

APPENDIX I

LUMMI NATION FINDINGS OF FACT

I. Introduction

This document contains factual findings upon which the United States Environmental Protection Agency (EPA) is relying in making a decision regarding the Lummi Nation's (the "Nation" or "Tribe") Application for treatment in the same manner as a state (TAS) for purposes of establishing water quality standards and issuing water quality certifications under Clean Water Act (CWA) Sections 303 and 401. The TAS determination is a separate process from EPA's decision to approve or disapprove a tribe's water quality standards.

The Lummi Nation's Application and supplemental materials describe the Reservation as consisting of approximately 20,000 acres of land, including approximately 13,000 acres of uplands and 7000 acres of tidelands. The Reservation, located in the State of Washington, consists of two peninsulas and an island that extends into the salt water of Bellingham Bay to the south, and the Georgia Straits to the west. The Reservation tideland boundary extends to the extreme lower low water tide mark (-4.5 feet). The Lummi Nation and individual Tribal members own 85 percent of the Reservation (uplands and tidelands) in either the name of an individual Tribal member, or the Tribe (See Map 22, Lummi Nation Atlas, 2006, (the Atlas) (hereinafter "Tribal lands").

The Tribe's Application describes in detail the importance of surface water quality to the Nation and the many ways the Tribe and its members use surface waters. Maps provided by the Lummi Nation show all the waters within the Reservation. Uses of the water by the Nation and its members that the Tribe seeks to protect include subsistence, ceremonial, and commercial fishing and shellfish harvesting, wildlife habitat, recreation in and on the water, cultural uses and domestic uses. Actual or potential activities on the Reservation that could, if unregulated, harm tribal water quality include: septic system operation, forestry, recreational activities (e.g., golf course operation and maintenance), agriculture and livestock raising, including the use of herbicides and pesticides, commercial transportation activities, including a ferry, and shoreland anti-erosion activities.

These Findings of Fact contain information relevant to the Tribe's demonstration that it has inherent authority over nonmember activities affecting water quality. The EPA assesses Tribal authority based upon the actual or potential impacts of nonmember activities on the Tribe. Thus, the first section of the Findings of Fact describes the *Montana* "impacts" test EPA uses to

assess Tribal authority, and the Clean Water Act functions the Tribe is proposing to carry out. The remaining sections contain factual information regarding actual and potential nonmember activities on the Reservation, and how the impacts of those activities on Reservation water resources may affect the Tribe.

This Findings of Fact document supports the decision by the Agency regarding the Lummi Nation's TAS application. The Nation asserts that it has authority to set water quality standards and issue certifications for all waters within the Reservation boundaries. The Agency analyzes a tribe's inherent authority over activities of nonmembers under the test established in *Montana v. United States*, 450 U.S. 544 (1981) (*Montana* test). This document sets forth the Findings of Fact EPA believes are relevant for our determination regarding the Tribe's assertion of inherent authority to regulate nonmember activities under the *Montana* test (as described in the attached Decision Document) for purposes of the Clean Water Act water quality standards and water quality certification programs. This document discusses nonmember activities on the Reservation, including Tribal lands.

II. Impacts of Actual and Potential Activities within the Reservation's Exterior Boundaries on the Political Integrity, Economic Security, and Health or Welfare of the Lummi Nation and its Members

A. Reservation Water Resources

This section presents information on the relationship between nonmember activities within the exterior boundaries of the Lummi Reservation and impairment of water quality and beneficial uses of water by the Lummi Nation. The facts summarized below from the files of the EPA and from materials submitted by the Tribe are organized to evaluate waters within the Reservation used by the Tribe or Tribal members (and the extent to which the Tribe or Tribal members could be subject to exposure to pollutants present in, or introduced into, those waters) and the waters of the Reservation subject to protection under the CWA. The Tribe has asserted that impairment of such waters on the Reservation would have a serious and substantial effect on the political integrity, economic security, or health or welfare of the Lummi Nation and its members.

The Lummi Indian Reservation (Reservation) was established in 1855 by the Treaty of Point Elliot (the Treaty), which was ratified by the Senate on March 8, 1859, 12 Stat. 927. Pursuant to Article II of the Treaty, on November 22, 1873, President Grant formally established the boundaries of the Lummi Reservation. See *U.S. v. Washington*, 969 F.2d 752, 754-55 (1992); 1 Kappler, *Indian Affairs*. All of the upland area within the Lummi Peninsula was assigned to Indian households, where the assignments or allotments conveyed 12,560.94 acres to 109 individual Indians, an average of 115 acres per assignee, and reserved 2 acres for a school. See *Duwamish v. U.S.*, 79 Ct. Cl. 530, 552 (1934). All of the tideland areas of the Reservation are held in trust by the United States for the Lummi Nation. See *State v. Edwards* 188 Wash.

