Confederated Tribes of the Colville Reservation

Wetland Program Plan

Environmental Trust Program

2012

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Definitions

Geodatabase:

A geographic information system data storage framework combining spatial and wetland resource attribute information.

Lacustrine:

Related to lakes or lake/pond margins

Palustrine:

Vegetated wetlands dominated by trees, shrubs, persistent emergent plants, mosses or lichens.

Proper Functioning Condition (PFC):

A methodology for assessing the physical functioning of wetlands through consideration of hydrology, vegetation, and soil/landform attributes. PFC also refers to the actual condition of a wetland and how well the physical processes are working.

QAPP:

A Quality Assurance Project Plan which documents the planning, implementation, and assessment procedures for monitoring.

Riverine:

Wetlands located in floodplains or the riparian areas of flowing waters.

Waters of the U.S.:

- Traditional navigable waters
- Wetlands adjacent to traditional navigable waters
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)
- Wetlands directly adjacent to such tributaries
- The following wetlands may qualify as Waters of the U.S.:
    - Wetlands adjacent to non-navigable tributaries that are not relatively permanent
    - Wetlands adjacent to, but not adjoining, a relatively permanent non-tributary

Introduction

The Colville Indian Reservation extends across a large area and possesses a wealth of wetlands. The Reservation is more than twice the size of the state of Delaware, and larger than the state of Rhode Island. In spite of a relatively arid climate, 28,496 acres of wetlands are mapped within the boundaries of the Reservation by the National Wetland Inventory. Three primary wetland systems are present, riverine, palustrine, and lacustrine. The NWI separates the Reservation wetland areas into more than 100 different wetland classes, and identifies 6,387 distinct wetland map units.

Wetlands serve many important ecological, environmental, and cultural functions and values. Many cultural and uncommon plants grow in wetland environments. Wetlands support fish and shellfish production, providing fish and special wildlife habitat. Their watershed functions include filtering water contaminants, dissipating stream energy, storing and releasing water to regulate flows, storing carbon, and contributing biodiversity through their special flora and fauna. They contribute to public health, safety and welfare by providing flood storage and conveyance; erosion, pollution and sediment control; recreation; water quality protection; water supply; and education and scientific research.

Armstrong Meadows

Given these special characteristics and functional relationships, a special program of management is needed to maintain wetland productivity and health, and to prevent loss of wetlands from the landscape.

Different CTCR and Bureau of Indian Affairs programs (and various landowners) have roles in the management and protection of Reservation wetlands, their water, and habitat. Given the extensive resource and various entities involved, a program is needed to lead and coordinate wetland management. It should be driven by knowledge of the locations, watershed functions, and conditions of Reservation wetlands and Tribal aspirations for them.

Because of the abundance of cultural resources associated with wetlands, strong tribal support for wetland restoration and protection exists, and a close working relationship with the History Department is anticipated in the work to achieve wetland restoration and protection goals.

Since beginning to develop CTCR Wetland Program, ETD's objective has been to ensure that wetland management and planning is integrated with all natural resource management programs on the Reservation, including forestry, range, fish & wildlife, and cultural resource managers. Integration will continue to be an important part of the Wetlands Program through the CTCR Wetlands Working Group (led by the Wetland Specialist) which will guide and prioritize restoration efforts and objectives on the Reservation. The Wetlands Working Group currently includes representatives from: Environmental Trust, BIA Range, BIA Forestry, BIA Realty,

History/Archeology, Fish & Wildlife, and the Colville Tribal Conservation District. Other programs/entities may take part in the future.

CTCR goals coincide to a great degree with national goals for wetlands: maintaining the physical, chemical, and biological integrity of our wetlands, preventing overall loss of wetland area, and managing the Reservation in a way that increase wetland functions and quality.

This plan is divided into four sections:

- Monitoring & Assessment
- Restoration & Protection
- Water Quality Standards
- Regulation

Development of this wetland program plan was funded by a Wetland Program Development Grant (# BG 00J42801) received from the US Environmental Protection Agency. Advancement and implementation of the CTCR Wetland Program Plan beyond its current state will depend on a dedicated wetland specialist staff position, given other ETD program responsibilities and staffing levels. Funding from EPA has been secured through a subsequent Wetland Program Development Grant for fiscal year 2013 to support such a position.

Monitoring & Assessment

Goals

- Develop a monitoring and assessment strategy consistent with *Elements of a State Water Monitoring and Assessment Program for Wetlands* (EPA, 2006) supporting wetlands management accomplishing CTCR objectives.
- Implement a sustainable monitoring program consistent with the wetlands monitoring strategy.
- Incorporate monitoring data into agency decision-making.
- Utilize monitoring results to evaluate effectiveness of wetland regulatory protections and restoration performance.
- Enable CTCR to fulfill federal Clean Water Act (CWA) requirements under Section 305(b) to assess the condition of all Waters of the U.S., including wetlands.

Monitoring of wetlands water quality will be addressed under the core element "Water Quality Standards." Monitoring for compliance with wetlands regulatory protections will be addressed under the core element "Regulation."

Current Status

CTCR has several wetland monitoring tools but has no overall monitoring and assessment strategy. A full strategy contains 10 elements, similar to the CTCR water monitoring strategy. The wetland and water monitoring strategies should complement each other. A comprehensive

monitoring program would likely involve wetland assessment at three levels of intensity, or tiers. These are the Landscape, Rapid Assessment, and Intensive Site Assessments.

CTCR developed a rapid assessment procedure for wetland assessment with support from an EPA Wetland Program Development Grant in 2007. Staff in different programs (Environmental Trust, Fish & Wildlife, Range, Forestry History/Archeology, Realty, etc.) collaborated to develop the procedure and received training to apply it. A limited number of wetlands have been assessed utilizing the rapid procedure since its creation. Concurrent with development of the rapid assessment, CTCR created a geodatabase to compile assessment and locational information. CTCR has in-house capabilities for utilizing geographic information systems to support a much more comprehensive wetland monitoring and assessment program. Appendix A contains the rapid assessment template.

