Quinault Indian Nation

Wetland Program Plan (2016–2021)

Addressing Three Core Elements:

- Monitoring and Assessment
- Voluntary Protection and Restoration
- Regulation

2018 update

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Acknowledgement

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The Quinault Indian Nation would like to acknowledge the United States Environmental Protection Agency (EPA) for funding the development of this Wetland Program Plan. We are very appreciative of the support provided by Region 10 EPA staff in the continued development of a holistic wetland plan for the Quinault Indian Nation.

Quinault Indian Nation Wetland Program Plan Qualification

This plan identifies activities necessary to protect, enhance, restore, and manage wetlands within the Quinault Indian Reservation. These activities are modeled after the Core Elements Framework (US EPA 2013) developed by the EPA. Certain activities identified within this plan must occur sequentially, while others can occur concurrently or independently. Many of the actions and activities proposed in this plan are currently not funded. Successful completion of these activities depends upon securing necessary financial support.

Quinault Mission

To always seek the Creator's wisdom and guidance to enhance the quality of life of our Nation's people through:

1) Preserving our roots: sovereignty, treaty rights and constitution, cultural traditions, and natural resources
2) Promoting our wings: employment and educational opportunities, prosperity, and physical, spiritual, and emotional well-being

Quinault Vision

We are a nation that draws strength from the values of our past and the resources within our community to manifest our shared future. We are a healthy, thriving, and sustainable community that inspires hope and self-reliance in our people. Our youth share the responsibilities of leadership and are prepared to take care of their future. We recognize the contribution of each citizen, honor authentic engagement and open communication, and have deep reverence for the Quinault Spirit that shines through our people, our ways, and our beautiful lands. We know who we are and exercise our sovereignty with wisdom, for the greater good of all. The Quinault homeland is the cradle of Quinault culture.

Quinault Division of Natural Resources Mission

To provide support, guidance, and oversight to all divisions, programs, and projects relating to the natural resources of the Quinault Indian Reservation and the Usual and Accustomed Area.

Quinault Wetland Program Mission

To manage, preserve, protect, and enhance wetlands and their associated ecological and cultural functions on the Quinault Indian Reservation and within the Quinault Usual and Accustomed Area for the benefit of the Quinault Indian Nation now and for generations to come.

Figure 1.1 Sundew (*Drosera rotundifolia)* growing in a forested wetland on the Quinault Indian Reservation, Washington, USA.

Background

The 208,150-acre Quinault Indian Reservation (QIR) is located in the southwest corner of the Olympic Peninsula (Figure 1.1), approximately 35 miles north of the town of Hoquiam, Washington. The QIR stretches from within the Pacific Ocean to the foothills of the Olympic Mountains. It is bounded to the east and north by the Olympic National Forest and the Olympic National Park. To the west lies the Copalis National Wildlife Sanctuary and a few miles to the south is the Bowerman Basin waterfowl refuge.

The Quinault Indian Nation (QIN) Usual and Accustomed Area (UAA) consists of the usual and accustomed fishing areas confirmed by Judge Boldt in the original U.S. v. Washington case, 384 F. Supp. 312 (1974). They include: the "Clearwater, Queets, Salmon, Quinault (including Lake Quinault and the Upper Quinault tributaries), Raft, Moclips, and Copalis [Rivers] and Joe Creek." They also include "Grays Harbor, and all those streams which empty into [it]," the entire Chehalis River system including all of its tributaries as well as the salt waters "adjacent to their territory."

The QIR, outside of its riparian areas and a few prairies is largely covered by dense forests that provide wildlife for food and textile materials for clothing, shelter, transportation, and artistic expression. For millennia, the Quinault people have been sustained by the fruits of the land: its forests, fish, and wildlife. Abundant rainfall nourishes dense stands of coniferous-deciduous forests and sustains five species of salmon, including the famed Quinault "blueback" sockeye (*Oncorhynchus nerka*). The harvest of salmon has supported the very fabric of the Quinault culture and economy since time immemorial.

All of the QIR, with the exception of the northeastern portion, is low elevation and relatively flat. The northeastern portion gradually ascends to an elevation of 2,769 feet above sea level. Several major rivers cross the QIR including the Queets, Raft, and Quinault. The QIR lies within the temperate rainforest and receives approximately 80 inches of precipitation along the coast and up to 150 inches of precipitation in the northeast mountainous regions.

Wetlands provide critical habitat for fish and wildlife and are culturally important to the Quinault. Wetlands within the boundary of the QIR are well distributed across the landscape and their shape, size, alignment, and classification type reflect glacial movement and runoff as well as the Reservation's coastal location. Wetlands occurring on the QIR fall within each of the primary classification types including marine, estuarine, riverine, lacustrine, and palustrine. A preliminary wetland plant observation list, highlighting the botanical diversity of wetlands on the QIR was developed in 2015 and can be found in Appendix A.

In addition to the development of this plan, funding provided by the Environmental Protection Agency was used to develop a wetland inventory map layer with geographical information systems (GIS) software. Recent high-resolution imagery and a variety of ancillary GIS data were utilized to create a wetland suitability index (WSI), which was then refined and calibrated to produce a draft wetland polygon layer. The accuracy of the draft wetland layer was assessed by verifying wetland presence or absence within estimated wetland boundaries and anticipated uplands at a variety of randomly selected modelled wetland/upland locations throughout the QIR.

Figure 1.2 A restored wetland pond within the Quinault Indian Reservation, Washington, USA.