467, 62 P. 2d 1094, (1936), *U.S. v. Stotts*, 49 F.2d 619 (W.D. Wash. 1930), *U.S. v. Romaine*, 255 F 253, 259 (9th Cir. 1919). The Reservation boundaries remain unaltered, and the Reservation has not been disestablished or diminished.¹

The February 1, 1999 Supplement to the Lummi Nation's Application, (the Supplement), and the Atlas provide maps of land ownership, topographical maps illustrating drainage, and maps of aquatic resources, within the boundaries of the Lummi Reservation. Figure 4 of the Supplement, and Map 22 of the Atlas, show the pattern of upland ownership. As noted earlier, the Reservation is comprised of approximately 13,000 acres of upland, and approximately 7,000 acres of tidelands. The Executive Order establishing the Reservation set the boundaries at the low tide mark, and a number of court decisions have confirmed the Reservation tideland boundary extends to the extreme lower low water tide mark (-4.5 feet). See *State v. Edwards* 188 Wash. 467, 62 P. 2d 1094, (1936), *U.S. v. Stotts*, 49 F.2d 619 (W.D. Wash. 1930), *U.S. v. Romaine*, 255 F 253, 259 (9th Cir. 1919).

The Reservation consists of two peninsulas, the Lummi River and Nooksack River floodplains, tidelands, and an island adjacent to Bellingham Bay and the Georgia Straits. On the northwest side of the Lummi Peninsula that faces into the Georgia Straits, the tidelands extend far into a part of Lummi Bay where the Lummi Nation has developed a large commercial shellfish aquaculture operation. On the south side of the Peninsula, the extensive tidelands run the length of the Reservation into Bellingham Bay. (See Map 3, Atlas). Approximately 77 percent of the upland area and 100 percent of the surrounding tideland are either owned by the Tribe or individual Tribal members or are held in trust by the United States for the use of the Lummi Nation and its members (these lands are collectively referred to hereafter as Tribal lands). Nonmember-owned lands comprise approximately 23 percent of the uplands of the Reservation (15 percent of the total Reservation). As shown in Map 22 of the Atlas, the nonmember-owned lands are scattered throughout the Reservation. However, the vast majority of nonmember-owned land parcels occur along the shoreline, directly adjacent to the tidelands that are 100 percent held in trust for the Lummi Nation. Figure 2 of the Supplement shows the drainage on the Lummi Reservation. All water that falls onto or flows through the Reservation drains to the resource-rich tidelands and estuarine tribally-owned lands and/or contributes to aquifer recharge.

The major surface waters within the Reservation boundaries are:

- a. Nooksack River
- b. Kwina Slough
- c. Lummi/Red River

¹ See Order Granting Motion for Partial Summary Judgment RE: Boundaries, *Lummi Indian Tribe v. Hallauer*, No. C79-682R, (June 18, 1981, W.D., Wash.).

- d. Jordan Creek
- e. Bellingham Bay
- f. Portage Bay
- g. Hale Passage
- h. Lummi Bay
- i. Georgia Straits
- j. Sandy Point Canal System
- k. Agate Lake
- l. Surface waters of Portage Island

Since the Application was initially submitted to EPA, the Lummi Nation has expended considerable effort to assess and map the environmental characteristics of the Reservation. To better understand the important role of non-point source pollution on the Reservation, in December 2001, the Lummi Nation prepared a Non-Point Source Assessment Report (NPS Assessment), which provides updated information that is relevant to this TAS application and is used in this Findings of Fact. The Lummi Nation also prepared a Nonpoint-Source Management Program, January 2002, and the February 2006 Atlas. These documents, incorporated as supplemental materials to the Lummi Nation's TAS application, summarize information about the Reservation, its soils, hydrology, and water resources, with current watershed maps, land use and cover, wetlands, and surface waters. They include updated information showing that the 2000 Census found 1,749 housing units on the Reservation, with a total Reservation population of 4,193 people. Census data for the Reservation from 1990 showed the housing density as 123 houses per square mile for non-Native Americans and 27 houses per square mile for Native Americans. The relatively high-density nonmember housing is located primarily along Reservation marine shorelines. While currently there are approximately 1,150 nonmember homes and approximately 600 Tribal member homes on the Reservation, 90 percent of the nonmember homes are located on less than 4 percent of the land. The greater housing density on nonmember-owned lands, coupled with their proximity to shorelines, can reasonably be expected to increase the risk that the nonmember activities will impact the water quality of the surrounding tribally-owned, resource-rich tidelands and estuaries.

The topography of the Reservation creates surface water drainage patterns where waters flow freely from lands owned by the Tribe or Tribal members to nonmember-owned land or from nonmember to Tribal land. Figure 3.5 of the NPS Assessment, and Map 5 of the Atlas provide maps of the watersheds and surface waters of the Lummi Reservation. With the exception of evapotranspiration losses and water discharged into off-Reservation waters from the two wastewater-treatment plants operated by the Lummi Nation, all water that falls onto or passes through the Lummi Reservation either discharges to the resource-rich tidelands and/or estuaries of the Lummi Nation (Figures 1 and 2 of the Supplement), and/or contributes to aquifer recharge. Storm water from both member and nonmember lands is generally combined in outfalls that discharge to tidelands, due to the interspersed pattern of land ownership within the Reservation boundaries.

Inter-tidal resources that are culturally and economically important to the Lummi Nation and its members are downstream and adjacent to Reservation uplands owned by members and nonmembers, including uplands along the shoreline. Inter-tidal and/or estuarine resources include salmon, shellfish, surf smelt, sand lance, waterfowl, raptors, other wildlife, extensive eelgrass beds, spawning grounds for herring, and water-supply intakes for salmon and shellfish hatcheries (See Maps 15 and 16, Atlas).

