

Makah Community Water Source Project Feasibility Study Makah Indian Reservation, Washington Environmental Assessment Project Description April 2006

Purpose

The Bureau of Reclamation (Reclamation) is evaluating the water supply needs of the Makah Indian Reservation (Reservation) through the Makah Community Water Source Project Feasibility Study. This study will identify the most effective methods of providing a safe and reliable water supply to meet the Reservation's commercial and domestic demands through the year 2050. Pursuant to section 102(2)(C) of the National Environmental Policy Act (NEPA) of 1969, as amended, Reclamation proposes to prepare an environmental assessment (EA) of structural and nonstructural alternatives to provide a water supply to the Makah Indian Reservation.

Need

For many years, the Makah Tribe's ability to provide sufficient drinking water has been hampered for several reasons: the lack of a reliable clean water supply, a raw water reservoir that is too small to provide adequate storage, and the lack of sustainable groundwater resources in the area. In addition, the existing Neah Bay drinking water treatment plant is ill-equipped to address certain water quality issues, but funding has been secured to construct a new drinking water treatment plant in Neah Bay. Construction of the new plant could begin as early as August 2006 and is scheduled to be completed in a year.

Description of Study Area

The study area is the Makah Indian Reservation located at the northwest point of the Olympic Peninsula of Washington. (See location map.) It occupies about 44 square miles of land and lies 66 miles west of Port Angeles, Washington. The Reservation's water and sewer facilities serve most of the 1,550 residents, as well as about 50 nonresidential users. Most residents live in the village of Neah Bay along the north coast of the Reservation. A small community also exists near the mouth of the Wa'atch River, along the west coast, and the remaining residents live near the Sooes River to the south along the Pacific Coast. During the summer, the Reservation is a popular destination for fishermen and tourists, with more than 2,000 visitors on some days.

Future water demands include both anticipated residential and commercial growth. The population is expected to increase because of:

- a. The current residents living on the Reservation who want to remain there;
- b. The expected return of Tribal members who are enrolled but not currently living on the Reservation;
- c. The young members of the Reservation who will remain and raise families; and
- d. The future economic development proposed for the Reservation.

Expanded water use is expected for retail/commercial and institutional water use sectors. The Tribe has described their plans for economic development in a “Harbor Plan for The Port of Neah Bay,” “Neah Bay Downtown Revitalization Master Plan,” and “Cougar Hill Master Plan.” Included in these plans are a Shoreline Complex with a Visitor Center and retail shops, a restaurant, an upscale motel, a Village Center, a waterfront park, and pier improvements. Additional water needs have also been identified for potential expanded fish processing.

Current Water Supplies

Four major rivers drain the Reservation: the Wa'atch, Sooes, Sail, and Sekiu Rivers. The Reservation usually obtains its water supply from Educkett Reservoir, which stores about 15.2 million gallons (47 acre-feet) when filled. The reservoir water contains high organic concentrations, particularly in the summer months, that restrict the Tribe's ability to produce a clean water supply. During such times, the Tribe relies on an infiltration gallery on the Wa'atch River as its primary water source, except during periods of heavy rain, when the Wa'atch River source is highly turbid. Both of these sources are highly dependent on streamflow and can become extremely limited during times of low rainfall. Although the Tribe has some groundwater wells, they are also extremely limited and include several water quality issues, such as iron and manganese.

These water sources are insufficient to meet current peak and projected future domestic and municipal demands. The Reservation already imposes conservation measures during winter storms and in late summer when streamflow is the lowest. Instream flows are severely compromised in the lower Wa'atch River during the summer months, which are critical for juvenile coho salmon rearing. Because of its limited raw water storage facilities and water quality problems, the Tribe uses both surface and groundwater sources throughout the year, which creates treatment difficulties and concerns about water supply availability. The lack of available water also restricts tribal residential and economic development since a moratorium was placed on residential and commercial building in 2000.

Authority

Feasibility studies are detailed investigations specifically authorized by law to determine the desirability of seeking congressional authorization for implementation. These studies include data collection and analysis and consider a full and reasonable range of alternatives. Feasibility

studies must be consistent with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&Gs).

The Makah Community Water Source Project Feasibility Study was authorized by Public Law 107-142, February 12, 2002. The Public Law authorized a detailed investigation to identify a preferred plan to be sent to Congress with a recommendation for construction authorization and funding. The feasibility study report and accompanying environmental and economic analyses are to provide the Congress with recommendations on how best to proceed with cost-effective and environmentally sound solutions to the water problems facing the Makah community. Accordingly, the feasibility study will develop a preferred plan from a range of alternatives. To comply with the National Environmental Policy Act (NEPA), Fish and Wildlife Coordination Act, Endangered Species Act, National Historic Preservation Act, and other related environmental and cultural resources laws an Environmental Assessment (EA) will be prepared.