Frosty Meadows riverine wetland

In 2010/2011, another kind of multi-disciplinary approach was utilized to assess wetland, stream channel and floodplain conditions along seven miles of the Little Nespelem River. An interdisciplinary team applied the Proper Functioning Condition assessment process to evaluate conditions and formulate management recommendations. This effort succeeded but realistically will only be available in exceptional circumstances due to staffing time constraints. It is also inadequate to accomplish the intentions of Goals 1 and 4 above.

The wetland specialist will develop a comprehensive monitoring strategy, implement the subsequent monitoring program, conduct more rigorous assessment supporting planning processes, manage wetlands data, and promote and provide continuing training for use of the rapid assessment.

Program Development Activities

- Hire a wetlands specialist (preferred) or obtain the services of a consulting wetlands scientist. (2013)
- Create a comprehensive wetland monitoring strategy for wetlands of the Reservation to assess wetland hydrology, soil, and habitat conditions including standard accepted practices for wetland inventory and overall wetland condition monitoring. Include a component regarding restoration effectiveness monitoring. Inventory will include metrics such as wetland type, vegetation composition, macroinvertebrate composition, evidence of disturbance, etc. and constitute the first round of wetland condition monitoring, establishing a baseline for future trend analyses. (2013)
- Write a QAPP to assure data quality and standardized procedures for data collection. (2013-2014)

- Develop and implement a 3-tier monitoring system to fulfill Goal 1 above (Guidance is detailed in Attachment B). (2014)
- Utilize monitoring data to support planning and decision-making, evaluate effectiveness of wetland regulatory protections and restoration performance, and fulfill CWA Section 305(b) reporting requirements. It is anticipated that the monitoring data may support the CTCR in the Upper Columbia Site natural resource damage assessment and CERCLA remedial investigation and feasibility study related to CTCR's Tech Cominco lawsuit. (2013 and on-going)

Voluntary Restoration and Protection

Goals

- Clearly and consistently define restoration and protection goals throughout Reservation
- Grow partnerships that support wetland restoration and protection
- Protect wetlands from degradation or destruction
- Restore wetland acres, condition, and function
- Track progress over time, evaluate and document results, and modify practices as appropriate

Current Status

To date, staff and funding for wetland management work has been limited. Hence little voluntary wetland restoration and protection (R&P) work is occurring. There is some focus in the CTCR non-point source pollution control (NPS) and BIA Range programs to identify and reduce impacts to wetlands from NPS activities. Great possibilities exist for working with partners to increase wetlands protection and restoration for the Reservation. Potential partners include the CTCR Fish & Wildlife, Transportation, Planning, and History Departments, BIA Range Management, Leasing, Forestry, and Fire Management programs, CTCR Conservation District, Natural Resources Conservation Service and other federal agencies, schools, community centers, landowners, and others. A wetlands specialist position will be filled in 2013 to initiate and coordinate wetland protection projects, carry out R&P program development activities and accomplish the goals of this program element.

Program Development Activities

Define restoration and protection goals: (2013- 2014)

- Establish Tribal wetland goals that are consistent and compatible across all stake-holding management departments
- Consider watershed planning, wildlife habitat, cultural resource, and other objectives when selecting restoration/protection sites

- Provide clear guidance on appropriate restoration and management techniques and success measures

Protect wetlands from degradation or destruction: (2013- ongoing)

- Develop partnerships to leverage protection effort
- Establish and institutionalize long term protection using mechanisms such as incentives, purchase of land title or easements to protect wetlands

Restore wetland acres, condition, and function: (2014- ongoing)

- Identify and assess potential restoration sites
- Develop partnerships to leverage restoration effort
- Increase wetland acreage through restoration (re-establishment)
- Improve natural wetland conditions and functions through restoration (rehabilitation)

Monitor/track progress over time, document results, and modify practices as appropriate:

- Develop and implement effectiveness monitoring (using standard accepted practices) for all restoration work. Determine, prior to restoration efforts, the metrics of success for each project
- Track restoration/protection projects
- Monitor restoration/protection projects to ensure that they are implemented and managed correctly, and to assess performance.
- Link wetland restoration and protection to relevant watershed planning efforts
- Modify restoration/protection techniques as needed

Water Quality Standards

Goals

- Obtain CWA Section 303 jurisdiction for the Reservation.
- Obtain approval of Reservation water quality standards including standards for wetlands.
- Utilize WQS monitoring to provide a rigorous foundation for decisions regarding protection and enhancement of Reservation wetland resources.

Current Status

In 2012, CTCR has submitted a draft application to EPA to obtain Treatment as State (TAS) approval for CWA Sections 303 and 401. Section 303 TAS approval would provide CTCR comparable jurisdictional authority under the Clean Water Act for water quality standards (WQS) that nearly all states hold. This change would enable updating of the Tribal WQS and sunset of the federally promulgated WQS for the Reservation. The draft WQS drafted by Environmental Trust are applicable to wetlands. In them, wetlands are classified as Special Resource Waters having primarily narrative WQS.


Grazing impacts as seen at Little Owhi Lake

A wetlands water quality monitoring program was initiated subsequent to a Wetland Program Development grant received in 2007. The program combines a wetland rapid assessment method with field and laboratory water tests that are performed routinely across a network of selected sites on the reservation.

Not all wetlands possess surface water, or have it long enough through the year for water quality monitoring. For those with surface water for adequate duration, 24 sites per year will be randomly selected for water quality sampling. During a 5-year period, this allows sampling from 120 wetlands, after which the round of sampling at these same wetlands will be repeated

This sampling pattern is intended to accommodate the widespread occurrence of individual, distinct wetlands relative to other selected surface water bodies and provide an adequate, random representation of wetland water quality conditions. It should determine whether WQS are being met, and provide some information on wetland water quality trends. This sampling strategy may be modified to be integrated with the strategy for wetland Monitoring & Assessment as it is developed.

Field water measurements include temperature, dissolved oxygen, pH, conductivity and turbidity and are taken just prior to sampling for laboratory analysis. Water lab tests include nutrients (ammonia, nitrate, nitrite, TKN, orthophosphate), fecal and *E.coli* bacteria, and total suspended solids. These parameters are a requirement of the EPA Section 106 grant program. All measurements and sampling are performed in accordance to the *Colville Indian Reservation Quality Assurance Project Plan (QAPP) for Water Monitoring Activities* (10-13-2000), reviewed and approved by EPA (03-05-01).

