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OVERVIEW

Purpose of the Guided Template

Wetlands are considered one of the most valued and biodiverse habitats in the world, making their health and prosperity important in our province. The Activity Designation Regulations (ADR) under the *Environment Act* require an approval for all wetland alterations with a couple of exceptions that can be viewed in the *Nova Scotia Wetland Conservation Policy*, including size and type of alteration.

The purpose of this guided template is to clearly outline the information required for a Wetland Alteration Application by Nova Scotia Environment and Climate Change (ECC). By following the structure of this guided template, applications can be processed efficiently.

Wetland Alteration Applications require specialized knowledge of wetlands and experience in the scientific procedures to delineate and assess their function. Successful applications will illustrate a certain level of expertise. Incomplete or poor-quality applications will be delayed, returned, or rejected.

This template is only meant to guide the applicant, and additional sections may be included and minor changes in the layout may also be applied if an applicant deems it necessary to best describe their project. However, all sections within this guided template must be present in some capacity and fully completed in the final submission.

Although not a requirement, it is important that pre-application discussions occur with the local ECC Inspectors. Keeping them informed about potential projects before and throughout the application process and wetland evaluation is helpful. Once an application is submitted, they will be reviewing for completeness and verifying the content of the wetland evaluation.

ii. LIST OF TABLES

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iii. LIST OF ABBREVIATIONS

ACCDC	Atlantic Canada Conservation Data Centre		
ADR Activity Designation Regulations			
APA	American Psychological Association		
ECC	Environment and Climate Change		
Geographic Information System (mapping system)			

Lipht Detection and Ranging		
LOI	Letter of Intent	
LOU	Letter of Understanding	
KML Keyhole Markup Language (file format) NSLF Nova Scotia Lands and Forestry		
SOCI	Species of Conservation Interest	
SHP Shape (GIS file format)		
WESP-AC	Wetland Ecosystem Services Protocol for Atlantic Canada	
WSS	Wetlands of Special Significance	

WETLAND ALTERATION GUIDED TEMPLATE

Use the below sections to help develop your wetland report document when submitting for a **Wetland Alteration Application**. All submissions are required to have a title page with a project name, author name(s), date of submission and page numbers. A table of contents and list of tables and figures are also required at the beginning of the submitted document.

This wetland report is required to be submitted to the local ECC office along with the Submission Checklist for Wetland Alteration Application and the Wetland Alteration Application form.

1. Introduction

This section will highlight the project scope. A description of the project and the need for it should be stated in this section, including the planned schedule and details on the project site. Include items like watershed information, land surveys, mapped location of project site, design drawings, and site history.

2. Methodology of Wetland Evaluation

This section will outline the methods used for any desktop research or any deviation from the normal methodologies used in wetland delineation and the wetland functional assessment (completed using the WESP-AC model).

2.1 Wetland Delineation

All wetland delineations will use the US Army Corps of Engineering Wetland Delineation Manual and methodology. Please include a brief description of delineation details, such as the time of year it was completed, any problematic issues involved in determining the boundaries, what field tools where used, and any deviations in the established methods.

Delineations will:

• Include the full extent of the wetlands, with some exceptions, such as safety and land access issues. In these cases, proxy data such as aerial imagery or LiDAR may be used.

- Be completed within the growing season. Delineations completed during the shoulder seasons
 may also be acceptable depending on the experience level of the individual(s) completing the
 survey.
- Be completed in the same year as the application is submitted (or within 12 months). Older
 delineations may be justified by confirming there has been no changes to the study area and the
 surrounding environment that may influence wetland boundary changes.

Any geographic data files created, such as GIS layer, (e.g. Shapefiles (SHP)), GPS coordinates recorded, and/or Google Earth files (e.g. Keyhole Markup Language (KML)) are to be sent via email to the local ECC office along with an attachment of the Wetland Alteration Application submission package.

Results from delineation will be included in Section 3.1, and field datasheet are to be attached in **Appendix A**.

2.2 Wetland Functional Assessment

All wetland functional assessments will be completed using the WESP-AC model. This methodology and templates of WESP-AC model can be found on the ECC website. Please include details around the time of year the assessment was completed, additional field data collected related to the functional assessment, issues related to conducting the assessment, and any deviations in the established WESP-AC standard methods.

Functional assessments will be completed:

- within the growing season. Assessments completed during the shoulder seasons may also be acceptable depending on the experience level of the individual(s) completing the survey.
- in the same year as the application is submitted (or within 12 months). Use of older assessments may be justified by confirming there has been no changes to the study area and the surrounding environment that may influence wetland functionality.

WESP-AC datasheets will be attached in **Appendix B.**, and information generated from the WESP-AC Interpretation Tool will be copy and pasted in Section 4. The excel file of the WESP-AC datasheet will also be included as an attachment in the application package.