This modelled information identifies 17,747 wetland acres across the QIR, of which, 51% are classified as freshwater forested/shrub wetlands, which have been historically underrepresented through the National Wetland Inventory digitization methodology. The model also indicates that 20% of the wetland acreage on the QIR is classified as lake (predominately comprised of Lake Quinault), 18% is riverine, and 7% is classified as freshwater emergent wetlands. The remaining 5% of the wetland acreage modeled on the QIR includes estuarine and marine deepwater wetlands, freshwater ponds, and less than 1% of the wetland acreage, that will need to be categorized using field verification methods.

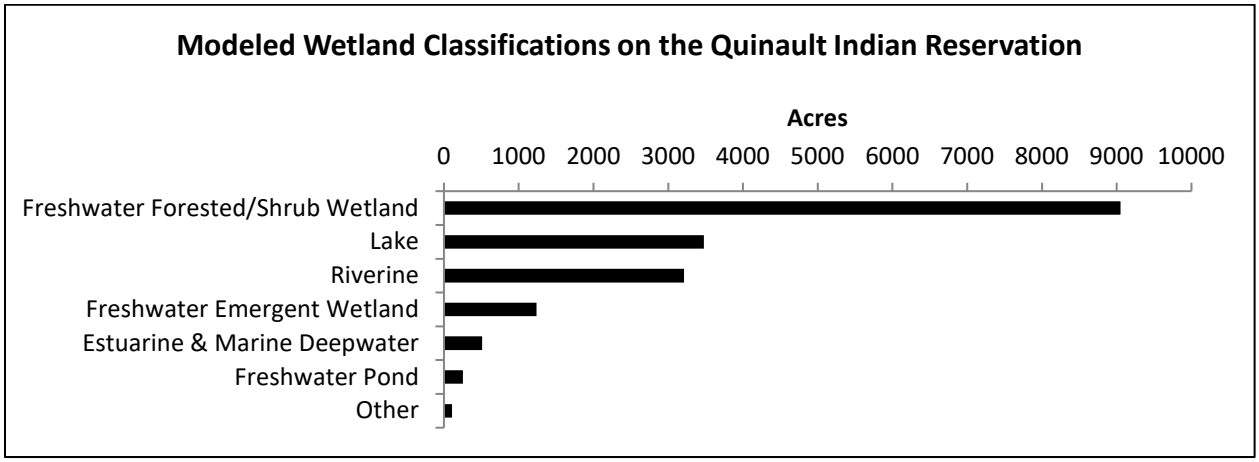

Figure 1.3 Quantity of modeled wetland acres across the Quinault Indian Reservation, Washington State based upon classification type.

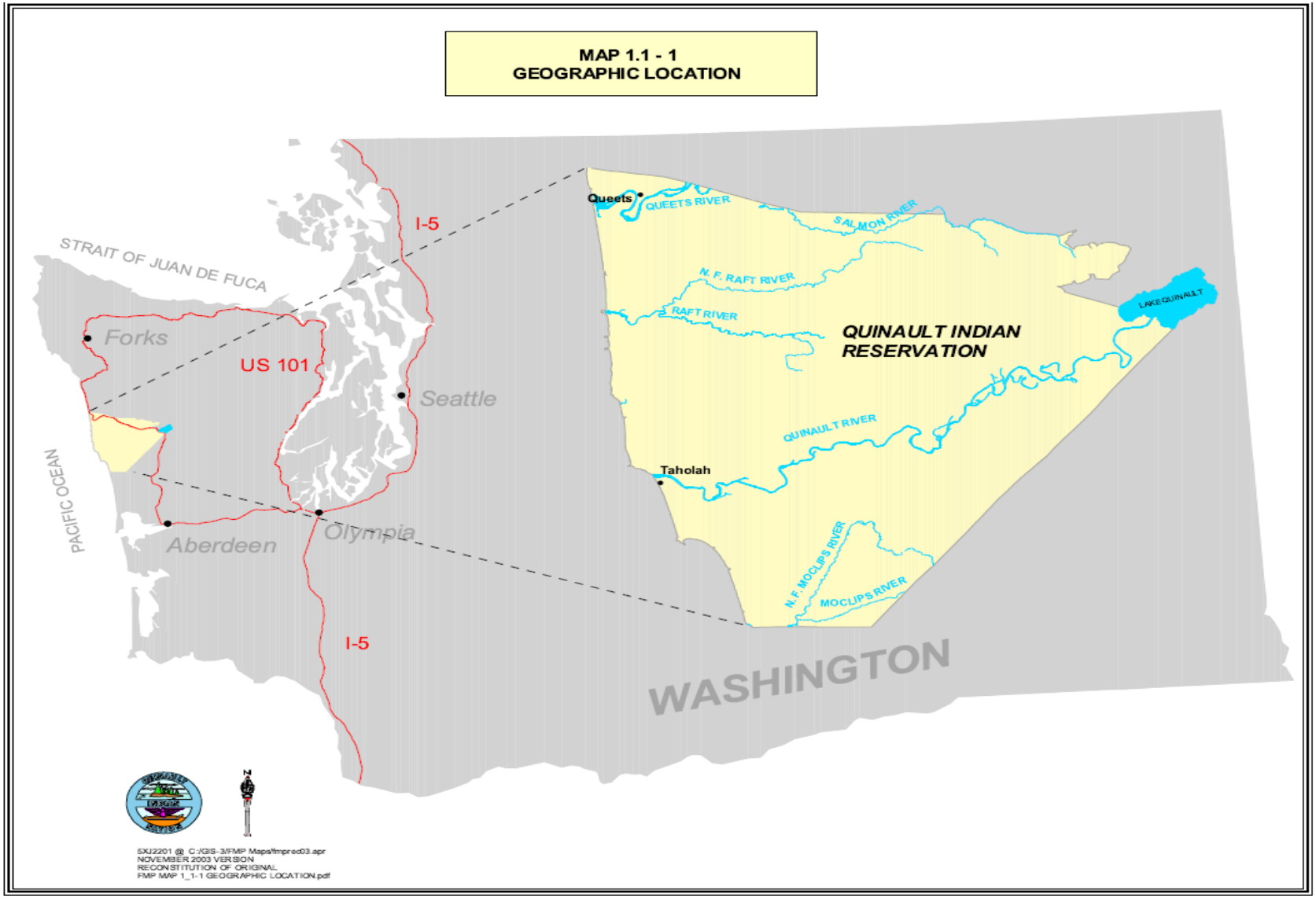

Figure 1.4 Geographic location of the Quinault Indian Reservation, Washington. USA.