Program Development Activities

- Conduct follow-through on Treatment as State application to obtain TAS approval from EPA for CWA Section 401 jurisdiction for Reservation. (2012-2013)
- Update CTCR surface water monitoring plan to include wetland water quality monitoring. (2012-2013)
- Update CTCR surface water monitoring QAPP as needed to address quality assurance in wetland water quality monitoring. (2013)

- After 3 to 5 years of monitoring, conduct a review of the wetlands monitoring program and revise as needed. (2016-2018)

Regulation

Goals

- Obtain CWA Section 401 jurisdiction for the Reservation.
- Administer Tribal permitting and codes that require wetland protection (Chapters 4-6, 4-7, 4-8, 4-9, 4-15).
- Close any remaining gaps in wetland protection that can be accomplished through regulatory approaches.

Current Status

In 2012, CTCR submitted a draft application to EPA to obtain Treatment as State approval for CWA Sections 303 and 401. Section 401 approval would authorize CTCR to certify whether federal or federally-permitted projects that generate discharges to waters will comply with the Reservation water quality standards.

In 2011, the CTCR Hydraulic Project code was revised including new provisions for wetland protection. The code requires a tribal permit for any activity affecting the bed or banks of waters including wetlands on the Reservation. It contains standards for certain common activities that are performed in waters, such as road crossings, certain logging activities, bulkheads, and stream bank stabilization. Previously there was no inclusion in the code relating to loss of wetlands or compensatory mitigation. The new Hydraulic Project, Forest Practices, and Shoreline Management codes provide a network of wetland protections from many non-point source activities. The new wetland standards and Hydraulic code revision were developed with support from a previous EPA Wetland Program Development grant.

Great Western Lake

All three codes include wetlands in their definition of Reservation waters, a term more inclusive than that of Waters of the US, as interpreted recently by the Supreme Court. The set of activities regulated is extensive but one major activity affecting wetlands on the Reservation, grazing, is not addressed. Grazing does need to be addressed further, possibly through a combination of regulatory and non-regulatory means. Currently ETD is working with the BIA Range Management and Leasing programs, and CTCR Fish & Wildlife and History & Archaeology programs to review grazing impacts to a limited number of wetlands and other waterways.

Training is provided from time to time related to wetland and surface water identification and regulatory protections. Periodic review for effectiveness and updating of Tribal codes is conducted by administering departments and the Office of Reservation Attorney.

Code administration is carried out by the Environmental Trust and Planning Departments. The programs conduct permit applications review, distribution of permits to reviewers, manage review and decision deadlines, perform compliance inspections, and carry out any appropriate enforcement.

Program Development Activities

- Conduct follow-through on Treatment as State application to obtain TAS approval from EPA for CWA Section 401 jurisdiction for Reservation. (2012-2013)
- Analyze gaps in regulatory wetland protection, and evaluate alternative approaches. (2015)

Program Evaluation

Every three years, this Wetland Program Plan should be evaluated. Program evaluation should include comment from the following Tribal departments: Fish & Wildlife, History & Archaeology, Environmental Trust, Planning, Transportation; and BIA Forestry, Range, and Leasing programs. Evaluation should assess program effectiveness in achieving goals and milestones, and whether implementation occurred according to schedule. The following questions should be addressed:

- Should goals, milestones, and schedule be revised?
- What is the state of Reservation wetlands? Are conditions or quantity of wetlands changing?
- Are activities occurring that contribute to decline of wetland condition?
- Has any specific wetland restoration occurred? If so, what and where and how much acreage? Was it effective?
- Are wetland regulatory protections effective?
- Has funding been adequate to support accomplishment of program goals? What additional sources of funding should be pursued?

Program evaluation will be conducted in 2015. Updates to Wetland Program Plan will be undertaken by 2017.

Summary

The Environmental Trust Department is responsible for the development and implementation of this plan, but caring for the wetlands of the Colville Reservation is a responsibility shared by all. Other government agencies, landowners, operators, and Tribal and community members have both challenges and opportunities to work together in monitoring, assessing conditions and addressing effects of past and current management activities, as well as restoring Reservation

wetlands. Only a fully functioning system of wetlands will bring about healthy watersheds, clean water, and support the traditional uses related to wetlands.

Appendices

I. CTCR Rapid Wetland Assessment Template

II. Application of Elements of a State Water Monitoring & Assessment Program for Wetlands

III. Wetland Water Class and WQS excerpt from 2012 CTCR Draft Water Quality Standards

Appendix I: CTCR Rapid Wetland Assessment Template

Colville Confederated Tribes

Wetland Field Assessment Form

Section 1

a. Wetland Name: _____ Staff: _____ Date: _____

b. Location: T___ R____ S_____ Coordinates: _____ (NAD_1983_UTM_Zone_11N)

c. Wetland Size ☐ <0.5 Ac: ☐ 0.5- <5 Ac: ☐ 5-20 Ac: ☐ >20 Ac: Notes: _____

Section 2. Wetland Type (Hydrogeomorphic Class)

			Associated Wetland Functions
a. Choose one:	☐ Depressional	(water < 2m)	flood/stormwater control; water quality improvement; biological/habitat support
	☐ Riverine		flood/stormwater control; erosion/shoreline protection; water quality improvement; biological/habitat support
	☐ Lake-fringe	(water > 2m)	erosion/shoreline protection; water quality improvement; biological/habitat support
	☐ Slope		biological/habitat support; other functions are minimal relative to other wetland types

b. Choose one:
- ☐ Wetland extends <30 m from Ordinary High Water Mark (OHWM)
- ☐ Wetland extends 30-60 m from OHWM
- ☐ Wetland extends >60 m from OHWM
- ☐ No OHWM present

