

Salmon vs. Dams: The Dam Removal Debate on the Elwha River

Teachers: This lesson contains a classroom project with background related to the AFG video clips about salmon vs. dams. These parts may be used individually or together, depending on the needs of your class.

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site www.pbs.org/americanfieldguide/teachers.

Grade Level: 10-12

Background

Hydroelectric Power has long been touted as a clean alternative source of energy. It produces roughly 70% of the power in the Pacific Northwest. However, hydroelectric is not without its costs. Salmon runs on the major river systems, such as the Columbia River, and on minor rivers, such as the Elwha River in Olympic National Park, have suffered greatly in recent decades, and some of these salmon species are becoming listed as endangered or threatened species. Today, large dams on the Columbia River, owned by the Bonneville Power Administration (BPA) provide the majority of power for the Pacific Northwest. Yet hundreds of small, privately owned dams are scattered around the region. These are in various states of disrepair, and often only provide enough power to fuel a small community or one or two factories. However, these dams do as much or more damage to the salmon runs in their area than the large dams (BPA dams have extensive programs to help the fish successfully navigate the dams). This lesson is derived from real testimony given to Congress regarding two of these small dams in the pristine Olympic National Park in Washington. In this lesson, students will use role playing to discuss the merits of tearing down these dams so that the Elwha River can run free. Some of the testimony given for this lesson is taken directly from congressional records, some is paraphrased to make it more accessible to students, and some is made up in order to facilitate the discussion. The activity is presented in the form of a council to encourage students to try to build consensus in finding solutions instead of militantly standing behind their own viewpoints.

A historical timeline is provided at the end for additional background information.

Related National Standards

This lesson addresses the following national content standards found at <http://books.nap.edu/html/nses>

Content Standard C: As a result of their activities in grades 9-12, all students should develop understanding of the

- Interdependence of organisms.
 - Human beings live within the world's ecosystems. Increasingly, humans modify ecosystems as a result of population growth, technology, and consumption. Human destruction of habitats through direct harvesting, pollution, atmospheric changes, and other factors are threatening current global stability, and if not addressed, ecosystems will be irreversibly affected.

Content Standard F: As a result of their activities in grades 9-12, all students should develop understanding of

- Natural resources
 - Humans use many natural systems as resources. Natural systems have the capacity to reuse waste, but that capacity is limited. Natural systems can change to an extent that exceeds the limits of organisms to adapt naturally.
- Environmental Quality
 - Many factors influence environmental quality. Factors that students might investigate include population growth, resource use, population distribution, over consumption, the capacity of technology to solve problems, poverty, the role of economic, political, and religions views, and different ways humans view the earth.
- Science and technology in local, national, and global challenges
 - Understanding basic concepts and principles of science and technology should precede active debate about the economics, policies, politics, and ethics of various science- and technology-related challenges. However, understanding science alone will not resolve local, national, or global challenges.
 - Humans have a major effect on other species. For example, the influence of humans on other organisms occurs through land use – which decreases space available to other species – and pollution – which changes the chemical composition of air, soil, and water.

Related websites from PBS

- **Online Newshour – Rush to Market**
http://www.pbs.org/newshour/bb/environment/jan-june98/salmon_6-23.html
This is a transcript from the Jim Lehrer newshour in which people discuss the issue of salmon vs. development in the Seattle area and will give students another example of the complexities of this issue!
- **The American Experience – Divided over Dams**
<http://www.pbs.org/wgbh/amex/h Hoover/sfeature/damdivided.html>
This site provides a text that covers the pros and cons of dam building.
- **Nature – Fish Food**
<http://www.pbs.org/wnet/nature/grizzlies/fish.html>
Look at this site for a brief rundown of the salmon life cycle.
- **The Living Edens - Kamchatka: Land of Abundant Salmon ... Filets**
http://www.pbs.org/edens/kamchatka/teacher_2.html
This is a lesson plan teaching about anadromous fish and the salmon life cycle. Includes video and a fish dissection activity.
- **Anyplace Wild – Salmon and Alaska**
http://www.pbs.org/anyplacewild/sb4_309.shtml
This site contains a list of salmon facts, description of the Native American relationship to salmon, and other relevant Internet connections.