Background

For the last several years, the Tribe and the Indian Health Service (IHS) have investigated alternative ways to meet the current and future water needs of the Makah Indian Reservation. Many new sources of water have been considered, including ground and surface water sources on the Reservation and from the surrounding area. Several improvements to the existing water supply system have also been considered.

In 1997, IHS and the Tribe asked Reclamation to help identify a suitable groundwater source for the community. Reclamation conducted geophysical investigations on the Reservation and provided some funding to the Tribe to obtain contractor services to drill test wells and conduct pump tests. Despite considerable effort, groundwater sources on the Reservation were found to be insufficient for constant use.

In 2000, the Tribe asked Reclamation to expand its investigation to include surface water resources. An initial assessment of the available surface water demonstrated that surface water was severely limited on the Reservation, so Reclamation investigated several sources from the area surrounding the Reservation. Reclamation developed other alternatives, including desalinization of seawater through reverse osmosis. Several surface water alternatives that were considered would remove water from nearby water bodies, including the North Fork Sekiu River and Lake Ozette.

On February 12, 2002, the Secretary of the Interior was authorized to engage in the Makah Community Water Source Project Feasibility Study, and Reclamation was provided funding to begin this work in 2003. The Tribe asked Reclamation to reconsider the surface water sources within the Reservation. Streamflow information was collected in several streams across the Reservation to more accurately measure the available water. As a result of this streamflow information, Reclamation found that surface water resources on the Reservation could meet current and future needs of the Makah Community. Several new water supply options were then developed for consideration in this study that only used on-reservation surface water resources.

Options Considered but Eliminated

During the course of the appraisal study and the subsequent addendum to that study, there have been many options and combinations of options that were studied. Several of the options were not carried forward for a variety of reasons, which include high construction cost, unacceptable environmental impact, an unreliable water supply, or technical issues with delivery or storage of the water.

Several alternatives were not carried forward to feasibility level analysis due to Makah Tribal Council direction and guidance. Numerous options were formulated and analyzed at an appraisal level over several years. As analyses were completed, Reclamation discussed the costs, impacts, and issues associated with these options with the Makah Tribal Council. Through these meetings, the Council expressed a variety of concerns that Reclamation used to refine potential solutions. Specifically, the Council was concerned with the location of a new water source and being able to minimize contamination of the source due to land management practices in the contributing watershed. They were also concerned with the speed at which a solution could be implemented, as well as water right and permitting issues. Additionally, the Council preferred a solution that required less money to operate and maintain, as well as one that relied less on highly specialized technology.

Because the Tribe is the primary project proponent and beneficiary, their preferences were considered paramount when deciding which options should be investigated at the feasibility level. The Makah Tribal Council expressed a primary preference to find a suitable water source within the Reservation to ease implementation and have control over the contributing watershed. Secondary preferences included finding a solution that had low operation and maintenance cost, as well as less technical instrumentation.

Several of the options considered but eliminated from analysis at the feasibility level are briefly described below.

1. Remove water from Lake Ozette and transport it directly to the Neah Bay drinking water treatment plant.

This option would remove water from Lake Ozette using a pump. The water would be pumped through a 10-inch diameter pipe to the Neah Bay drinking water treatment plant. Two potential locations were considered for the intake facilities — between Deer Bay and Umbrella Bay and near the Olympic National Park campground at the northwest end of the lake near the lake outlet to Ozette River. The length of pipe varied between 96,000 feet and 105,000 feet depending on the intake location. This option was analyzed and eliminated due to high cost and Makah Tribal Council preferences.

2. Remove water from Lake Ozette, transport it to Pilchuck Creek through a pipeline, release water into Pilchuck Creek and allow it to flow downstream to a new water treatment plant at the Sooes River outlet, then transport treated water to Neah Bay through a pipeline.

This option also removed water from Lake Ozette, but used natural stream courses to transport the water to the Sooes River and to a new treatment plant located on the west side of the

Reservation. This option required 26,000 feet of 10-inch diameter pipe with the same lift station as the above options. This option was eliminated because of high cost, environmental impact, and Makah Tribal Council preferences.