30 m = 100 ft

Section 3. Hydrology

a. Choose one:
- ☐ Unconstrained outlet (unimpeded outflows-natural landform)
- ☐ Semi-constrained outlet (outflow slowed)
- ☐ Constrained outlet (outflow significantly less than inflow- usually artificial impoundment)
- ☐ No outlet

b. Choose one:
- ☐ Temporarily flooded or saturated
- ☐ Seasonally or semi-permanently flooded or saturated
- ☐ Permanently flooded or saturated, or intermittently exposed

c. Choose one:
- ☐ Rapid flow through site
- ☐ Slow flow through site
- ☐ No visible flow

d. Altered Hydrology: ☐ Ditched

e. Water Quality: Water: ☐ Clear ☐ Murky ☐ Algae present ☐ Algae Bloom Water Depth: <1 | 1-2 | >2 Meters

Section 4. Soil

a. Choose one: ☐ Soil coarse: gravel, sand ☐ Soil fine: silt, clay ☐ Soil organic

Section 5. Vegetation

a. Dominant Plant Forms: % Wetland area dominated

Open water	%
Aquatic	%
Graminoids	%
Forbs	%
Shrubs	%
Trees	%

Aquatic- floating, unrooted plants
Graminoids- grass, grass-like plants
Forbs- herbaceous, non-woody plants
Shrubs- willow, red-osier
Trees- alder, birch, other
Total equals 100%

b. Surrounding Landcover

	< 20%	20-60'	>60%
Forest			
Shrub/steppe			
Grassland			
Other			

List: _____

c. Species Present
- Redcedar, Cottonwood, Willow
- E Spruce, Alder, Red-osier
- Lodgepole, Aspen, Cattail
- Grand fir, Birch spp, Tule
- Douglas-fir, Hawthorn, Other _____
- Reed canarygrass

d. Nonnative invasive plants (list): _____ e. Unusual Plants: No / Yes, describe: _____

Section 6. Habitat

a. Habitat Complexity
- ☐ Multiple habitat types present
- ☐ Multiple canopy layers in wetland
- ☐ Multiple canopy layers near OHWM
- ☐ Cover connection to uplands
- ☐ Springs, seeps present
- ☐ Recent fire

b. Habitat features present
- ☐ snags
- ☐ perches
- ☐ large woody debris
- ☐ shading of surface water

0-33	34-66	67-100%

c. Evidence of Wildlife Presence (At time of assessment)
- waterfowl, songbirds, raptors
- small mammals, large mammals, large carnivores
- ungulates, beaver
- fish, reptiles
- amphibians, unusual spp

(large mammals are coyote or larger)

Section 7. Disturbance

a. Choose one:
- ☐ <20% shoreline length developed (20 pts)
- ☐ 20-60% shoreline developed (40 pts)
- ☐ >60% shoreline developed (60 pts)

Shoreline means within 35 feet of wetland edge.
Developed means clearing, road, grading, conversion from natural condition

b. Disturbance Factors

Score each disturbance factor present:
1 = low intensity
2 = moderate
3 = high

	Within 0-5 Yrs	6-10	>10
Farmland			
Clearing/grading			
Filling/draining			
Road w/in riparian area			
Building w/in riparian area			
Powerline			

	Within 0-5 Yrs	6-10	>10
Equipment			
Grazing			
Logging			
Recreation			
Hazardous materials			
Refuse			

Wetland Disturbance Rating: _____ Sum of all development and disturbance factor points from section 7a and 7b

Section 8. Sketch, Additional Notes

Appendix II: Applications of Elements of a State Water Monitoring & Assessment Program for Wetlands

Application of

Elements of a State Water Monitoring and Assessment Program For Wetlands

April 2006

Wetlands Division
Office of Wetlands, Oceans and Watersheds
U.S. Environmental Protection Agency

Available on the web

http://www.epa.gov/owow/wetlands/monitor/

Introduction

This document was prepared to help EPA and State program managers plan and implement a wetland monitoring and assessment program within the context of the March 2003 EPA document, *Elements of a State Water Monitoring and Assessment Program* (EPA 841-B-03-003). It provides clarification and further information on how the original *Elements* document applies to wetlands. That document recommended ten basic elements of a state water monitoring and assessment program, and serves as a tool to help EPA and the States determine whether a monitoring program meets the requirements of Clean Water Act Section 106(e)(1).

Over the past few years States have made significant progress in developing and implementing monitoring programs that characterize state waters and have contributed to an improved understanding of the condition of wadeable streams nationwide. In developing monitoring programs a number of states have explicitly addressed wetlands assessment. The purpose of this document is to provide specific information on the elements of wetlands monitoring programs for states that are in earlier stages of developing these programs and to promote interstate consistency in reporting progress toward increasing wetland quantity and towards the longer-term goal of improving the quality of the nation's wetlands.

A monitoring and assessment program that is built using these elements will be able to provide managers the information necessary to report on the condition of State wetlands. That information, in turn, can be used to prioritize wetland management activities such as protection, restoration and compensatory mitigation. State implementation of these elements will be an iterative process that is completed over several years. Progress made on one element of activity will influence and advance work being conducted on the other elements.

Organization of this Document

We duplicate the descriptions of each of the 10 elements that make up the Elements of a State Water Monitoring and Assessment Program, and then follow with a description of how to apply that element to wetlands.

The Recommended Elements of a State Program

A) Monitoring Program Strategy

The State has a comprehensive monitoring program strategy that serves its water quality management needs and addresses all State waters, including streams, rivers, lakes, the Great Lakes, reservoirs, estuaries, coastal areas, wetlands, and groundwater. The strategy should contain or reference a description of how the State plans to address each of the remaining nine elements. The monitoring program strategy is a long-term implementation plan and should include a timeline, not to exceed ten years, for completing implementation of the strategy. EPA believes that state monitoring programs can be upgraded to include all of the elements described below by 2014. It is important that the strategy be comprehensive in scope and identify the technical issues and resource needs that are currently impediments to an adequate monitoring program.

EPA recommends that appropriate staff from multiple agencies devise the State's overall water monitoring strategy and integrate wetland monitoring and assessment into it. While the State can develop a separate monitoring strategy for wetlands, it should be coordinated with and referenced in the broader State water monitoring strategy. For example, States that operate under a water monitoring strategy that was finalized during or before 2006 are encouraged to include a description of wetland monitoring and assessment activity in the next scheduled revision of their overall water monitoring strategy. Over time, such program integration will foster the coordination and prioritization of monitoring activities across the various types of waterbodies.

