of Hazard Inventory

Provide a map that identifies potential contaminant sources and summarize in a hazard identification table.

Table X Hazard Identification Summary

|  |  |  |  |
| --- | --- | --- | --- |
| Hazard ID# | Hazard to Drinking Water | Hazard Type | Distance from Intake |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

4.0 Risk Characterization and Analysis (Module 7)

The intent of Module 7 is to consider the hazards to drinking water quality and quantity in Modules 1 and 2, along with the consequence to drinking water should a contaminant or combination of contaminants reach the intake.

4.1 Evaluation of Source Protection Barriers

Review and evaluate the barriers currently in place.

4.2 Consequences to Source Water Quality and Quantity

4.2.1 Consequences of Physical Contamination

Describe and rank the consequences related to physical contamination (sediment loads and turbidity) from mass wasting events, wildfire, recreation, and forest development.

4.2.2 Consequences of Biological Contamination

Describe and rank the consequences related to biological contaminants such as fecal coliforms, E. coli and other pathogens.

4.2.3 Consequences of Chemical Contamination

Describe and rank the consequences related to contaminants such as petroleum products, fire suppressant application, and other chemical contaminants.

4.3 Likelihood Assessment for Hazards to Source Water Quality and Quantity

Complete a qualitative risk assessment for the hazards identify and describe the likelihood as unlikely, rare, possible, or likely.

4.3.1 Likelihood of Physical Contamination

Describe the likelihood of physical contamination from sediment and turbidity, increased peak flows, wildfire, and other risks.

4.3.2 Likelihood of Biological Contamination

Describe the likelihood of biological contamination from sediment and turbidity, increased peak flows, wildfire, and other risks.

4.3.3 Likelihood of Chemical Contamination

Describe the likelihood of chemical contamination from petroleum products, fire suppressants, and other chemical contaminants.

4.4 Summary of Risks to Drinking Water Quality and Quantity

Provide a summary of the physical, chemical, and biological risks in table and map format.

Table X. Summary of potential drinking water risks

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Hazard ID#** | **Hazard to drinking water** | **Hazard type** | **Consequence level** | **Likelihood** | **Risk** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

5.0 Recommendations to Improve Drinking Water Source Protection and Sustainability (Module 8)

The intent of Module 8 is to provide recommendations to protect source water quality based on the information provided in Modules 1, 2 and 7. The recommendations should include hazard(s) addressed, protective barriers enhanced, accountability and timelines for implementation.

5.1 Strengths, Weaknesses, Opportunities, and Threats Analysis

Complete a Strength-Weakness-Opportunity-Threat (SWOT) analysis to summarize, understand and balance the strengths, weaknesses, opportunities and threats to the water source. Provide a summary in a table.

Table X SWOT Analysis for the Study Area

|  |  |
| --- | --- |
| **Strengths** | **Weaknesses** |
|  |  |
| **Opportunities** | **Threats** |
|  |  |

5.2 Recommendations

5.2.1 Forest Development Risk

List of recommendations related to sediment and turbidity from forest development activities.

5.2.2 Wildfire Risk and Forest Health Risk

List of recommendations related to wildfire and declining forest health.

5.2.3 Natural Process, Landslide and Geohazard Risk

List of recommendations related to naturally occurring processes, landslides and other geohazards.

5.2.4 Recreation Risk

List of recommendations related to sediment and turbidity from recreation use.

5.2.5 Climate Change Risk

List of recommendations related to climate change risks.

5.2.6 Chemical Contamination Risk

List of recommendations related to chemical contamination.

5.2.7 Other

List of other general recommendations to protect water quality and quantity in the source watershed(s).

5.3 Summary of Recommendations

Summary table of the above-listed recommendations.

Table X Summary of Source Protection Plan Recommendations (Module 8)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hazard Type** | **Risk Level** | **SPP Report Section and Item #** | **Recommendations** | **Responsible Party** |
|  |  |  |  |  |
|  |  |  |  |  |

# PART 2 – RESPONSE PLAN

Provides detailed and specific responses to the risks identified in the Source Water Assessment. Outline the assessment recommendations and provide a forward look at future actions to be completed by the water supplier, other licensed users, and regulators. For each action, include estimated time and cost, and background information to provide insight and rationale for establishing response initiatives. Note: the plan is considered a living document and will continue to evolve as new hazards are identified and previous hazards are addressed.

# 1.0 Introduction

1.1 Purpose of the Response Plan

Describe the purpose and format of the Response Plan.

1.2 Watershed Technical Committee and Goals

Describe the technical committee that was established to guide the process.

# 2.0 Response Plan Forms

2.1 Response Plan Templates

Develop a Response Plan template that can be issued to gather input from Watershed Technical Committee members and other stakeholders. An example is included below

|  |  |  |
| --- | --- | --- |
| Risk Being Addressed: |  | |
| Responsible Stakeholder: |  | |
| Current Response: |  | |
| Recommendation outlined in Source Assessment | Specific Actions to Reduce Hazard | Anticipated Timeline and Cost |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

2.2 Stakeholder Responses

Include responses here.

# 3.0 Response Plan

Reference the Excel document that houses the Response Plan and include a link if appropriate.

# 4.0 Recommended Implementation of the Response Plan

Provide a flow chart that shows the sequence of events for implementation of the Response Plan. Describe the meeting schedule for the Technical Committee and the annual updates to the Response Plan. Include a 5-year update to the Source Water Assessment.

References

# Appendices