The QIR was drastically fragmented into 80-acre allotments in the late 19th and early 20th centuries resulting in approximately 25,000 acres of privately owned land within the boundaries of the QIR. These allotments were distributed to individuals and families from many different tribes. Over time, land ownership on the QIR became more complex as the land continued to fractionate due to inheritance by members of succeeding generations. This fractionation has significantly influenced management activities as any development, road-building, timber harvest, restoration or other activity requires agreement from the majority of affected landowners.

The 173,000 remaining acres on the QIR are under tribal and Bureau of Indian Affairs (BIA) management. This includes individual Indian-owned trust and tribally owned land. In addition to this, there are approximately 9,000 non-forested acres, which include Lake Quinault, major rivers, ocean beaches, sand bars, gravel pits, urban areas, drivable roads, and wetlands.

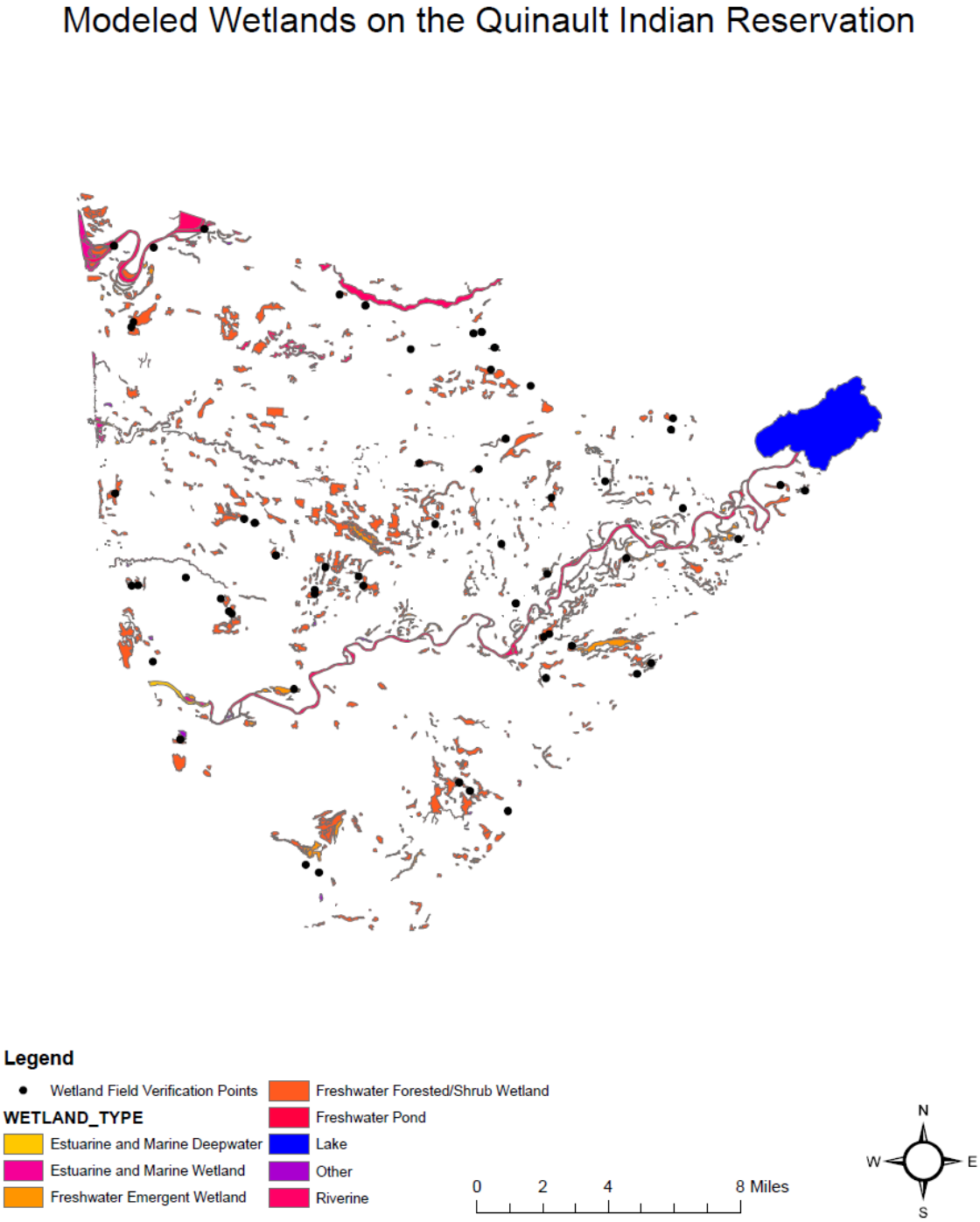

Figure 1.6 Map of the modeled wetland layer based upon wetland type for the Quinault Indian Reservation, Washington, USA.

Historic Management

Lands of the reservation were mismanaged for years under the supervision of the BIA. Excessive timber harvest resulted in devastated lands and waters. Outrage from QIN leaders ultimately led to the development of legislation reforming the relationship between the QIN and the BIA. Subsequently, land use decision making returned to the QIN as they took over management responsibilities for the natural resources on the QIR. Currently, the QIN is working to consolidate their holdings by purchasing trust and fee lands as they become available. These efforts will allow the Nation to manage the land more holistically for the long-term benefit of all.