B. Role of Functions Authorized under the Clean Water Act in Protecting the Tribe's Ability to Use and Benefit from its Water Resources

This section contains information about nonmember activities that may affect water quality based upon the actual or potential impacts of nonmember activities. It begins by addressing how the Clean Water Act water quality management functions that the Tribe proposes to carry out can protect uses of Tribal waters. It then describes how, if unregulated, activities like those that take place on the Reservation can cause water quality degradation. Finally, it discusses specific examples of nonmember activities currently taking place on the Reservation, on both Tribal and nonmember land, to illustrate how those actual and potential nonmember activities affect or may affect the Tribe. The information considered in these Findings of Fact is drawn from the Application, supplemental materials, and the court decisions cited.

1. Clean Water Act Water Resource Protection

The Clean Water Act and subsequent amendments call for the maintenance and restoration of the physical, chemical and biological integrity of waters of the United States. Water quality standards are provisions of federal, state, or tribal law that consist of designated and existing uses, water quality criteria to protect those uses, an antidegradation policy, and other general policies that affect the implementation of the standards, such as mixing zone and variance policies. Water quality standards serve the dual function of establishing water quality goals for specific water bodies and serving as the regulatory basis for water quality-based treatment controls and strategies. The objective of the Act, maintenance and restoration of the integrity of the nation's waters, is directly related to water quality standards that are intended to ensure the full protection of all existing uses and designated uses identified by states and tribes.

Tribal water quality standards are intended to protect the beneficial uses and water quality of reservation waters. In addition to designated uses and criteria, water quality standards include antidegradation provisions that protect all existing uses of surface waters regardless of whether such uses are actually designated in water quality standards. Antidegradation requirements also serve to maintain and protect high quality waters and waters that constitute an outstanding national resource. Further, antidegradation requirements can be utilized by tribes and states to maintain and protect the quality of surface waters that provide unique cultural or ceremonial uses.

2. Tribal Water Uses

The Tribe has identified the following uses for waters within the Reservation: source for fish and aquatic life; source of sustenance for Reservation wildlife; source for recreation in and/or on the water; source for domestic, commercial, municipal, and industrial uses; navigational uses; and source for agricultural uses. The Tribe's Application also indicates that the Tribe uses the water for ceremonial and cultural purposes. Tribal authority to carry out management and protection functions for Tribal water resources relates to protecting Tribal uses in the following ways:

a. Fish and Shellfish Uses

The Lummi Nation and its members use Tribal waters for fishing and shellfish harvesting. Protecting water quality can prevent or limit water quality-degrading activities that harm fish and shellfish that live in Tribal waters or that use and depend on those waters as a source of water, food, or habitat. Water quality degrading activities can harm the political integrity, economic security, and health or welfare of the Tribe and its members by threatening Tribal food sources and sources of Tribal revenue.

The tidelands and estuaries of the Reservation contain substantial marine and estuary resources that are critical to the economic security and health and welfare of the Lummi Nation and its members. The Lummi Nation owns approximately 7,000 acres of tidelands within Reservation boundaries that provide habitat for fish and shellfish. Economically and culturally important fish species, such as herring, chinook salmon, coho salmon, pink salmon, chum salmon, steelhead, and shellfish such as oyster, Manila clam, little neck clam, butter clam, horse clam, and Dungeness crab use Reservation waters. (See Maps 15 and 16, Atlas).

Over 600 Tribal members obtain all or a part of their annual income from harvesting fish and shellfish that reside in or use Tribal tidelands. Decertification of commercial shellfish-growing areas in Portage Bay over the 1997-2006 period has already substantially impacted the economic welfare of the Lummi Nation. The Tribe describes how nearly all Tribal members (>4,000) utilize the tidelands to harvest shellfish for subsistence and ceremonial purposes. The Lummi Nation has traditionally and historically relied on fishing for economic and cultural well-being and has spent approximately one million dollars per year over the last twenty years in fish and shellfish enhancement and management. In addition, the Lummi Nation has spent over eight million dollars in capital improvements for fish and shellfish on the Reservation (e.g., shellfish hatchery).

The Lummi Nation owns and operates three fish-hatchery facilities. These facilities produce millions of young salmon each year and help offset the decline of fish stocks due to loss of natural habitat and historic overfishing. The Tribe also owns an on-Reservation shellfish

hatchery, producing over one billion oyster and clam seeds annually. Much of the 7,000 acres of tidelands owned by the Lummi Nation is suitable for productive shellfish beds. The shellfish hatchery sells oyster seeds throughout the Puget Sound area and places oyster seeds within the Reservation. The area within the seaponds dike (the aquaculture pond), is located in Lummi Bay (See Map 16, Atlas), and supports a substantial Manila clam population. This area lies within the drainage of Watershed K, which contains dairy operations located on and off the Reservation (Figure 3.5, of the NPS Report, and Map 17, Atlas). A large portion of this watershed contains the former Lummi River Delta, which drains into Lummi Bay and onto the resource-rich Tribal tidelands identified above. All of these facilities are culturally and economically significant to the Lummi Nation and its members and dependent upon high-quality surface water.