B) Monitoring Objectives

The State has identified monitoring objectives critical to the design of a monitoring program that is efficient and effective in generating data that serve management decision needs. EPA expects the State to develop a strategy and implement a monitoring program that reflects a full range of State water quality management objectives including, but not limited to, Clean Water Act goals.

Likewise, progress made in developing a comprehensive wetland monitoring program will serve many local and State program needs. Some of those wetland program goals include the following:

(1) Establish a baseline of wetland condition and/or report changes in condition in a State's Clean Water Act (CWA) Section 305(b) report or Integrated Report;

(2) Evaluate the environmental consequences of a federal action or group of actions, including the effectiveness of compensatory wetland mitigation, under the provisions of CWA Section 404/401 and the National Environmental Policy Act (NEPA);

(3) Evaluate the performance of wetland restoration projects, including CWA Section 319 nonpoint source pollution control projects;

(4) Evaluate the cumulative effects of wetland loss and/or restoration, and develop watershed plans for the recovery of impaired waterbodies that are listed pursuant to CWA Section 303(d) and;

(5) Refine or create wetland specific water quality standards pursuant to CWA Section 303, including development of appropriate reference conditions.

These objectives should be considered during strategy development along with other state or local objectives. When setting program objectives, EPA expects that the States will focus on measuring both the individual and cumulative environmental effects of management actions so that improvements can be made in those actions over time. Wetland monitoring and assessment should be conducted with the expectation that the information gathered will be used to help support and document the effectiveness of environmental protection and restoration activity.

Each individual objective controls the nature of wetland sampling design, the selection of assessment indicators and sampling methods, field deployment, quality assurance, data analysis, data management, reporting, and the cost of wetland monitoring activity. However, practitioners should avoid the pitfall of assuming that the data quality needs associated with each of the listed objectives are the same. For example, some wetland planning decisions will not need the same high resolution information as is needed for the promulgation of water quality standards that are specific to wetlands.

The remainder of the Strategy should describe the State's approach for achieving the identified objectives including how the State plans to address program gaps or weaknesses.

C) Monitoring Design

The State has an approach and rationale for selection of monitoring designs and sample sites that best serve its monitoring objectives. The State monitoring program will likely integrate several monitoring designs (e.g., fixed station, intensive and screening-level monitoring, rotating basin, judgmental and probability design) to meet the full range of decision needs. The State monitoring design should include a probability-based network for making statistically valid inferences about the condition of all State water types over time. EPA encourages the State to use the most efficient combination of monitoring designs to meet its objectives.

A State should describe in its strategy the monitoring designs that will be used to achieve their wetland management objectives. Below we describe three generally accepted sampling designs for the monitoring and assessment of wetlands.

1. The first is a census that entails examining every unit in the population of interest. Some CWA Section 404 "advance identification actions" (ADID) and "special area management plans" (SAMP) employ this approach to identify significant wetlands in need of specific regulatory attention.

2. The second approach is used for studying an extensive resource, such as all wetlands within a watershed or region. It relies on probability sampling. Studies based on statistical samples rather than complete coverage are referred to as sample surveys.

   Implementing a sample survey involves three primary steps: (1) Creating a list of all units of the target population from which to select the sample; (2) selecting a spatially-distributed, random sample of units from that list; and (3) collecting data from the selected units. The premise behind sample surveys is the ability to characterize and report the overall cumulative condition of wetlands on a broad scale, such as watersheds and regions, without sampling each wetland. The results of sample surveys also allow a State agency to prioritize areas where more targeted sampling efforts are needed to meet a particular objective. Developing a probability-based sampling design is a rigorous task. EPA can provide technical assistance in designing this type of a monitoring program and in analyzing the resulting data.

3. The third approach relies on best professional judgment to target sampling within specific wetlands for purposes of comparison. A common use of targeting sampling is to characterize wetland condition and function along a gradient of human disturbance in order to establish reference wetland condition. Many rapid assessment methods use this design approach. Improvements to the assessment methods are then made using supplemental data gathered through the use of a probability-based sampling approach.

Also, a State strategy should identify the type of wetland classification system and mapping system they intend to use as part of their sampling design. They should also describe how they intend to complete or update the wetland inventory maps needed to conduct monitoring and assessment activity. States are encouraged to closely coordinate with EPA Regional staff on this matter in order to keep apprised of related work being conducted by the Federal Geographic Data Committee (FGDC). More information about the FGDC can be found at: *http://www.fgdc.gov/*.

Characterization of wetland reference condition

The characterization of wetland reference condition is an important step in the design of a wetland monitoring and assessment program. The ecological understanding that is derived from the characterization of reference sites can be extrapolated to other sites to meet a specified set of assessment objectives. In a practical sense, that extrapolation is achieved through the development, verification and use of wetland assessment methods. Steps to characterize reference condition include:

- Prioritize watersheds or other geographical areas to be surveyed to meet a given wetland monitoring and assessment objective.

- Identify specific wetland classes within prioritized watersheds targeted for assessment, and identify the domain (sample frame) for each selected type. Consider the hydrogeologic or

ecoregion setting, wetland inventory, wetland hydrogeomorphic (HGM) and Cowardin classification and the overall wetland landscape profile. A wetland landscape profile represents the abundance, by class, of wetlands that occur in a geographical area.

- Select and verify indicators that are used to assess wetland condition, relative to wetland beneficial use and function. Verification can be achieved based on a preponderance of scientific information (i.e., "weight of evidence") that is systematically gathered at wetland reference sites.

- Establish a reference network that: (a) Reflects a gradient of human-induced disturbance, and includes both least-impacted sites and other sites, and (b) can be sampled to verify the accuracy of wetland assessment methods. Long-term sampling conducted within the reference network will provide information needed to characterize wetland variability over time and space.

D) Core and Supplemental Indicators (and Methods)

Note: EPA has training modules and websites containing detailed information on monitoring design, assessment indicators and methods. For further information, please visit: http://www.epa.gov/waterscience/criteria/wetlands/.