2.3 Research

Please include information on mapping and mapping programs used (e.g. ArcGIS, QGIS, and Google Earth). The Department of Lands and Forestry has a <u>wetland database</u> that can be accessed and used for reference. The province also provides access to geographic information that can be used with GIS programs from the <u>GeoNova</u> website. An inventory of Wetlands of Special Significance (WSS) within the province in GIS layer format, although not yet complete, can also be accessed by request to the ECC wetland specialist(s).

Atlantic Canada Conservation Data Centre (ACCDC) has a database of Species of Conservation Interest (SOCI) and Species at Risk (SAR), which provide insight into additional WSS. This information can be accessed by request and fee (ACCDC is working towards providing this information as open source and free). Through the WESP-AC model, an ACCDC is required to fully complete the functional

assessment. Descriptions of the ACCDC search results will also be included in the supported survey results section, with data sheets added as **Appendix C**.

This section will also include methodology details on any supporting surveys to be completed at the study area, such as surveys completed for flora and fauna, and/or information on whether the area support fish habitat.

3. Results

3.1 Wetland Delineation Results and Wetland Type

This section will include a table and map using the data collected from the field of the delineated wetland(s) with the proposed area for alteration highlighted. If the delineator does not have permission to access properties that the wetland crosses into, or cannot access due to safety reasons, delineate the property boundaries or estimate the rest of the wetland area from aerial imagery or Light Detection and Ranging (LiDAR) where it can be safely accessed.

- Delineation results table will include a name or code for wetland(s) identifier, the wetland(s) type, total wetland area(s) stated in metric units (m² or hectares), proposed area(s) of impact (m² or hectares), percentage of the area(s) impacted, and the proposed type of alteration. See *Table 1*. below as an example.
- Maps can be created using a GIS platform or Google Earth (free software program). All maps must include the total wetland area, the proposed wetland area to be impacted, a legend, north arrow, and a scale bar.
- The field datasheet(s) used for collecting the delineation information will be included in Appendix A.

Table 1. Example of a delineation results table including wetland type, total area, area of proposed impact, and proposed type of alteration.

Wetland ID	Wetland Type	Total Wetland Area (ha)	Proposed Impact (ha)	Precent Impact (%)	Alteration Type
e.g. WL001	Treed Swamp	4.92	1.7	34.6	Partial infill
					•

3.2 Functional Assessment Results

This section will state that the WESP-AC datasheet(s) containing both the office and field components will be attached as **Appendix B**, and/or included as a excel file in the application package.

Additional commentary on the results are not required. If there are any discrepancies, areas of concern, or items that stand out as important in the results, this section can be used to highlight these.

3.3 Supporting Surveys Results

This section will include any additional surveys completed along with any information on the flora and fauna identified within the study area. This includes lists of species, their provincial status, and

whether there are any invasive species and can be presented in table format within the document, or as an attached appendix. ACCDC data results will be provided in **Appendix C**.

Include if any SOCI or SAR provincially or federally have been identified, or if there is supporting evidence indicating species is present within the study area or within a 5 km radius. Highlight whether any of the *Location Sensitive* species have been identified within a 5 km radius (e.g. Black Ash, Peregrine Falcon, Wood Turtle, Blandings Turtle, Bat Hibernaculum).

Results will also include whether fish habitat is present within the study area.

4. RESULTS FROM WESP-AC INTERPRETATION TOOL

This section will present the results generated from the WESP-AC Interpretation Tool, included in the WESP-AC excel model. *Table 2.* below shows an empty table as an example of what information is required from the WESP-AC for all freshwater wetland assessments (if conducting a WESP-AC for a tidal wetland, include a table of the summarized results).

If multiple WESP-AC assessments have been completed, transcribe information for each wetland. Please distinguish each wetland using an identification name or code, and clearly indicate the name or code in each caption of the transcribed tables.

This information will be used as a possible classification of WSS based on wetland functionality and provides ECC with objective information on which to base application decisions. This is one of many ways for a WSS to be classified. Wetlands can also be classified depending on wetland type (e.g. saltmarsh), land designation, and the presence of a SAR.

Table 2. Example of the required information to be copied and pasted into the report from the results in the completed WESP-AC datasheet.

Function-Benefit Products (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUP - HYDROLOGIC		
SUP - WATER QUALITY SUPPORT		
SUP - AQUATIC SUPPORT		
HAB - AQUATIC HABITAT		
HAB - TRANSITION HABITAT		

Functional WSS Rule Definitions:

Habitat Rule: Two 'High' Scores -OR- One 'High' and one 'Moderate' score Support Rule: Three 'High' scores -OR- Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: One 'High' HAB score -AND- Two or three 'High' SUP Scores

Functional WSS Determination:	(YES/NO)
	Habitat Rule Satisfied
	Support Rule Satisfied
Habitat/Sup	port Hybrid Rule Satisfied
	CONCLUSION

5. WETLAND ALTERATIONS AND MINIMIZATION

5.1 Avoidance of Direct Wetland Alteration

In this section, a justification for the need to alter wetland habitat, including the constraints for avoiding and minimizing the direct impact, will be presented. This may include consideration of alternative project location, sizes, and approaches to avoid/minimize altering the wetland(s) where it was feasible.