Acknowledgement

Thanks to Roger Oakes, Lakeridge High School, for his help in refining this activity.

Activity 1: Land Use Controversies - The Stakeholders**Time allotted:**

15 minutes

Materials:

Large paper and markers or chalkboard space and chalk for brainstorming

Objectives:

- Students will describe possible conflicts between various people in land-use issues.

Classroom Activity

1. Brainstorm: Ask the students to imagine a pristine wilderness in your area. Have them brainstorm with a partner or as a group "Who can you think of that might be interested in the value of this area". Have them come up with as many people or groups of people that they can think of.

**Watch the AFG Video Segment: "Sipsey Wilderness – Clash of Viewpoints"**

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

2. Ask them to add to their list after watching the video.
3. If they have made their lists in small groups, have the groups report to the class as a whole and compile a class list of possible stakeholders in a land use debate.
4. Discuss:
 - Who is right?
 - Which uses are incompatible with each other?
 - Who do you think should be able to determine the use for the land?

Activity 2: The Elwha River Council**Time allotted:**

Two class periods with two optional 20-minute extensions (these can be done as homework).

Materials:

- Copies of the 8 personal statements (1 statement for each group) and student instructions (attached). Photocopy the student instructions on to the back of each of the personal statements. Each student should get a copy of one personal statement and the instructions.
- Directions for Council Members (attached)
- Poster Board or paper for visual aids (materials for 8 groups)

Objectives:

- Students will develop an understanding of a conflict between the needs of society (dams and hydropower) and natural resources (salmon and the native ecosystem).
- Students will be able to describe opposing points of view in a major controversy.
- Students will work in small groups to understand a perspective relating to the issue of power generation and salmon fisheries.
- Students will use role playing to explain a perspective regarding the removal of dams in a small river system to a larger group.
- Students will build consensus to try to come up with a solution to the problem of salmon vs. dams.

Part 1: Preparation

Time allotted: 1 class period

- Break students into eight small groups who will represent the eight different community perspectives and one group of 4-6 students who will serve as Council members. Any students who are absent on this first day can also serve as Council members at the final meeting. Give the students in each community group copies of one of the personal statements along with the student instructions. Give each of the Council members a copy of the Elwha Council Instructions and Historical Background and Outline to review.
- Optional: You may want to give these out in the prior class period and have them read the statements for homework. Have them write a one-page description of the person's perspective in their own words. They should include: who they are, how they are connected to the problem, their views on the problem, and how the student would feel if they were in the same position as their character. Students also might include an outline of the main points or arguments their character provides.
- Students will spend the first class period preparing for the Council meeting: outlining their arguments, making a visual to provide to the Council, and electing a spokesperson who will present their arguments to the Council. Have students watch the related AFG Video Clip to get some more perspective on the issues that might be important to their character. They might also spend some time brainstorming possible solutions that would be acceptable to their characters.

- Note: Another option for this activity is to not have separate Council group. Presentations would be given to the entire class and all students would participate in the questioning and deliberations.

Part 2: The Council Meeting

Time Allotted: 1 class period

- Place students in a circle.
- The spokesperson for each group will present their arguments to the general council.
- The council will have time to ask questions of each group.
- The council will then break while students meet in small groups to come up with ideas for possible solutions. These discussion groups should a mixture of students representing all the different community perspectives. Encourage students to work toward a solution that is acceptable to all sides.
- Have each group present their ideas to the Council.
- If there is time, the Council can meet privately to deliberate and make a final decision. They will present their final plans to the group at large.

Part 3: Synthesis (optional)

Time allotted: 20 minutes

- Using the *Environmental Decision Making Model*, students should answer the question: "Should the dams on the Elwha River be removed". This should be done individually.

Assessment

Use the assessment rubric below to score student presentations for this activity.