Because limited resources affect the design of water quality monitoring programs, the State should use a tiered approach to monitoring that includes a core set of indicators selected to represent each applicable designated use, plus supplemental indicators selected according to site-specific or project-specific decision criteria.

The development of wetland assessment methods, and in particular a rapid wetland assessment method, is a prerequisite to accomplishing many program objectives. Figure 1 (next page) shows a conceptual model that identifies the core indicators and metrics used in wetlands assessment. The indicators and metrics reflect the ecological factors (or attributes) that define wetlands (i.e., hydrology, soils and biota) and how those factors respond to human-induced disturbance (i.e., stressors). Indicators of wetland condition can be based either on the response of a wetland to stressors or on the stressors themselves.

In particular, environmental indicators are used in making determinations of whether wetland function is changed or lost to the point of affecting wetland condition. In turn, the condition of wetlands affects their capacity to support a beneficial use (e.g., aquatic life use support, including wildlife habitat). The choice of indicators (and associated metrics) depends on the purpose of monitoring and level of accuracy needed for decision-making. For example, a set of core indicators can be used to characterize wetland condition in terms of ecological integrity. Supplemental indicators can then be used to characterize a wetland's special significance as critical or outstanding wildlife habitat. Wetland indicators, and their associated metrics, are often portrayed in wetland assessment methods as an organized set of assessment questions.

Figure 1

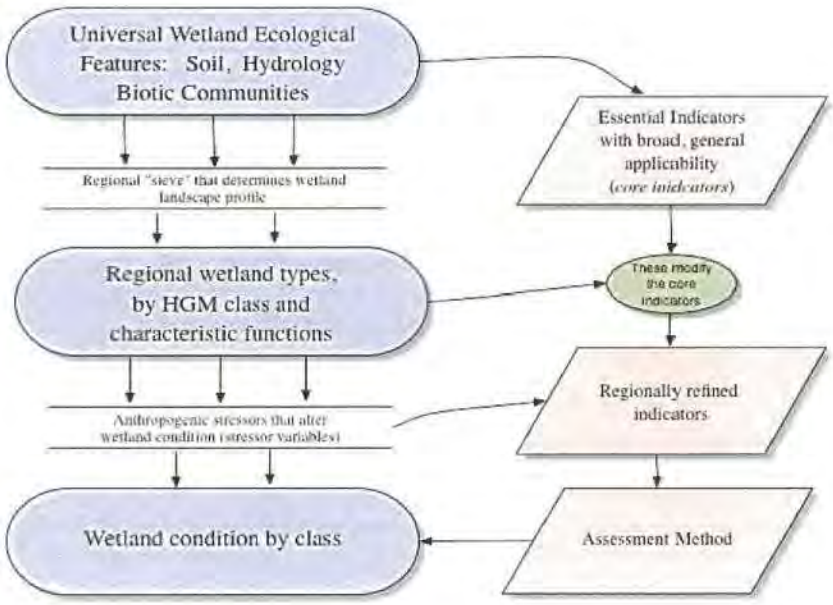

Table 1 (next page) presents three types of wetland assessment methods that can be developed to support program objectives. The method selected will depend on the availability of resources for project deployment and the desired level of rigor needed for project reporting and decision-making.

Work may begin on the development and verification of any of the three types of assessment methods, but should reflect identified monitoring objectives. For example, rapid wetland assessment methods (Level 2) that are developed using best professional judgment can be tested using results from more intensive wetland monitoring activity (Level 3). Results from both Level 2 and Level 3 assessments can be used to enhance the utility or test the efficacy of landscape scale (Level 1) assessments. The three types of assessment are generally described as:

Level 1 - Landscape Assessment

These assessments rely almost entirely on Geographic Information Systems (GIS) and remote sensing data to obtain information about watershed conditions and the distribution and abundance of wetland types in the watershed. Wetland (acreage) trends analysis that is conducted by the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) is a Level 1 type of assessment.

Also, wetland landscape profiles and landscape development indices are used in "Level 1" assessments. Landscape development indices (LDI) involve the characterization of lands that surround assessed wetlands, including their buffer. Metrics used in the LDI approach, such as road density, percent forest cover, land use category, and presence of drainage ditches, can provide preliminary information on wetland condition within a watershed. Field-based monitoring efforts (Level 2 and 3) can be targeted within parts of a watershed and to specific wetlands in need of more rigorous assessment.

Table 1

3-Level Technical Approach

	Products/Applications
Level 1 - Landscape Assessment: Use GIS and remote sensing to gain a landscape view of watershed and wetland condition. Typical assessment indicators include wetland coverage (NWI), land use and land cover	•Targeting restoration and monitoring •Landscape condition assessment •Status and trends •Integrated reporting CWA 305(b)/303(d)
Level 2 – Rapid Wetland Assessment: Evaluate the general condition of individual wetlands using relatively simple field indicators. Assessment is often based on the characterization of stressors know to limit wetland functions e.g., road crossings, tile drainage, ditching.	•401/404 permit decisions •Integrated reporting •Watershed planning •Implementation monitoring of restoration projects, including nonpoint source BMPs,and Farm Bill programs
Level 3 – Intensive Site Assessment Produce quantitative data with known certainty of wetland condition within an assessment area, used to refine rapid wetland assessment methods and diagnose the causes of wetland degradation. Assessment is typically accomplished using indices of biological integrity or hydrogeomorphic function.	•WQS development, including use designation • Integrated reporting •Compensatory mitigation performance standards •Verify levels 1 and 2 methods

Level 2 - Rapid Assessment

Rapid assessments use relatively simple metrics for collecting data at specific wetland sites. These methods should provide a single rating or score that shows where a wetland falls on the continuum ranging from full ecological integrity (or least impacted condition) to highly degraded

(poor condition).

A "rapid" method should take two people no more than four hours of field time, and one half day of office preparation and data analysis to reach a condition score. Once verified with "Level 3" site intensive assessments, rapid assessment methods can be used for regulatory decision making, local land and water use planning, and the assessment of ambient wetland condition.