Water quality management protects fish and other aquatic life, and ensures the health and safety of Tribal members who use the fish or shellfish as a food source. By sustaining fish and other life forms, the system protects the Tribe's ability to use and rely on those life forms to achieve the Tribe's economic, subsistence (food), ceremonial/cultural, aesthetic and educational/scientific goals. Fully protecting aquatic life use also helps ensure the economic well-being of both the Tribe and its members through the harvesting of fish and other aquatic life and encouragement of water-based recreation businesses.

b. Wildlife Uses

Water quality management protects wildlife, by helping ensure that birds, mammals, reptiles, and amphibians that use and depend upon Tribal waters as a source of water, food, and/or habitat will maintain the species diversity and productivity that Tribal lands and waters are capable of supporting. The Lummi Reservation is rich with wildlife habitat (See Appendix A of the Supplement). Protection of beneficial wildlife use protects the biota that use Tribal waters, including threatened and endangered species (e.g., bald eagle, chinook salmon, bull trout). This protection enables the Lummi Nation to achieve its fisheries, cultural, recreational, scientific, educational, and economic goals, and enhances the Tribe's long-term economic security by preserving the value of wildlife resources. Protecting wildlife protects Tribal members and nonmembers from ingesting toxins that may accumulate in the tissues of wildlife.

c. Recreational Uses

Water quality management protects recreation in and on the water, thereby helping ensure that Tribal members and nonmembers can enjoy recreational uses of waters for body contact during play and sport without undue threat of disease or loss of aesthetic pleasure. Canoe racing is a cultural sport for the Lummi Nation that provides a venue for other cultural teaching. Canoe racing is also an inter-generational activity involving hundreds of families. The Lummi Nation has an annual Stommish Festival along Hale Passage that includes canoe races. This and other canoe races at the Stommish Grounds draw participants from Oregon north to Vancouver Island and the British Columbia mainland in Canada. The Lummi Nation has spent

over \$400,000 to build a cedar canoe storage shed at the Stommish Grounds, and provide canoes, racing gear, and travel money for the canoe clubs. The waters of the Reservation are also used for recreational kayaking, fishing, swimming, and washing. Protecting recreational uses serves to protect the Lummi Nation's economic goal of developing tourism.

The Tribe's ability to manage and protect water quality in the Tribal waters can protect Tribal recreation and tourism, by ensuring that water quality is adequate to make it desirable to engage in recreational activities on the Reservation. That will protect the Tribe's economic security by protecting future economic benefits from those recreational activities and preserving the value of Tribal recreational resources. The Tribe's ability to manage and protect water quality in Tribal waters will foster Tribal recreation and tourism, by ensuring adequate water quality to provide desirable recreational activities on the Reservation. Preserving the valuable Tribal recreational resources and the future economic benefits from recreational activities will enhance the Tribe's economic security.

d. Cultural Uses

Water quality management functions protect the Lummi Nation's culture and health and safety by maintaining Tribal traditional and cultural water uses. The CWA allows states and tribes to set water quality standards to protect beneficial uses they deem appropriate. Thus, the Lummi Nation may adopt water quality standards that protect traditional and cultural beneficial uses.

Water is a Lummi cultural resource with traditional, customary, ceremonial, and spiritual significance. Nearly all Tribal members (>4,000) utilize the tidelands to harvest shellfish for subsistence and ceremonial purposes. The Lummi Nation has traditionally and historically relied on fishing for cultural well-being. The ability to participate in cultural activities, many of which are water dependent, including the canoe racing activities discussed above, is important for retaining family, community, traditional, and Tribal identities. The protection of Lummi cultural uses assures that traditional practices and properties safeguarded under federal and Lummi Nation law will not be impaired.

e. Domestic, Commercial, Municipal, Industrial Water Source

Carrying out management and protection functions for Reservation waters enables the Tribe to ensure the quality of water used for domestic, commercial, municipal, and industrial purposes. As a finite resource, the Tribe considers ground water to be one of the most important and critical of the Lummi Nation's resources. Activities that contribute to the contamination of surface water may also contaminate ground water when contaminated surface water contributes to aquifer recharge and contaminants remain in the water when it reaches the aquifer.

Public water supplies are basic to the health and welfare of Tribal members. Over ninety-five percent of the residential water supply for the Reservation is currently pumped from ground water wells. Recharge of the aquifers is primarily from local precipitation (i.e., falling on or near the Reservation). Where surface waters contribute to aquifer recharge, ground water is susceptible to contamination. Ground water contamination could lead to the loss of the primary water supply source for the Reservation, because water supply wells are difficult to replace, ground water contamination is very expensive to treat, and some damages to ground water caused by contamination may be impossible or unfeasible to mitigate. The management of surface waters to minimize water-quality impact and to maximize ground-water recharge will help to protect the limited and vulnerable ground water resources on the Reservation.