Elwha River Project Rubric	Name: _____					
Clearly & Seriously presents points as expressed by their person	5	4	3	2	1	0
Visual Aid Enhances the presentation	5	4	3	2	1	0
Personal synthesis(taking on character)	5	4	3	2	1	0
Polite to other participants	5	4	3	2	1	0
Works with group to try to come up with a solution	5	4	3	2	1	0
Participation in whole process	5	4	3	2	1	0

Note: The Environmental Decision Making Model can be used to evaluate individual student understanding. We often use it to help students format essays on a test.

Extension Activities:

- Watch 'When the Salmon Runs Dry.' A 60-minute video outlining the larger debate surrounding the economy of saving the salmon. Available from Oregon Public Broadcasting.
- The **Elwha River Ecosystem and Fisheries Restoration Act** was passed in 1992. Since then, there has been a lot of debate, and some action, regarding the two dams on the river. Students can conduct research using the Internet and news databases such as SIRS to learn what has happened regarding the dams since the passage of the Elwha River Act. Alternatively, they might research the facts on the dam before beginning this debate.
- They then may want to write their congressmen stating their opinions on what should be done.

Related Web Sites

- For more information, see
<http://www.elwha.org/river.htm>
<http://www.nps.gov/olym/elwha/docs>
- To contact your congressman
<http://www.visi.com/juan/congress/>

Environmental Decision Making Model

From Karen Arms Environmental Science, 1996, Holt Rinehart and Winston

Values That Affect Environmental Decision Making

Value	Definition
Aesthetic	What is beautiful or pleasing
Economic	Gain or loss of money or jobs
Environmental	Protection of natural resources
Educational	Accumulation and use of knowledge
Ethical/Moral	What is right or wrong
Health	Maintenance of human health and prevention of sickness or disability
Recreational	Providing for human leisure activities
Scientific	Knowledge gained by scientific research
Social/Cultural	Maintaining human communities and respecting their values and traditions

To evaluate the pros and cons of an issue, look over the above list of values. Pick three or four values that seem relevant to the issue that you are studying. For instance, if I was researching the use of animals in testing medications, I might select Economic, Ethical/Moral, Health, and Scientific as four values that seem fundamental to the issue. Then, make a chart as follows putting positive and negative short and long term consequences on the right and the values you selected along the top. The first column, examining the question 'should animals be used in testing medications for humans' has been done as an example.

	Economic	Ethical/Moral	Health	Scientific
Positive Short-term consequences	Animals are cheaper to experiment on than are humans.			
Negative Short-term consequences	Animals cost money to properly care for.			
Positive Long-term consequences	Medications might become available more cheaply than if they had been tested on humans			
Negative Long-term consequences	Animal testing might result in bad public relations for the company.			

Step 1:

You will examine the question: "Should Dams on the Elwha River be removed?" Look over the list of values first chart and then make a table showing the positive and negative consequences of dam removal.

Step 2:

Once you have considered three or four aspects of dam removal, write a short essay explaining your conclusion.

American Field Guide Teacher Resources: Salmon vs. Dams

Access this lesson plan online at: www.pbs.org/americanfieldguide/teachers

Student Instructions for Elwha River Council

Background

The Elwha River is the main river basin in Olympic National Park. Olympic National Park is internationally important and is an International Biosphere Reserve and a World Heritage Site. The Elwha River is the largest watershed within Olympic National Park. The Glines Canyon project is the largest Dam within Olympic National Park. The Glines Canyon project is located on the Elwha River within Olympic National Park boundaries. The Elwha project is outside the park boundary, about 8 miles downstream from the Glines Canyon Dam.

Elwha Dam, located approximately 5 miles from the mouth of the river, is nearly 105 feet high. The 210 feet high Glines Canyon Dam is located at approximately 13.5 miles from the mouth of the river. Construction of the dams was completed in 1916 (Elwha) and 1927 (Glines) and reservoirs created by the dams inundate approximately 342 and 415 acres of land respectively.

For a number of reasons, it has been proposed that the Dams on the Elwha River be removed. The objective of this activity is to come to a consensus that a variety of different citizens will be happy with.