The EPA has assisted the QIN in efforts of working towards the concept of holistic ecosystem management with funding for the development of a wetland program. These efforts resulted in the development of a general classification of QIR wetlands finalized in 2000. Funding from the EPA under Wetland Program Development Grant #CD-00J77301-0 for the development of this Wetland Program Plan and more extensive geographic information systems (GIS) wetland modeling was received in 2013. Additional funds have been awarded to the Nation and several of the tasks identified in this plan will be implemented beginning in 2016.

Future Management

This plan includes tasks that strive to identify, document and monitor wetlands across the QIR, to identify priorities for wetlands protection and restoration, and to better manage the Nation's wetland resources through updated regulatory programs. Additionally, tasks to document culturally important wetland plant species on the Reservation are included. This will result in a cultural overlay to wetland functional criteria that can be incorporated into a ranking process to assist in the identification of significant wetlands. The structural framework of a long-term wetland monitoring and assessment program will also be developed. All of these components will facilitate a more knowledgeable and holistic approach to identify wetlands for conservation and restoration activities.

Figure 1.7 Discussing wetland buffers as a holistic management approach to the working forests in forested/shrub wetland on the Quinault Indian Reservation, Washington, USA.

The development and adoption of this plan strives to ensure conservation and restoration of significant wetlands on the QIR, to develop tools to monitor and assess wetland conditions or functions and to develop regulations to protect wetlands and associated aquatic resources.

Figure 1.8 The edge of an estuarine wetland within the Quinault Indian Reservation, Washington, USA.

Collaborative Efforts

This document will facilitate a collaborative process within various Divisions and Departments of the QIN. As such, endeavors to preserve and enhance wetland structure, function and cultural significance may be intertwined with the development or update of the following management documents:

- QIN Land Consolidation Plan
- Wildlife Management Plan
- Stream Habitat Restoration Plan
- Climate Change Adaptation Plan
- Forest Management Plan
- Road Maintenance and Abandonment Plan
- Watershed Restoration Plan
- Village Relocation Plan

Within the Division of Natural Resources, the Wetland Program Plan will facilitate collaboration amongst the Forestry, Fisheries, Environmental Protection, and BIA-supervised Trust Forestry departments in all wetland-related projects.

Core Element Actions and Activities

This plan is organized according to the EPAs Core Elements discussed below: 1) Monitoring and Assessment; 2) Voluntary Protection and Restoration; and 3) Regulation. Each Core Element

contains goals, objectives, and activities to provide the best available estimate of priority needs for the QIN over the six-year planning period. The activities identified below are meant to be used as guidance and are subject to revision and/or redirection depending upon QIN priorities, funding availability, and staffing constraints. A project timeline for the completion of identified tasks for each of the Core Elements is provided in the following sections.

Core Element: Monitoring and Assessment

Tasks included in this core element rely heavily upon the QDNR Wetland Core Team. This team was compiled in 2013 largely to assist in the development of this plan and consists of the staff identified below. Participating staff from the Environmental Protection Department include: Wetland Specialist (temporary position to be hired with 2016 wetland program development grant funding); Fish Habitat Biologist; Water Quality Specialist; Invasive Species Coordinator; Wildlife Biologist; Cultural Resource Specialist; and Environmental Protection Manager. Participants from the Forestry Department include: Silviculturist; Inventory Forester; Forest Roads Manager; Planning Forester; and the Forest Manager. Participants from the Fisheries Department include: Habitat Management Specialist and the Fisheries Manager. The Division Director also participates on the team as their schedule allows.

The QIR has nearly 18,000 acres of modeled wetlands; some of which remain in a natural unaltered state and others that are a direct result of historic management practices. In order to manage these wetlands as a holistic component of the landscape, a monitoring and assessment strategy needs to be developed and must include a cultural component to be successful. Thus far, the management of QIR wetlands has been unstructured, only occurring on an individual site-specific basis as a component of other projects. The tasks identified under this core element will facilitate a more strategic approach to wetland management across the landscape with specific emphasis to the cultural importance of wetlands. This type of approach will represent a more holistic approach to management, as directed by the Quianult Council, and will hopefully reconnect tribal members to wetlands that have played a significant role in their history.

Goals:

- To guide and coordinate monitoring and assessment efforts of the QIN in order to holistically manage and conserve wetlands on the QIR.

Objectives:

- Develop a wetland monitoring and assessment program for the QIN to monitor the status and trends of wetlands within the QIR consistent with Application of Elements of a State Water Monitoring and Assessment Program for Wetlands (EPA 2006) by using EPA's three-tier approach. This will provide decision makers with the best possible information on the extent, type, and health of the QIN's wetlands and the ecosystem services that they provide.