Ground water protection, in turn, protects human health by reducing risks of human exposure to disease from conventional and non-conventional pollutants, including toxics in domestic water, particularly where water is used for human consumption. It also protects humans from the effects of exposure from other domestic uses, including cooking and bathing. As noted, contamination of the surface waters that recharge the aquifer also potentially contaminates the ground water and affects the quality of drinking water used by the Tribal members on Tribal trust lands, and therefore affects the health and welfare of the Tribe and its members.

f. Agricultural Uses

Water quality management protects agricultural uses by preventing the introduction of contaminants that could decrease agricultural productivity, impact the health of consumers, and/or contaminate wildlife and fish/shellfish habitat. These potential impacts threaten the political integrity, economic security, and health and welfare of the Tribe and its members.

C. Potential Effects of Unregulated Human Activities on Tribal Resources

The Application and supporting materials establish that the Reservation characteristics are such that the following human activities occur: septic system operation, forestry, and agriculture and livestock-raising, including the use of herbicides and pesticides. Those activities are carried out by members or nonmembers, on nonmember-owned land or Tribal lands, and, if unregulated, can cause pollution that harms Tribal resources in the following ways:

The Tribe has been carrying out sewage management functions for the Reservation watershed since 1974, when, working with federal agencies and with federal funds, it planned and constructed a sewer system that it has since operated and maintained. The Lummi Nation adopted a comprehensive sewer ordinance in 1976 and formed a sewer district to serve much of the Reservation, including the land owned in fee simple by non-Indians. These actions, taken to protect the Tribe and its members from the impact of unmanaged activities, demonstrate the Tribe's belief that the unmanaged activities may threaten the political integrity, economic

security, and health and welfare of the Tribe. In 1982, a court upheld the Tribe's authority to undertake sewage management and to require any residence located within 200 feet of a sewer line to connect with the sewer system. Noting that the State of Washington had identified wastewater treatment on the Lummi Reservation as a "number one" priority, and had supported the Tribe's regulatory authority to operate the sewer system, a court described the consequences of improper sewage management in stark terms, finding:

. . . no question that inadequate septic tank systems had resulted in unsanitary and unhealthy conditions on the Lummi Indian Reservation. Serious diseases were posing imminent health problems due to sewage seepage and open sewage in ditches. Badly needed additional housing could not be built without the sewer system, thus resulting in substandard and overcrowded living conditions that intensified health hazards. In addition, to the health problems, pollution of the waters surrounding the Reservation was threatening the Lummi aquaculture and oyster-raising ventures which are vital to the Tribe's economic well-being.

Lummi Indian Tribe. v. Hallauer., No C79-682R (Feb. 5, 1982, W.D. Washington). The court's factual description of the serious problems that arose in the absence of Tribal sewage management dramatically illustrates the potential impact of unregulated residential activities on the political integrity, economic security, and health and welfare of the Tribe and its members.

Agricultural and forestry practices may potentially cause increases in water turbidity and deposition of fine sediments in streams, rivers, and tidelands that may adversely impact water bodies in many ways. Turbidity and fine sediments can negatively affect aquatic life in Tribal waters by reducing photosynthesis of plant life, interfering with the ability of fish to sight-feed, smothering fish eggs and insect life, and reducing the habitat available for food organisms and spawning of fish.

Increased turbidity and sediment deposition can also result in a lower growth rate of fish from loss of food resources and/or elimination or significant reduction of spawning success in streams. Fish populations may decline in the streams, rivers and tidelands to which they are tributaries.

As herbicides and pesticides are used, increased loadings of these substances can result from forestry activity, agricultural and residential runoff from these lands (runoff may be a result of precipitation or use of waters for irrigation or both). Depending on the concentrations, these loadings may cause direct mortality or reduction of growth and reproduction in fish and invertebrates. Tribal members may also face increased health risks from exposure to herbicides and pesticides present in fish flesh or drinking water taken from Tribal water bodies or from ingestion of wildlife that feed upon aquatic plants or animals in Tribal water bodies. Studies have found elevated herbicide and pesticide levels in agricultural areas around the United States.

Diversion of surface water for agricultural or other uses and return of diverted water to surface water bodies after use can result in harmful effects on water quality and the integrity of aquatic communities by increasing stream temperatures and by the loss of physical habitat for fish and other aquatic life. Increased stream temperatures may exceed levels necessary for optimum growth, cause direct mortality, or prevent successful spawning and survival of cold water fish such as salmon and bull trout.

Agricultural runoff, carrying constituents such as cow manure, which is high in both nitrogen and bacteria, has been identified as a significant source of water quality degradation nationwide. Increases in loading of nutrients (primarily nitrogen and phosphorus compounds) can result from both precipitation and irrigation. These nutrients can stimulate undesirable increased growth of vegetation in water bodies. High concentrations of phytoplankton (microscopic plants) or larger plants are known to result in undesirable changes in water quality on a daily or seasonal basis. For example, excessive vegetation may result in very low levels of dissolved oxygen during dark hours when photosynthesis does not occur but respiration continues. Stimulation of plant growth from excessive nutrients may result in low dissolved oxygen and fish kills.

Increases in loadings of ammonia, chlorine, and oxygen-demanding (biochemical oxygen-demanding, or BOD) substances may result from improper operation or accidents occurring at on-site septage disposal facilities that discharge into Tribal waters. Because rather small shifts in pH and temperature can significantly increase the toxicity of ammonia, effects of discharges on the growth and survival of aquatic life may occur downstream from discharges.

