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

Executive Summary

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**DEFINITIONS/ BASIC STATISTICAL INFORMATION**

**PART 1: Source Water Assessment**

1.0 Introduction

1.1 Study Background

1.2 Study Purpose

1.3 Study Plan

2.0 XXXXXX Intake Module 1: Characterization of Source

This section provides an overview of the Clients intake

2.1 Description of System Intake Location, Design, Construction and Maintenance

2.1.1 Water Licenses

2.1.2 Intake Location and Depth

2.1.3 Water Treatment, Distribution and Monitoring Overview

* + 1. Routine Monitoring and Emergency Planning

* 1. Limnology of XXXXX Lake as it affects the intake
* Describe how the limnology of the lake affects the intake (General)
* Table and/or graphs of relevant data

2.2.2 Watershed Influences

2.2.1 Thermal Behavior

2.2.3 Temperature, Dissolved Oxygen, pH and TDS Profiles

2.2.4 Turbidity and Water Clarity

2.2.5 Nutrients

2.2.6 Chloride

2.2.7 Metals

2.2.8 UV Transmissivity

2.3 Biology of XXXX Lake with the potential to impact the intakes

2.3.1 Protozoan Pathogens in Water Column

2.3.2 Bacteria in Water Column

2.3.3 Bacteria in Sediments

2.3.4 Sediment Contaminants

2.3.5 Algae in XXXXX Lake

Cyanotoxin Exposure

2.3.6 Tri-halomethane Formation Potential

2.3.7 Biofilm Development

Add/remove site specific

2.4: Human Influences on Water Quality

2.4.1 Sewage, Septage, and Stormwater

* These are basic influences, add and remove site specific impacts

**Sewer**

**Septage**

**Stormwater**

2.4.2 Agriculture

2.4.3 Animals

2.5 Calculation of Intake Protection Zone for XXXX Lake Intake

* IPZ discussion
	+ Relative to Table 2.5 Module 1: Hazards and contaminants table – summary table of risks
* How the IPZ was calculated

Table 2.5 MODULE 1: Hazard and contaminant table - summary table of risks

|  |  |  |  |
| --- | --- | --- | --- |
| Report section | **Drinking Water Hazard/Contaminant** | **Possible Effects** | **Existing Preventative Measures/Barriers** |
|  | **Physical** |  |  |
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|  | **Chemical** |  |  |
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|  | **Biological** |  |  |
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3.0 XXXXX Lake Intake Module 2 Contaminant Inventory

3.1 Anthropogenic Potential Water-Borne Hazards to XXXXX Lake Intake

- Intake depth repercussions

- Examples include: inflows, stormwwater outfalls, agriculture, invasive mussels, recreation, septic fields, etc.

- Adjacent land uses

- Vandalism and accidental introductions

3.2 Natural Contaminants or Factors that Influence Susceptibility of XXXXX Lake to Contamination

* Add/remove factors based on site specifics

3.2.1 Flooding

3.2.2 Landslides

3.2.3 Cyanobacteria and Algae Blooms

3.2.4 Shoreline Wildlife

Table 3.3 SUMMARY MODULE 2: Contaminant source inventory

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Contaminant Source and Type** | **Owner/****Jurisdiction** | **Location** | **Distance to intake** | **Possible Contaminants** | **Contaminant Transport Mechanism** | **Comments** |
| Inflows  |  |  |  |  |  |  |
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| Sewage  |  |  |  |  |  |  |
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| Storm Water  |  |  |  |  |  |  |
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| Boating |  |  |  |  |  |  |
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|  Land Use |  |  |  |  |  |  |
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| Natural |  |  |  |  |  |  |
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Table 3.4 Summary MODULE 2: Hazard from contaminants identification table

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| --- | --- | --- | --- |
| **Contaminant Source and Type** | **Possible Contaminants** | **Existing Preventative Measures and Barriers** | **Possible Preventative Measures and Barriers** |
| Inflows  |  |  |  |
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| Sewage  |  |  |  |
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| Storm Water  |  |  |  |
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| Boating  |  |  |  |
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|  Land Use |  |  |  |
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| Natural |  |  |  |
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4.0 XXXXXX Intake Module 7: Risk Characterization and Analysis

The intent of Module 7 is to connect the contaminant hazards identified in Modules 1 and 2 with an evaluation of the existing source protection and water treatment barriers.

**Risk Characterization and Analysis**

**Seasonal Variation in Hazard and Risk Analysis**

**Characterization Table: MODULE 7 Part 1:**

Table 4.2: Risks with the potential to impact the XXXXXX intake

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Contaminant Source and Type** | **Liklie-hood** | **Consequ-ence**  | **Risk** | **Inside IPZ?** | **Comments** |
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4.1 Condition of Source

4.2 Physical Integrity of Intake, Treatment and Distribution System

4.3 Risk Assessment for Healthy and Health-compromised Individuals

4.4 Additional Treatment Options – Add or remove site specific options

4.4.1 Intake Extension

4.4.2 UV Water Disinfection

4.4.3 Water treatment plant

4.5 Strengths, Weaknesses, Opportunities, and Threats Analysis

Table 4.3: Strengths, weaknesses, opportunities, and threats summary of the client’s intake

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

5.0 XXXXXXX Lake Intake Module 8: Recommendations

The summation of Modules 1, 2 and 7 led to the recommendations to protect source water quality at the client’s intake presented here as Module 8. All identified high-risk potential impacts to the intake are addressed in these recommendations. The numbered hazards from Table 4.2 addressed by each recommendation are shown in the Risk box attached to each recommendation below.

5.1 Source Protection Action Plan

* Brief

5.2 High Priority Recommendations Based on Risk Rating

These are general recommendations, add and remove site specific recommendations

5.2.1 Establish Intake Protection Zone (IPZ)

|  |  |  |
| --- | --- | --- |
| **Risk** | **Stakeholders** | **Outcome Desired** |
|  |  |  |
| Action 1 |  |
| Action 2 |  |
| Action 3 |  |

5.2.2 Potential for water treatment with UV disinfection

|  |  |  |
| --- | --- | --- |
| **Risk** | **Stakeholders** | **Outcome Desired** |
|  |  |  |
| Action 1 |  |

5.2.3 Extend intake and increase clearance to ≥3 m above sediment

|  |  |  |
| --- | --- | --- |
| **Risk** | **Stakeholders** | **Outcome Desired** |
|  |  |  |
| Action 1 |  |

5.3 Moderate Priority Recommendations Based on Risk Rating

The following recommendations address predominately “moderate” risk ratings as identified in tables 4.2-4.3

* Same table format as section 5.2

# 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 |
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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