Administrative Activities	2016	2017	2018	2019	2020	2021	Responsible Party	Status
Investigate alternative funding sources for QIN wetland program	X	X	X	X	X	X	Grant Writer	Active
Hire a Wetland Specialist	X						Environmental Protection Manager	Planned*
Conduct monthly meetings of Wetland Group	X	X	X	X	X	X	Wetland Specialist, Water Quality Specialist, Fish Habitat Biologist	Planned*
Continue participation with the Intertribal Wetland Working Group	X	X	X	X	X	X	Wetland Specialist	Active*
Design a five-year wetland monitoring strategy	X						Wetland Specialist, Water Quality Specialist	Planned*
Identify biological indicators to be monitored	X						Wetland Specialist	Planned*
Develop a Quality Assurance Project Plan to ground truth the modeled GIS QIR wetland layer (developed as part of 2014-2015 funding)	X						Wetland Specialist	Planned*
Ground truth modelled wetland layer		X					Fish Habitat Biologist	Planned*

* Asterisks denote activities funded with EPA FY2016 Wetland Program Development Grant funding

Compile data and report to EPA on progress toward accomplishing tasks identified in this Wetland Program Plan	X	X	X	X	X	X	Environmental Protection Manager	Planned*

Program Development Activities	2016	2017	2018	2019	2020	2021	Responsible Party	Status
Integrate wetland classification and assessment as a component of the ID Team process that contributes to the layout of timber harvests to educate pre-sale foresters about types of wetlands, determination factors, and appropriate buffer requirements		X	X	X	X	X	Fish Habitat Biologist	Active
Update the standardized base map of QIR wetlands annually after field verification	X	X	X	X	X	X	Wetland Specialist	Active
Develop curricula for continued staff training	X	X					Contractor	Planned*
Train QIN staff in wetland ecology and assessment techniques	X	X					Contractor	Active*
Develop monitoring design and rationale for site selection by reviewing existing scientific methods, field testing of methods, and then adoption of rapid assessment methods to serve monitoring objectives for a Level II Rapid Wetland Assessment in order to determine wetland condition	X						Wetland Core Team	Planned*
Select a core set of indicators or functions to represent wetland condition	X						Wetland Core Team	Planned*

* Asterisks denote activities funded with EPA FY2016 Wetland Program Development Grant funding

Develop a Quality Assurance Project Plan (QAPP) to allow for the collection of data in a Level II Rapid Wetland Assessment	X						Wetland Specialist	Planned*
Develop a geodatabase to facilitate data collection during Level II Rapid Wetland Assessment	X						GIS Staff	Planned*
Implement a pilot Level II Rapid Wetland Assessment approach to a subset of diverse reference wetland classes across QIR watersheds		X					Wetland Specialist	Planned*
Develop data collection methodology and associated QAPP in order to conduct climate change vulnerability assessment for wetlands	X						Contractor	Planned*
Identify and hire a contractor to assess QIR wetland vulnerability to climate change effects	X						Wetland Specialist	Planned*
Conduct a broad stroke climate change vulnerability assessment for QIR wetlands to explore climate change effects on ecological function, economic value, and cultural values		X					Contractor	Planned*
Combine wetland assessment into QIN natural resource and infrastructure climate change assessment for distribution		X					Environmental Protection Manager	Planned*

* Asterisks denote activities funded with EPA FY2016 Wetland Program Development Grant funding

Core Element: Voluntary Protection and Restoration

The fragmented ownership patterns across the QIR significantly affect tasks under this core element. Thus, activities to provide protection and/or restoration to wetlands have only been conducted on lands under the direct ownership of the QIN. Individually owned lands held in trust by the BIA are managed primarily for economic return and the agency asserts that to hold individual landowners responsible for additional resource protection or restoration activities would negatively affect the financial return. Any activity on these lands also requires majority agreement amongst the landowners and given that allotments can have hundreds of owners, acquiring enough agreement to move forward can be a daunting bureaucratic process. The largest restoration project to date on the QIN owned Moses Prairie is currently underway and has generated a lot of tribal interest and participation. It is hoped that this project will serve as a catalyst for additional restoration work and that interest amongst individual landowners will increase. Tasks under this core element are intended to increase tribal member interest in and knowledge of wetland restoration and protection options while also working to help prioritize the protection and/or restoration of QIN owned wetlands.

Goals:

- Identify ecologically and culturally important wetlands while working to maintain, improve, and increase their extent and function through protection and restoration.

Objectives:

- Protect intact wetlands from degradation or destruction; restore wetland areas, condition, and functions; monitor and track progress over time; and modify practices as appropriate.
- Enhance native vegetation, species diversity, and structural complexity on QIR wetlands and riparian corridors with an emphasis on increasing culturally significant plants and plants that provide significant fish and wildlife benefits.

Administrative Activities	2016	2017	2018	2019	2020	2021	Responsible Party	Status
Identify acquisition opportunities and strategies	X	X	X	X	X	X	Lands Manager	Active
Identify ways to increase tribal member knowledge of and accessibility to wetlands with high cultural, spiritual, and recreational values in order to increase awareness and interest in wetland protection, management and restoration		X	X	X	X	X	Cultural Resources Specialist	Planned
Write enthnobotanical guidebook including wetland plants of significance	X						Contractor	Planned*
Publish a first edition Quinault ethnobotanical guidebook including wetland plants of significance		X					Contractor	Planned*

* Asterisks denote activities funded with EPA FY2016 Wetland Program Development Grant funding

Program Development Activities	2016	2017	2018	2019	2020	2021	Responsible Party	Status
Identify wetlands for protection, enhancement and restoration activities	X	X					Wetland Specialist	Planned
Initiate the ecological restoration and/or enhancement of wetlands through control of invasive species, the reintroduction of fire, or other alternative mechanisms	X	X	X	X	X	X	Environmental Protection Department	Active
Develop measures to control and prevent the spread of invasive species	X	X	X	X	X	X	Invasive Species Specialist	Active
Work to reduce or minimize the impacts of invasive species, restore floodplain functions, restore in-stream habitat, and restore wetland and riparian areas to increase water quality and flood storage capacity	X	X	X	X	X	X	Wetland Core Team	Planned
Implement pollution source abatement (coordinate the removal of garbage, from tribal wetlands) and QIR-wide nonpoint source reduction activities	X	X	X	X	X	X	Environmental Protection Department/Public Works	Active

Core Element: Regulation

It is imperative that improvements to the existing administrative permitting process at the QIN are made prior to addressing the complexities of regulating wetland protection, restoration, or use. The tasks included under this core element rely upon staff to collaborate in their efforts of improving the administrative tasks associated with permit issuance and compliance tracking. Comprehensive regulation of wetlands will only be feasible if the Quinault Business Committee elects to develop policy that will guide various levels of protection for wetlands within the QIR. Once policy is developed and the proper permitting structure in place, additional steps towards achieving comprehensive wetland regulation will be possible.