Level 3 - Intensive Site Assessment

This is a more rigorous, field-based method that provides higher resolution information on the condition of wetlands within an assessment area, often employing wetland bioassessment procedures (i.e., indices of biological integrity "IBI") or HGM functional assessment methods.

The robust metrics used in "Level 3" assessments produce information that can be used to (a) refine rapid assessment methods based on a characterization of reference condition, (b) diagnose the causes of wetland degradation, (c) develop design and performance standards for wetland restoration, including compensatory wetland mitigation, and (d) support the development of water quality standards that are protective of wetlands.

E) Quality Assurance

Wetlands monitoring programs will include Quality Management Plans and Quality Assurance Project Plans (QAPP), maintained and peer reviewed in accordance with EPA Policy to ensure the scientific validity of monitoring and laboratory activities. These plans are used to prevent the introduction of both random and systematic errors into data analysis and reporting. They ensure the scientific validity of sampling, laboratory, and data analysis and reporting activities.

QAPPs should reflect the level of data quality appropriate for specific uses of data (e.g., reporting status and trends, prioritizing restoration activity and assessing the performance of compensatory mitigation projects). In particular, States should be careful not to assume that a QAPP developed for the monitoring and assessment of streams, lakes or estuaries is directly suitable for wetlands.

For example, new State wetland monitoring programs will likely conduct a significant amount of testing on assessment indicators and methods. Some of that testing work will be accomplished during the actual implementation of wetland survey projects. For that situation, the overall project QAPP would have to explain how acquired sampling data would be used to independently verify the efficacy of methods used in the survey, as well as to document the statistical certainty of survey results.

In general, a QAPP can be thought of as a guide, a work plan, or a wetland sampling plan used to ensure scientific validity and provide consistency between field crews, sampling seasons, and differing sample sites. It can keep a project team on task so that they will produce timely and defensible results.

F) Data Management

The State uses an accessible electronic data system for water quality, toxicity, sediment chemistry, habitat, and biological data (following appropriate metadata and State/Federal geo-locational standards) with timely data entry and public access.

The State should also have the capability of managing available geospatial data for wetlands for use in Geographical Information System (GIS) applications (e.g., "Level 1" wetland assessment). Monitoring and assessment should be conducted with the intent that collected data and analyzed data will be archived to allow for its use in future studies. The selection of a data management system should be planned in the initial phases of a monitoring project and program.

EPA encourages States to enter wetland monitoring data into EPA's central water quality data warehouse (See: *http://www.epa.gov/storet/*). The "STORET" data warehouse is used by State environmental agencies, EPA, other federal agencies, universities, and others for the exchange of data of known quality. Over time, all wetland survey data gathered by the States should be entered into the warehouse. For States that do not currently enter their data into the water quality data warehouse, monitoring strategies should indicate that entry will be accomplished as quickly as possible. The entry of data gathered from a reference wetland network is a reasonable first step toward accomplishment of that goal.

The EPA is committed to working with States to provide training and technical support in the use of the STORET data warehouse. That partnership will help improve data sharing and reduce the cost of wetland monitoring by minimizing duplicative sampling among states. For example, neighboring states that share ecoregions and similar wetland classes may be able to use existing, stored data to assess wetland reference condition and thereby build a common set of wetland assessment methods.

In addition, the State should store its wetland assessment information in an accessible electronic database. EPA strongly recommends that all States use either the Assessment Database (ADB) or an equivalent database. The ADB is a relational database application for tracking water quality assessment information, including use attainment, and causes and sources of impairment. It is the basis of Clean Water Act Section 305(b)/Integrated Reporting.

The ADB supports three principal functions:

- Improve the quality and consistency of water quality reporting;
- Reduce the burden of preparing reports under Clean Water Sections 305(b), 303(d), 314, and 319 of the Clean Water Act (CWA); and
- Improve water quality data analysis.

As such, it serves as an analytical tool for States in the process of developing water quality standards that are specific to wetlands. For more information about the ADB, visit *http://www.epa.gov/waters/adb/index.htm*.

G) Data Analysis/Assessment

Data analysis procedures include the design and use of field data sheets and the specification of statistical/graphical analysis methods. The documentation of procedures, prior to environmental sampling, ensures monitoring and assessment data are produced and analyzed in a timely and cost effective manner. It also ensures that the rigor of wetland sampling and analysis is conducted in a manner that is commensurate with that needed for a particular type of decision-making. For example, the quality of assessment results needed for general wetland resource planning may differ from the quality needed for water quality criteria development.

States should document or reference their wetland data analysis and assessment procedures in their Strategy and relate them to the objectives identified under "Element B - Monitoring Objectives." The strategy also should describe the data analysis procedures that will be used to characterize a wetland or wetlands relative to an established reference condition.

H) Reporting

The State produces timely and complete water quality and wetland condition reports. EPA expects that wetland monitoring and assessment will be conducted to specifically inform wetland management decisions. The intended user group, format, style and peer review requirements of project reports should be identified in the initial phases of a monitoring and assessment project.

The EPA encourages all States to enter wetland assessment results produced from ambient monitoring surveys into EPA's Assessment Database (ADB), as mentioned in "Element F." Information entry may include an interpretation of those results and narrative describing how the reported information will be used to inform wetland management decisions.

All available wetland assessment information should be included in the State CWA Section 305(b)/Integrated Report. That report, which draws upon information from the Clean Lakes Program, nonpoint source program, CWA Section 303(d) listed waters and other assessments, is the primary State monitoring program report to EPA. Integrated Reporting guidance is available at *http://www.epa.gov/owow/tmdl/2006IRG/*.

The EPA also is interested in partnering with the States to integrate wetland monitoring and assessment information with CWA Section 404/401 permit tracking systems. Several such

systems are currently under development by the U.S. Army Corps of Engineers and the States.

I) Programmatic Evaluation

The State, in consultation with its EPA Region, conducts periodic reviews of each aspect of the monitoring program to determine how well the program serves its water quality decision needs for all State waters, including all waterbody types. The internal audits will identify gaps in information production that can be filled as a program matures. Program evaluation may consist of a periodic program review by a technical or policy advisory committee. During periodic review, the EPA expects that States will document how wetland monitoring and assessment information is used to produce beneficial environmental outcomes (e.g., prioritize wetland protection and restoration to aid recovery of impaired waterbodies, develop design and performance measures for compensatory wetland mitigation projects). The review also provides an opportunity to identify contingencies that will allow wetland monitoring and assessment activity to continue in the event of a funding shortfall.