Ammonia and its breakdown products may also serve as nutrients for excessive plant growth and as sources of oxygen demand, which can lower oxygen levels in Tribal waters. Chlorine has direct toxicity to aquatic life at very low levels and may directly affect the growth, reproduction and survival of aquatic life. Increases in BOD loading can result in reduced oxygen levels, which affect aquatic life survival, growth, and productivity.

Fecal coliform bacteria are used as an indicator of contamination of water by the feces of warm-blooded mammals. Fecal contamination of Tribal water can result from the improper operation of Confined Animal Feeding Operations (CAFOs) that discharge waste into Tribal waters, and leaking septic systems. Fecal coliform are indicators of health risks resulting from the discharge of waste. Diseases may pass to human populations that drink, bathe, or otherwise come in contact with Tribal water so contaminated. Fecal coliform are used to classify shellfish growing areas for purposes of commercial shellfish harvest. If the amount of fecal coliform bacteria is too great, commercial shellfish harvesting is restricted or prohibited.

D. Impacts of Nonmember Activities on the Tribe

The Lummi Nation asserts that contamination of the surface water resources on the

Reservation has a direct, serious and substantial effect on the political integrity, economic security, or health, or welfare of the Lummi Nation. The following discussion provides specific examples of current nonmember activities on Tribal lands and nonmember lands within the Reservation, and discusses how those activities affect the Tribe and its members.

1. Specific Examples of Existing or Potential Activities by Nonmembers that May Impair or Have the Potential to Impair Water Quality and Beneficial Uses of the Lummi Nation's Waters

In its Application and supplemental materials, the Lummi Nation provided the following information regarding actual or potential Reservation activities that may impact water quality on Reservation lands. Table 1 in the Supplement provides a list of the potential contaminants and sources associated with the following activities that the Reservation is capable of supporting: subsistence and commercial fishing and shellfishing; agriculture; forestry; and residential, community, and commercial activities. Furthermore, in its 2002 NPS Assessment, the Lummi Nation identifies its three current impairments of greatest concern as: 1) the closure of large portions of Portage Bay to commercial harvest of shellfish; 2) the degradation of salmon habitat in the Nooksack River watershed, and estuary; and 3) saltwater intrusion into Reservation aquifers. The NPS Assessment also identifies the Lummi Nation's two potential impairments of most concern: 1) the threat of commercial shellfish closures in Lummi Bay (and the remaining approved areas of Portage Bay); and, 2) the contamination of Reservation ground water.

The following are examples of impacts from these activities on both nonmember-owned land and Tribal lands.

a. Residential Land within the Lummi Reservation

The residential areas on the Lummi Reservation are generally concentrated along the shoreline. (See Figure 3.3, from the NPS Assessment) Almost all of the residential development on nonmember-owned lands is adjacent to the shoreline, located between Tribally-owned tidelands and largely Tribally-owned uplands. (See Map 22, Atlas). In addition, nonmembers rent homes owned by Tribal members located on Tribal lands. These residential areas include Gooseberry Point, Hermosa Beach, Robertson Road, Sunset Way, Leeward Way, Harnden Road, Sandy Point, Neptune Beach, Sandy Point Heights residential developments, and the Sandy Point Improvement Company golf course (See Fig. 3.4, from the NPS Assessment). These areas are located along the shoreline of the Reservation. All the identified watersheds within the Reservation drain from the uplands to the surrounding waters and the resource-rich tidelands of the Lummi Reservation (See Map 22, Lummi Nation Atlas).

The Sandy Point Peninsula is a lowland area of the Reservation that consists largely of residential development on nonmember-owned lands. The Sandy Point Peninsula lies southwest of the northwestern upland of the Reservation (See Figure 3.4, of the NPS Assessment), and is

located within Watershed R which drains into Georgia Strait and to Onion Bay and Lummi Bay (See Figure 3.4, and Map 5, Atlas). As a low-lying coastal area of the Reservation, portions of the Sandy Point Peninsula have been rated as having a very high vulnerability to coastal flooding (See Figure 4.7, Lummi Nation Multi-Hazard Mitigation Plan). Any flooding of this area would result in runoff pollutants and contaminated storm water or flood waters flowing immediately into the waters and resource-rich tidelands of the Reservation.

Activities on nonmember-owned lands could potentially impact Tribal interests through releases of contaminants such as household chemicals, household cleansers, solvents, heating oil, fertilizer, herbicides, insecticides, septage, coliform and noncoliform bacteria, and effluents from barnyards and feedlots. With the highest residential density on the Reservation occurring along the shorelines, contaminated storm water flows directly onto the resource-rich tidelands and estuaries located in Bellingham Bay, Lummi Bay, Onion Bay, Georgia Strait, the Lummi River, the Nooksack River, Portage Bay, and Hale Passage. (See Fig. 3, of the Supplement). These runoff pollutants include the nutrients derived from fertilizers, automotive wastes, failing septic systems, and other sources. Because fresh water will generally "float" over denser seawater before gradually mixing with the seawater, species that reproduce, live, or feed in the inter-tidal zone or in the upper portion of the water column are particularly vulnerable to contaminated freshwater input.