Goals:

- Revise QIN Title 61 - Natural Resources Code to be more protective of wetlands and aquatic resources

Objectives:

- Revise existing QIN regulatory code to increase wetland and aquatic resource protection
- Provide improved data management to permitting process in order maximize efficient permitting and strengthen enforcement efforts

Administrative Activities	2016	2017	2018	2019	2020	2021	Responsible Party	Status
Explore applicable options to enable electronic web-based permitting for tracking permits and regulatory review activities	X	X	X	X	X	X	Fish Habitat Biologist	Active
Continue to develop and maintain clear guidelines for roles, responsibilities, and procedures for review of permits for activities that require approval	X	X	X	X	X	X	Fish Habitat Biologist	Active
Continue to identify opportunities to streamline permit processes to ensure adequate avoidance, minimization and mitigation measures are addressed	X	X	X	X	X	X	Fish Habitat Biologist	Active
Develop and implement general permits for activities that are similar in nature or recurring and have predictable outcomes and effects	X	X	X	X	X	X	Fish Habitat Biologist	Active
Explore opportunities for additional wetland focused staff training	X	X					Wetland Core Team	Planned*

* Asterisks denote activities funded with EPA FY2016 Wetland Program Development Grant funding

Program Development Activities	2016	2017	2018	2019	2020	2021	Responsible Party	Status
Develop GIS related tools to assist in enforcement investigations and contested case proceedings	X	X					GIS Department	Planned
Develop enforcement and compliance mechanisms to deter violations	X	X					Resource Protection Department	Planned
Develop clear guidance for staff involved with permitting to achieve maximum protection on wetlands of importance as identified by the QIN					X	X	Water Quality Specialist	Planned
Evaluate existing buffer protection standards associated with water quality, flood control and other functions/values	X	X					Wetland Specialist	Planned
Reduce fish passage barriers by identifying undersized culverts that connect wetlands to streams and prioritize for replacement or removal while maintaining grade to prevent draining of the wetland when feasible	X	X	X	X	X	X	Fish Habitat Biologist	Active

Program Evaluation

This Wetland Program Plan should be evaluated every three years to ensure that the plan is achieving the actions and activities as outlined. Program evaluation should include comment from the following Departments in the Division of Natural Resources: Environmental Protection, Forestry, and Fisheries. The evaluation process should include the following considerations:

- Has funding been adequate to support the accomplishment of program goals and objectives?
    - What additional sources of funding should be pursued?
- Do the goals, objectives, milestones, or schedule need revision?
- What is the state of QIR wetlands?
    - Are the conditions or quantity of wetlands changing?
- Are activities on the QIR contributing to a decline in wetland condition?
- Has any specific wetland restoration occurred? If so, what, where, and how much total acreage?
    - Was it effective?
- Are wetland regulatory protections effective?

Comprehensive review of this Wetland Program Plan should be conducted beginning in 2020 to facilitate application for renewal if so desired.

References

[US EPA] United States Environmental Protection Agency. 2006. Elements of a State Water Monitoring and Assessment Program for Wetlands. Retrieved from: http://www.epa.gov/owow/wetlands/monitor/ on November 10, 2014.

[US EPA] United States Environmental Protection Agency. 2013. Core Elements of an Effective State and Tribal Wetlands Program Framework. Retrieved from: http://water.epa.gov/grants_funding/wetlands/cefintro.cfm on November 14, 2014.

Appendix A. Quinault Indian Reservation Preliminary Plant Observation List

Family	Species	Common Name	N/I*
TREES			
Sapindaceae	*Acer macrophyllum*	bigleaf maple	n
Betulaceae	*Alnus rubra*	red alder	n
Pinaceae	*Picea sitchensis*	Sitka spruce	n
Pinaceae	*Pinus contorta* var. *contorta*	shore pine	n
Pinaceae	*Pinus contorta* var. *latifolia*	lodgepole pine	n
Pinaceae	*Pinus monticola*	western white pine	n
Salicaceae	*Populus trichocarpa*	black cottonwood	n
Pinaceae	*Pseudotsuga menziesii* var. *menziesii*	Douglas-fir	n
Cupressaceae	*Thuja plicata*	western redcedar	n
Pinaceae	*Tsuga heterophylla*	western hemlock	n
SHRUBS			
Sapindaceae	*Acer circinatum*	vine maple	n
Cornaceae	*Cornus sericea*	red-osier dogwood	n
Fabaceae	*Cytisus scoparius*	Scot's broom	i
Rhamnaceae	*Frangula purshiana*	cascara	n
Ericaceae	*Gaultheria shallon*	salal	n
Ericaceae	*Kalmia microphylla* var. *occidentalis*	bog laurel	n
Caprifoliaceae	*Lonicera involucrata* var. *involucrata*	black twinberry	n
Rosaceae	*Malus fusca*	western crabapple	n
Ericaceae	*Menziesia ferruginea*	fool's-huckleberry	n
Myricaceae	*Myrica californica*	Pacific bayberry	n
Myricaceae	*Myrica gale*	sweet gale	n
Rosaceae	*Physocarpus capitatus*	Pacific ninebark	n
Ericaceae	*Rhododendron groenlandicum*	bog Labrador tea	n
Rosaceae	*Rosa nutkana* var. *nutkana*	Nootka rose	n
Rosaceae	*Rubus bifrons*	Himalayan blackberry	i
Rosaceae	*Rubus laciniatus*	evergreen blackberry	i
Rosaceae	*Rubus leucodermis*	blackcap raspberry	n
Rosaceae	*Rubus parviflorus*	thimbleberry	n
Rosaceae	*Rubus spectabilis*	salmonberry	n
Rosaceae	*Rubus ursinus*	dewberry	n
Salicaceae	*Salix hookeriana*	Hooker willow	n
Salicaceae	*Salix lasiandra* var. *lasiandra*	Pacific willow	n
Salicaceae	*Salix sitchensis*	Sitka willow	n
Caprifoliaceae	*Sambucus racemosa* var. *racemosa*	red elderberry	n
Rosaceae	*Spiraea douglasii* var. *douglasii*	Douglas' spiraea	n
Caprifoliaceae	*Symphoricarpos albus*	common snowberry	n