5.2 Mitigation of Indirect Wetland Alterations

This section presents the potential causes of wetland alteration beyond the direct project footprint, and how they will be mitigated. This may include sediment barriers such as silt fencing to prevent sedimentation, revegetation plans, providing spill kits on-site to address leaky machinery, requiring all machinery to be refueled off-site, and/or providing proper training to individuals on-site to minimize impacts and address them when they occur.

This section will highlight on high functioning areas that require efforts of mitigation focus.

These potential wetland impacts will be used to develop a targeted monitoring program using *Table 3*. below. Where appropriate, clearly identify locations of the numbered activities.

Table 3. Example of addressing potential wetland alterations with mitigation measures and monitoring to confirm mitigations have been effective.

No.	Potential cause of additional wetland alteration	Resulting wetland changes that would be seen in 1-5 years	Specific mitigation in place to prevent alteration	Monitoring to confirm effective mitigation
1	e.g. Erosion of exposed soils	-Sediment deposits -Vegetation stress -Localized species changes	- Minimizing exposed soil -Immediate revegetation -Sediment barriers using grubbing's from project footprint	-Visual inspection for exposed soil plant stress -Botanical quadrats to observe community change from the disturbance zone
2	e.g. new surface water discharge to wetland	-Erosion -Water ponding -Vegetation stress -Localized species changes	-Plunge pool for sediment capture before wetland -Plunge pool cleanout seasonally -Check dam to slow water on entering wetland diffused to multiple entry points	-Visual inspection for exposed soil plant stress and plunge pool content -Botanical quadrats to observe community change from the disturbance zone
3				
4				

5.3 Total Wetland Alteration

This section presents the resulting total area of wetland alteration (loss and change) that cannot be avoided or mitigated. The area of direct loss includes wetland area that will be converted to non-wetland area due to direct infill or excavation. It also includes the area expected to change due to the indirect effects of the project that are unlikely to be successfully mitigated.

These areas are to be marked clearly in a scaled figure that indicates areas of loss and predicted change. This is the area of alteration for which approval is being sought.

6. Monitoring Plan

This section will describe the proposed monitoring plan, which is subject to ECC modification and approval. This section includes the targeted monitoring to confirm successful mitigation in *Table 3.*,

Section 5.2, in addition to the following minimum monitoring requirements in partially altered wetlands:

- site photographs in key areas to demonstrate effective mitigation,
- vegetation monitoring to demonstrate that the community did not change due to the project,
- hydrologic monitoring to demonstrate water levels have not changed due to project, and
- delineation and WESP-AC function assessment in the final year of monitoring.

Monitoring plans will identify monitoring locations, frequency, duration, and provide clear rationale if the proposed minimum monitoring requirements are not applicable. Most alteration projects will require an annual monitoring plan for at least five years, with a baseline study completed prior to any alteration.

7. WETLAND COMPENSATION

Any wetland that has been permanently altered and/or wetland functions that have been impaired or lost, requires wetland compensation. This section will outline the requirements for wetland compensation and a plan for accomplishing it.

Typically, ECC requires primary compensation at a 2:1 ratio (e.g. 1 km² of altered wetland will require 2 km² of wetland restoration). However, this ratio is subject to change depending on wetland type, land designation, SAR presence, and wetland functionality.

Secondary compensation may include wetland enhancement, stormwater retention wetlands or wastewater treatment wetlands, preserving WSS, interpretive centres, development of public education and/or wetland research. Wetland studies, interpretive centres and public education will most commonly be accompanied by a 1:1 restoration ratio, and may also slow down the typical 60-day application review process.

Ideally, a detailed compensation plan, or a signed commitment in the form of a Letter of Understanding (LOU), should be submitted with the application package. If a Letter of Intent (LOI) can be used as a substitution, with a detailed compensation plan to follow within six months from when the application has been approved.

Compensation plans will include information about the project, timelines, description of the amount and location of the wetland to be restored, whether it's enhanced or created, monitoring details, the dollar value of the project, and signed agreements from involved parties. Physical work for compensation projects will be completed within two-years after application approval, unless otherwise directed.

All compensation projects involving wetland restoration, creation and enhancement requires monitoring to accompany the project to measure the success.

8. References and Data Sources

This section will include all referenced materials and data sources used in the document. American Psychological Association (APA) citation format is preferred.

9. ATTACHMENTS/APPENDICES

This last section will include all the required appendices. Refer to the sections above and the *Wetland Alteration Application Submission Checklist* to ensure you have included all the requirements.

- Appendix A. Delineation field datasheets Note that any geographic data files created such as GIS or Google Earth layer, (e.g. SHP or KML) will be sent via email to the local ECC office as an attachment with the application submission.
- **Appendix B.** WESP-AC datasheets *Note that excel files will be sent as an attachment with the application submission.*
- Appendix C. Supporting Surveys Results (including ACCDC report)

Additional appendices, such as wetland evaluators resumes, and any other supporting materials may also be included.