Due to the topography of the Reservation (See Fig. 3.4, from the NPS Assessment), the mobile nature of pollutants, and the fact that nonmember-owned lands are interspersed with Tribal lands, waters, and any pollutants they contain, flow from Tribal lands to nonmember-owned lands and vice versa. Ultimately, all surface waters on the Reservation drain onto the Tribally-owned estuaries and tidelands of Bellingham Bay, Lummi Bay, Onion Bay, Georgia Strait, Lummi River, Nooksack River, and Portage Bay, (Fig. 3.5 from the NPS Assessment). Activities that cause pollutants in waters not captured by the Lummi sewer system can reasonably be expected to increase the risk of (1) contamination of ground water used for drinking water, (2) contamination of the tidelands held in trust for the Lummi Nation, and/or (3) contamination of estuarine waters. Such contamination can reasonably be expected to adversely affect the political integrity, economic security, or the health or welfare of the Tribe and its members.

b. Agricultural Lands within the Lummi Reservation

Agriculture in the Lummi Reservation watersheds occurs largely on the floodplain of the Nooksack and Lummi rivers. These floodplain areas are located in the northern part of the Reservation. (See Figure 3.3 Land Use/Land Cover on the Lummi Reservation, and Map 19, Atlas). The agricultural lands within the Lummi Reservation contain farm lands that are used for raising strawberries, silage and forage grain, other row crops and hybrid poplars, as well as land used for livestock, such as horses, goats, cattle, sheep, and/or llama. These activities within the Reservation are conducted by Tribal members and by nonmembers on fee land and leased trust

land. A large portion of the grass and agricultural areas are on land in the former Lummi River Delta that was formerly wetland and is now protected by the seawall along Lummi Bay and by the Lummi River Levee. There are also small areas of farm land in the upland areas of the Reservation.

Nonmember dairy operations within the Reservation are also conducted in the floodplain of the Lummi and Nooksack Rivers (See Watershed K, Map 22, Atlas). The potential water quality impacts associated with uses on these lands come from pesticides (e.g., insecticides, herbicides, fungicides), fertilizers, automotive wastes, livestock sewage wastes, nitrates, phosphates, chloride, coliform and noncoliform bacteria, viruses, and the chemical sprays for controlling insect, bacterial, viral, and fungal pests on livestock. The floodplain is a sensitive area in regard to water quality because it is periodically inundated by water and the soil, which may contain accumulated contaminants, can be eroded and transported to areas with important aquatic resources. Due to the topography of the Reservation, and the mobile nature of water-borne pollutants, the water from the area (waters that enter the Reservation west of the Nooksack River) and any pollutants it contains, largely drains into the resource-rich Tribal tidelands in Lummi Bay, where it could impact ceremonial, subsistence, and commercial shellfishing. Because of the potential resulting harm to the Tribal economy, the threat of commercial shellfish closures in Lummi Bay is identified in the Lummi Nation's 2002 NPS Assessment as one of the Tribe's greatest concerns for potential impairment to its waters. Any pollutants and discharges not captured by the Lummi sewer system threaten the health and welfare and the economic security of the Lummi Nation and its members.

c. Forestry Lands within the Reservation

The Lummi Reservation also contains lands used for forestry. Timber harvest activities take place in the forested lands owned by both Tribal members and nonmembers. The forest lands are primarily located in the upland areas of the Reservation. These lands drain into Bellingham Bay, Lummi Bay, Onion Bay, Georgia Strait, Hale Passage, Lummi River, Nooksack River, and Portage Bay. The potential water quality impact from forestry comes from forestry chemicals (e.g., pesticides), sediment, nutrients, automotive wastes, organic materials (e.g., slash, soil, organic matter) and changes in water temperature. Fertilizers used during reforestation and leaching of nutrients from soils exposed by harvest activity may result in nutrient inputs to streams. Forestry chemicals, including pesticides and their degradation products, are carried to streams by runoff and may leach into ground water that is used as a source of drinking water.

In the Lummi Nation's 2002 NPS Assessment, forestry is identified as an activity that may be the primary source of impairment to salmonids in the upper Nooksack River watershed (i.e., along the North, Middle, and South Forks of the Nooksack River and tributaries) and a contributing source of contaminants affecting, or potentially affecting, shellfish in Portage Bay and Lummi Bay. As stated earlier, the Lummi Nation has identified the threat of closure of

commercial shellfish beds as one of its greatest concerns regarding the impairment of Reservation waters. Since much of the Reservation upland is forested, future harvesting of these forests may have continuing impacts as a contributing source of contaminants affecting or potentially affecting, shellfish in Portage Bay and Lummi Bay. Any pollutants and discharges not captured by the Lummi sewer system may threaten the economic security and health or welfare of the Lummi Nation and its members.

2. Nonmember Activities on Nonmember Owned Land

The following specific examples illustrate actions by nonmembers on [nonmember-owned] lands that may negatively impact the water quality and beneficial uses of Reservation waters, potentially causing impacts on the political integrity, economic security, and health or welfare of the Lummi Nation and its members.