Ericaceae	*Vaccinium ovatum*	evergreen huckleberry	n
Ericaceae	*Vaccinium oxycoccos*	bog cranberry	n
Ericaceae	*Vaccinium parvifolium*	red huckleberry	n
Ericaceae	*Vaccinium uliginosum*	bog blueberry	n
HERBS			
Asteraceae	*Achillea millefolium*	yarrow	n
Asteraceae	*Ambrosia chamissonis*	silver beachweed	n
Asteraceae	*Anaphalis margaritacea*	pearly everylasting	n
Ranunculaceae	*Anemone oregana*	Oregon anemone	n
Apiaceae	*Angelica lucida*	sea-watch	n
Asteraceae	*Artemisia suksdorfii*	coastal mugwort	n
Rosaceae	*Aruncus dioicus* var. *acuminatus*	Sylvan goatsbeard	n
Brassicaceae	*Barbarea orthoceras*	American wintercress	n
Asteraceae	*Bellis perennis*	English daisy	i
Orobanchaceae	*Boschniakia hookeri*	Vancouver groundcone	n
Saxifragaceae	*Boykinia intermedia*	boykinia	n
Plantaginaceae	*Callitriche heterophylla*	different-leaved water-starwort	n
Plantaginaceae	*Callitriche stagnalis*	pond water-starwort	i
Asparagaceae	*Camassia quamash var.*	camas	n
Brassicaceae	*Cardamine angulata*	seaside bittercress	n
Brassicaceae	*Cardamine hirsuta*	hairy bittercress	i
Caryophyllaceae	*Cerastium glomeratum*	sticky mouse-ear chickweed	i
Onagraceae	*Chamerion angustifolium* ssp. *circumvagum*	fireweed	n
Asteraceae	*Cirsium* sp.	thistle	
Montiaceae	*Claytonia sibirica*	Siberian miner's lettuce	n
Rosaceae	*Comarum palustre*	marsh cinquefoil	n
Convolvulaceae	*Convolvulus soldanella*	beach morning-glory	n
Cornaceae	*Cornus unalaschkensis*	western bunchberry	n
Papaveraceae	*Corydalis scouleri*	Scouler's corydalis	n
Papaveraceae	*Dicentra formosa* ssp. f*ormosa*	Pacific bleeding heart	n
Plantaginaceae	*Digitalis purpurea*	foxglove	i
Droseraceae	*Drosera rotundifolia*	round-leaf sundew	n
Hydrocharitaceae	*Elodea canadensis*	common waterweed	n
Onagraceae	*Epilobium ciliatum*	willowherb	n
Asteraceae	*Erigeron peregrinus* var. *thompsonii*	Thompson's wandering daisy	n
Menyanthaceae	*Fauria crista-galli*	deer cabbage	n
Rosaceae	*Fragaria chiloensis*	coastal strawberry	n
Rubiaceae	*Galium trifidum* var. *pacificum*	small bedstraw	n
Asteraceae	*Gamochaeta ustulata*	purple cudweed	n

Gentianaceae	*Gentiana sceptrum*	staff gentian	n
Rosaceae	*Geum macrophyllum*	largeleaved avens	n
Apiaceae	*Heracleum maximum*	common cow parsnip	n
Caryophyllaceae	*Honckenya peploides* ssp. *major*	sea purslane	n
Boraginaceae	*Hydrophyllum tenuipes*	Pacific waterleaf	n
Hypericaceae	*Hypericum anagalloides*	bog St. John's-wort	n
Asteraceae	*Hypochaeris radicata*	hairy cat's-ear	i
Balsminaceae	*Impatiens* sp.	jewelweed	
Fabaceae	*Lathyrus japonicus* var. *maritimus*	beach pea	n
Asteraceae	*Leucanthemum vulgare*	ox-eye daisy	i
Apiaceae	*Ligusticum apiifolium*	celery-leaf wild lovage	n
Liliaceae	*Lilium columbianum*	Columbian lily	n
Fabaceae	*Lotus corniculatus*	bird's-foot trefoil	i
Onagraceae	*Ludwigia palustris*	marsh primrose-willow	n
Lamiaceae	*Lycopus* sp.	water-horehound	n
Araceae	*Lysichiton americanus*	skunk cabbage	n
Asparagaceae	*Maianthemum dilatatum*	false lily-of-the-valley	n
Brassicaceae	*Nasturtium officinale*	watercress	i
Nymphaeaceae	*Nuphar polysepala*	spatterdock	n
Apiaceae	*Oenanthe sarmentosa*	American water-parsley	n
Oxalidaceae	*Oxalis oregana*	Oregon wood-sorrel	n
Asteraceae	*Petasites frigidus* var. *palmatus*	western coltsfoot	n
Plantaginaceae	*Plantago lanceolata*	English plantain	i
Plantaginaceae	*Plantago macrocarpa*	Alaska plantain	n
Plantaginaceae	*Plantago major*	common plantain	i
Orchidaceae	*Platanthera dilatata*	white bog orchid	n
Polygonaceae	*Polygonum* sp.	knotweecd	i
Potamogetonaceae	*Potamogeton natans*	floating-leaved pondweed	n
Rosaceae	*Potentilla anserina* ssp. *pacifica*	Pacific silverweed	n
Lamiaceae	*Prunella vulgaris*	self-heal	
Ranunculaceae	*Ranunculus repens*	creeping buttercup	i
Boraginaceae	*Romanzoffia tracyi*	Tracy's mistmaiden	n
Polygonaceae	*Rumex acetosella*	sheep sorrel	i
Polygonaceae	*Rumex obtusifolius*	bitter dock	i
Rosaceae	*Sanguisorba officinalis*	great burnet	n
Asteraceae	*Senecio jacobaea*	tansy ragwort	i
Asteraceae	*Senecio sylvaticus*	woodland groundsel	i
Asteraceae	*Senecio vulgaris*	common groundsel	i
Asteraceae	*Sonchus asper*	prickly sow thistle	i
Lamiaceae	*Stachys mexicana*	Mexican hedge-nettle	n
Caryophyllaceae	*Stellaria calycantha*	northern bog starwort	n