3. Remove from Sekiu River and transport it to the Neah Bay drinking water treatment plant through a pipeline.

This option would collect water in a Ranney type (underground) collector at the mouth of the Sekiu River and pump the raw water through about 67,000 feet of pipe located along state highway 112 to Neah Bay. This option was not carried forward to the feasibility level because of high cost, Makah Tribal Council preferences, and the disruption and impact to the only road into the Makah Reservation.

4. Construct a new reservoir in the Sooes River Basin, release reservoir water into Sooes River, allow it to flow downstream to a new water treatment at the Sooes River outlet, then transport treated water through a pipeline from Sooes water treatment plant to Neah Bay distribution system.

This option would construct a 300 acre-foot storage reservoir on a small tributary of the Sooes River and the water would then be released as needed in the summer to a new water treatment plant on the Sooes River. The impounded area is naturally marshy and wetland impacts would be high. Natural river flows would be sufficient most of the year. This option was eliminated due to Makah Tribal Council preferences and environmental impacts.

5. Construct several dams on several small creeks on the Reservation and transport water to the Neah Bay drinking water treatment plant through pipelines.

Several small impoundments were considered for developing additional storage on the Reservation. A range of four to seven small reservoirs were considered, from which water would be piped to the Neah Bay drinking water treatment plant. This option was eliminated due to environmental impacts, high cost, and Makah Tribal Council preferences.

6. Wa'atch Diversion to Educket Reservoir.

This option would divert water from the upper portions of the Wa'atch River in the headwaters and transport the water through about 9,800 feet of pipeline to Educket Reservoir. This water would then be available for release into the reservoir or for transport to the Neah Bay drinking water treatment plant. The diversion from the Wa'atch River would be located above a falls in a canyon making the pipeline construction difficult and the environmental impacts high. This option was eliminated due to environmental impacts and because the Tribe is already able to access Wa'atch River water through the existing infiltration gallery downstream of Educket Reservoir.

Options Being Considered

Several options are still being considered to meet current and future water demands of the Makah community. These options include making improvements to the existing water supply system, as well as finding new potential water sources. Alternatives will be formulated by combining the

following options, which will then be analyzed for potential environmental impacts and the ability to meet the projected water demands in 2050:

Option A: Educket Reservoir Rehabilitation

Several improvements could be made the Educket Reservoir to improve the Tribe's ability to use their existing primary water source. The primary improvements being considered are:

1. Replace the existing intake structure that draws water out of the reservoir with a multi-level intake. This replacement will increase the Tribe's ability to remove water lower in organic concentrations, which will improve the quality of water being provided to the community.
2. Replace the broken silt drain valve in the reservoir so that the reservoir can be actively managed to maintain reservoir capacity.

Additionally, the delivery pipeline between the reservoir and the Neah Bay drinking water treatment plant could be replaced to reduce loss of water. The capacity of Educket Reservoir could also be increased by raising the crest of the spillway 2 feet, which would maximize water storage into the late summer when reservoir inflows are minimal. Several reservoir operation scenarios are also likely to be suggested to improve water supply management.

Option B: Cape Creeks Collection System

Additional drinking water can be collected from three creeks along Cape Flattery. Water from Beach Creek, Middle Creek, and Classet Creek would be diverted at existing road-crossing culverts and pumped to the Neah Bay drinking water treatment plant through 19,000 feet of 8-inch pipe that would be buried in the existing road. Water would be transported directly to the water treatment plant, and excess water could also be deposited in Educket Reservoir to maintain reservoir capacity.

Option C: Desalinization Plant

Additional drinking water can also be obtained by desalinizing ocean water. This option would collect water from the Wa'atch River intertidal zone south of the existing tribal center through an underground collection system near the outlet of the Wa'atch River. The water would be pretreated by multimedia filters and then purified at a Reverse Osmosis (RO) Desalination Plant to be located at the existing tribal center. By collecting the source water through an underground system, the intake system would have a lower likelihood of becoming clogged. Additionally, operational costs of the RO plant would be lowered when Wa'atch River flows were sufficient to dilute the salinity of the source water.

The RO purified water would be piped to the Neah Bay drinking water treatment plant where it would be fed into the existing community distribution system. The non-potable RO reject water would be piped to the Makah wastewater treatment plant to the east of the tribal center, where it would be blended with wastewater effluent. The mixture of wastewater effluent and RO reject water would then be discharged through the existing ocean outfall to the north of Neah Bay. Two variations of this option are being considered:

- Construct an initial plant that would produce only 157 gallons per minute to meet existing water demands with the ability to expand the plant in the future.
- Construct a larger plant that would produce 550 gallons per minute to meet anticipated water demands in Year 2050.