J) General Support and Infrastructure Planning

The State identifies current and future monitoring resources needed to fully implement its monitoring program strategy including those components that are not yet in place. The start-up of a wetland monitoring and assessment program will likely occur at geographical locations where there are wetlands at risk, discretionary dollars, interested people and existing data. Work at those locations should take into account the logistics and budget resource needs relative to project staffing, training, field operations (e.g., access to private properties), laboratory needs and
office operations (e.g., access to existing information, data management and analysis). The actual costs of such projects should be documented in terms of both money and time. Such budget documentation forms the basis for future funding requests and project plans.

All needs should be assessed and discussed with EPA Regional staff during the preparation of proposals for CWA Section 104(b)(3) grants, 106 grants and/or Performance Partnership Grants.

Appendix III: Wetland Water Class & WQS Excerpt from 2012 CTCR Draft Water Quality Standards

PROPOSED 2012 REVISIONS TO CCT WATER QUALITY STANDARDS, CHAPTER 4-8 OF TRIBAL CODE THAT PERTAINS TO WETLANDS:

Wetlands are classed as a Special Resource Water. Applicable water quality criteria for this class are primarily narrative (for example, "shall not exceed natural conditions") with numeric criteria for dissolved gas and turbidity.

4-8-5 (f) Special Resource Water Class (SRW):

(1) *General characteristics*: Water quality of this class will be varied and unique as determined by the Department. These are fresh or saline waters that comprise a special and unique resource to the Reservation and may receive specific management. Included are:

A) Special Fishery Waters (SFW), waters that do not meet water quality (aquatic life) criteria year round for migratory salmonid but have important salmonid fisheries and/or special cultural values; and

B) Wetlands, for which water quality criteria are described in subsection 4-8-5(f)(3) of this section. Wetland general characteristics, characteristic uses and other criteria are described in Wetlands section 4-8-5(g) below.

(2) *Characteristic uses, SFW*: Characteristic uses may include but not be limited to, the following:

(A) Water supply (domestic, industrial, agricultural and stock watering).

(B) Aquatic life:

(i) Cold water fish and aquatic life.
(ii) Resident warm water fish and aquatic life.

(C) Ceremonial and religious water use.

(D) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment).

(E) Commerce and navigation.

(F) Wildlife habitat.

(3) *Water quality criteria*:

(A) Microbial organisms (bacteria) shall not exceed natural conditions.

(B) Dissolved oxygen - no measurable decrease from natural conditions.

(C) Total dissolved gas shall not vary from natural conditions unless the water body has been designated SFW. Such as designation requires that total dissolved gas shall not exceed 110 percent (%) of saturation at any point of sample collection. For the Columbia River SFW a waiver of up to 120% could be granted on request during periods of high flows above 7Q10F (210K cfs) or special dam operations.

(D) Temperature - no measurable change from natural conditions unless the water body has been designated SFW. Such as designation requires that temperature shall not exceed 13.0°C from February 1 through April 30 and cold water refugia protection is available year round to migratory salmonid.

Note: temperature criteria are based on the highest 7-day average of the daily maximum values (Highest 7-DADMax)

(E) pH - no measurable change from natural conditions.

(F) Turbidity shall not exceed 5 NTU over background conditions.

(a) **Wetlands**:

(1) All wetlands within the exterior boundaries of the Reservation that are not constructed wetlands shall be subject to water quality criteria in Special Resource Water Class (subsection 4-8-5 (f)(3) above) and, as with other surface waters, to provisions described in "Narrative Criteria" (section 4-8-6), "Antidegradation Policy" (section 4-8-15), and "Toxic Substances", narrative criterion (section 4-8-7) within this Chapter.

(2) *General characteristics*: These are waters that comprise an important and unique resource to the Reservation and may receive specific management. Water quality shall be maintained at naturally occurring levels, within the natural range of variation for the individual wetland, and shall meet or exceed the requirements of selected and essential uses.

(3) *Characteristic uses*: Characteristic use may include but not be limited to, the following:

(A) Water supply (stock watering).

(B) Aquatic life.

(C) Ceremonial and religious water use.

(D) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment).

(E) Wildlife habitat.

(4) *Water quality criteria*: See Special Resource Water Class subsection 4-8-5 (f)(3) above.

(5) The primary means for protecting water quality in wetlands is through implementing the antidegradation procedures described in section 4-8-15 of this Chapter.

(6) In addition to designated characteristic uses, wetlands may have existing beneficial uses that are to be protected that include ground water exchange, shoreline stabilization, storm water attenuation or flood flow alteration, sediment/toxic retention, and nutrient removal/transformation.

(7) Wetland water quality and natural physical and biological characteristics shall be maintained and protected by:

(A) Maintaining hydrological conditions*, including hydroperiod, hydrodynamics, and natural water temperature variations;

(B) Maintaining the native hydrophytic vegetation; and

(C) Maintaining substrate characteristics necessary to support existing and designated uses.

* Protecting natural hydrological conditions will prevent significant adverse impacts on: water currents, erosion or sedimentation patterns; the chemical, nutrient and dissolved oxygen regime of the wetland; the normal movement of aquatic fauna; the pH of the wetland; and normal water levels or elevations.

(8) Wetlands shall not be used in lieu of storm water treatment, except as specified by subsection 4-8-5(g)(11) of this section, below. Storm water shall be treated before discharge to a wetland.

(9) Point and nonpoint sources of pollution shall not cause destruction or impairment of wetlands except where authorized by the Department and the Tribal Council and approved by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act.

(10) Wetlands shall not be used as repositories or treatment systems for wastes from human sources, except as specified by subsection 4-8-5(g)(11) of this section, below.

(11) Wetlands intentionally created from non-wetland sites for the sole purpose of wastewater or storm water treatment (constructed wetlands) are not considered "surface waters of the Reservation" and are not subject to the provisions of this section.