Caryophyllaceae	*Stellaria crispa*	crisped starwort	n
Caryophyllaceae	*Stellaria media*	common chickweed	i
Asteraceae	*Taraxacum officinale*	common dandelion	i
Saxifragaceae	*Tolmiea menziesii*	piggyback plant	n
Myrsinaceae	*Trientalis europaea*	Arctic starflower	n
Fabaceae	*Trifolium pratense*	red clover	i
Fabaceae	*Trifolium repens*	white clover	i
Fabaceae	*Trifolium wormskioldii*	salt marsh clover	n
Typhaceae	*Typha latifolia*	common cattail	n
Melanthiaceae	*Veratrum* sp.	wild hellebore	n
Plantaginaceae	*Veronica americana*	American brooklime	n
Plantaginaceae	*Veronica officinalis*	common speedwell	i
Fabaceae	*Vicia nigricans* ssp. *gigantea*	giant vetch	n
Violaceae	*Viola glabella*	stream violet	n
Melanthiaceae	*Xerophyllum tenax*	beargrass	n
GRASS, SEDGES, and RUSHES			
Poaceae	*Agrostis* sp.	bentgrass	
Poaceae	*Aira caryophyllea* var. *caryophyllea*	silver hairgrass	i
Poaceae	*Ammophila arenaria* ssp. *arenaria*	European beachgrass	i
Poaceae	*Anthoxanthum odoratum*	sweet vernalgrass	i
Cyperaceae	*Bolboschoenus maritimus* ssp. *paludosus*	saltmarsh bulrush	n
Poaceae	*Bromus* sp.	brome	
Poaceae	*Calamagrostis* sp.	bluejoint	n
Cyperaceae	*Carex aquatilis* var. *dives*	Sitka sedge	n
Cyperaceae	*Carex echinata ssp. phyllomanica*	coastal star sedge	n
Cyperaceae	*Carex exsiccata*	big inflated sedge	n
Cyperaceae	*Carex livida*	pale sedge	n
Cyperaceae	*Carex macrocephala*	bighead sedge	n
Cyperaceae	*Carex obnupta*	slough sedge	n
Cyperaceae	*Carex utriculata*	inflated sedge	n
Poaceae	*Deschampsia cespitosa* ssp. *cespitosa*	tufted hairgrass	n
Poaceae	*Elymus glaucus*	blue wildrye	n
Cyperaceae	*Eriophorum chamissonis*	russet cottongrass	n
Poaceae	*Holcus lanatus*	velvetgrass	i
Juncaceae	*Juncus bufonius* var. *bufonius*	toad rush	n
Juncaceae	*Juncus bulbosus*	spreading rush	i
Juncaceae	*Juncus canadensis*	Canadian rush	i
Juncaceae	*Juncus ensifolius*	daggerleaf rush	n
Juncaceae	*Juncus laccatus*	shiny rush	n
Juncaceae	*Juncus* spp.	rushes	

Poaceae	*Leymus mollis* var. *mollis*	American dunegrass	n
Juncaceae	*Luzula parviflora*	small-flowered woodrush	n
Juncaceae	*Luzula* sp.	woodrush	
Poaceae	*Phalaris arundinacea*	reed canarygrass	i
Poaceae	*Poagrostis aequivalvis*	Arctic bent	n
Cyperaceae	*Rhyncospora alba*	white beakrush	n
Cyperaceae	*Scirpus microcarpus*	small-fruited bulrush	n
Cyperaceae	*Trichophorum cespitosum*	tufted clubrush	n
Poaceae	*Trisetum cernuum*	nodding trisetum	n
FERNS and ALLIES			
Dryopteridaceae	*Athyrium filix-femina* var. *cyclosorum*	common ladyfern	n
Blechnaceae	*Blechnum spicant*	deer fern	n
Dryopteridaceae	*Dryopteris expansa*	northern wood fern	n
Equisetaceae	*Equisetum arvense*	common horsetail	n
Lycopodiaceae	*Lycopodium clavatum*	common clubmoss	n
Polypodiaceae	*Polypodium glycyrrhiza*	licorice fern	n
Polypodiaceae	*Polypodium scouleri*	coast polypody	n
Dryopteridaceae	*Polystichum munitum*	western sword fern	n
Dennstaedtiaceae	*Pteridium aquilinum* var. *pubescens*	bracken fern	n
Selaginellaceae	*Selaginella* sp.	selaginella	n
n/i = native or introduced			