A documented case of pesticide impacts on Reservation waters involved a golf course that lies on nonmember-owned lands on the Reservation, along the north shore of Lummi Bay. In April 1995, ducks were found dead on the golf course. At the request of the Lummi Nation, EPA investigated and found that improper use of the pesticide diazinon caused the death of the ducks. The golf course is in close proximity to shellfish beds and a salmon-rearing facility (hatchery). In addition, raptors, which prey on ducks, use the areas surrounding the golf course for foraging. Both wildlife and fishery uses were potentially impaired. The Lummi Natural Resources Department temporarily closed nearby subsistence and commercial shellfish beds to avoid potential health effects on harvesters and consumers. This activity not only resulted in potential health effects on the Tribal members, but in actual economic harm by the temporary closure of nearby commercial shellfishing beds.

Dairy operations are conducted on nonmember-owned land within the Reservation in the floodplain of the Lummi and Nooksack Rivers. These dairy operations are generally located in the northern portion of the Reservation in watersheds K, L, N, O, and P (See Map 5, Atlas). Waters that enter the Reservation in these watersheds drain into the resource-rich tidelands of Lummi Bay and Bellingham Bay. In March 1997, EPA cited and imposed an \$8,000 fine on a CAFO on the Reservation operated by a nonmember for discharging cow manure to the Lummi River, which discharges directly to resource-rich tidelands of Lummi Bay. Fecal coliform bacteria are an indicator of health risks and water contamination and fecal coliform levels in water are used to classify shellfish growing areas for purposes of commercial shellfish harvest. If the amount of fecal coliform bacteria is too great, commercial shellfish harvesting is restricted or prohibited. Lummi Bay is an important shellfish resource to the Lummi Nation with both cultural and economic significance to the Lummi Nation and its members. The Lummi Nation has spent over eight million dollars in capital improvements for fish and shellfish fisheries on the Reservation. Releases of waste from this CAFO may threaten the economic security and health or welfare of the Lummi Nation and its members.

Fecal coliform bacteria is an indicator of contamination of water by the feces of warm blooded mammals. When fecal coliform counts in the waters over shellfish beds exceed the National Shellfish Sanitation Program (NSSP) criteria, those beds are closed to commercial harvest. The potential impact of this type of contamination is illustrated by the consequences of the downgrading of 220 acres of shellfish beds in Portage Bay from an approved to restricted status in 1997 and 1999 (60 acres were downgraded in 1997 and another 160 acres in 1999). The 1997 closure of 60 acres caused approximately \$250,000 in annual harvest losses. While the economic value has not yet been calculated for the additional 160-acre closure, if all the shellfish beds in Portage Bay were to be closed to commercial harvest, the potential annual harvest of approximately \$900,000 would be lost. (See Figure 6 of the Supplement). The impacts from these closures illustrate how unregulated nonmember activity can affect Tribal political integrity, economic security, and health or welfare.

3. Nonmember Activities on Tribal Land

The Lummi Nation's submittal dated May 25, 2006 (See Supplemental Information In Support of the Lummi Nation "TAS" Application, May 25, 2006), provides examples of nonmember activities on Tribal lands that can negatively impact the water quality and beneficial uses of Reservation waters, and have the potential for impacts on the political integrity, economic security, and health or welfare of the Lummi Nation and its members.

In general, nonmembers on Reservation Tribal lands carry out the same types of activities as they carry out on nonmember-owned lands, with the same types of impacts resulting from the activities as when those activities occur on nonmember-owned lands. In addition, nonmembers carry out activities on Tribal tidelands (e.g., shoreland protection, anti-erosion activities, Lummi Island Ferry terminal, recreational uses) that are different from, and have different impacts than, nonmember activities on uplands on the Reservation.

A specific example of nonmember activity on Tribal tidelands is the authorized and unauthorized construction and maintenance of shore defense works. These activities have the potential to have an adverse effect on the resource-rich tidelands surrounding the Reservation including Bellingham Bay, Lummi Bay, Onion Bay, Georgia Strait, Portage Bay, and Hale Passage. The impact of these activities may include increased beach scour/erosion, steeper beaches and therefore decreased tideland, decreased and degraded shellfish habitat, and the likely loss of surf smelt and sand lance spawning habitat.

Another such example is Whatcom County's operation of the Lummi Island Ferry on Tribal tidelands. The ferry terminal is located at Gooseberry Point on Hale Passage. The potential water quality impacts of the construction, operation, and maintenance of the Lummi Island ferry terminal come from automotive wastes (e.g., gasoline, diesel, antifreeze, transmission fluid, battery acid, engine and radiator flushes, engine and metal degreasers hydraulic fluids, and motor oil); creosote pilings; and general solid wastes. These contaminants

drain into the Reservation waters of Hale Passage, Lummi Bay, and Georgia Strait.

Table 1 from the Lummi Nation's May 25, 2006 submittal provides additional examples of nonmember activity on Tribal lands, and includes the potential contaminants and physical impacts of those activities, and the receiving water bodies, thereby providing further evidence of the impacts of nonmember activities on the Lummi Nation and its members.

E. Conclusion

In sum, the facts described concerning nonmember activities on the Reservation support EPA's conclusion that the Tribe has shown that existing and potential nonmember activities within the Reservation have or may have direct effects on the political integrity, economic security and health or welfare of the Tribe that are serious and substantial.