Day 1: Preparation

1. Read through the personal statement provided (this may be assigned as homework). You will be asked to represent this person's viewpoint in the Elwha River Council meeting.
2. If possible, watch the related AFG Video Segment
 - Decide how that person feels about dam removal. Are they for, against, neutral or other?
 - Write a ½ page description of the person's perspective in your own words
 - Write an outline of the main points or arguments on the bottom half of the page
3. Work with your group to prepare a presentation for the council. Be sure to include the following:
 - State your background, what you know about the area, and what your recommendations are and why.
 - Make a visual aid to enhance your presentation

Day 2: Elwha River Council Meeting

1. **Give your presentations to the Council.** You will be asked to answer additional questions about your perspective. This should lead to a discussion. Take notes during the other presentations, especially if they say something that you don't agree with or something that supports your position. Use your visual aid to show your point of view.
2. **Break into small groups to discuss a plan for the Elwha.** Your group will include people with very different perspectives. Your goal is to come to a consensus.
3. **Present your ideas to the Council.**
4. **The Council will then break to deliberate and make a final decision.**

Extension Activity

Use the Environmental Decision Making model provided by your teacher to make a decision to the question "should the dams on the Elwha River be removed?" Use what you heard in the presentations as your background info. Each student must do this part on their own.

Directions for Elwha Council Members

You have been chosen to be on the council that will decide the fate of the Elwha dams! Your job is very important since you will be listening and trying to decide the best course of action. Your job is much like a juror in a court trial except that you WILL interact with the presenters. Here is what you need to do:

1. **LISTEN** carefully to all of the people who will be presenting at the council meeting.
2. **ASK QUESTIONS** to clarify statements you hear. It is important that you gather as much information as possible. You may ask questions at ANY TIME, such as during a characters presentation, or later. You will be graded on how you interact with the presenters so make sure you ask questions.
3. **TAKE NOTES** to help you decide what should happen. An easy way to do this is to assign each member of the council a specific topic to jot down notes on. Some topics may be: Costs, technical aspects of dam removal, arguments for removal, arguments against removal, historic considerations etc... Each council member will have to submit their notes when finished.
4. Let characters ask each other questions and debate between each other. This will help you gather more information.
5. After all views have been expressed, the council will take a break while the characters come up with some ideas based on what they heard in the council.
6. The council will rejoin and you will need to listen to the new proposals that are described by the characters. Again, feel free to ask questions about these proposals.
7. Add any new info to your notes.
8. The council will break again to make a decision

Deliberations:

1. You will be given time with your council members to discuss what you have heard and what you think should happen. Try to carefully weigh everything you have heard. You should consider how well certain arguments were delivered. Refer to your notes to assist you in making your decision. Try to reach a unanimous agreement in your group. Do not worry about offending the characters. Do what you think is best. If you cannot reach a unanimous agreement, boil it down to two options and vote.
2. Write down the details of your decision on a piece of paper.
3. We will then rejoin the meeting and you will present your decision. Your members must take time to outline how your decision will be implemented.

When we are done turn in your notes and council decision. You must also complete the decision-making model described at the bottom of the Elwha directions handout.

Personal Statements of Participants

Statement of Mr. Steven Fitzpatrick, owner of the licensed Glines Canyon Dam.

I have owned the Glines Canyon Dam for 28 years now and we have never come across a problem with relicensure. Our dam has run smoothly throughout the second part of this century and we have provided a valuable resource for the people of Port Angeles. The dams here assure the people that they have a clean drinking water supply which the government has to supply according to the Safe Drinking Water Act of 1974. If the dams were to be dismantled, the government would somehow have to ensure an alternative source of clean drinking water, which may be quite costly.

These dams have also been an integral part of this community by providing power for the Daishowa of America Paper Mill, which is the largest employer in this district. 100% of the power produced here is used locally by that business. If these dams are dismantled, the government will have to come up with an alternative source of energy that is affordable for the people of Port Angeles.

Finally, there are the interests of private investors such as myself. If the dams are to be removed, then the dam owners will have to be compensated. This dam is my livelihood and I have been here my whole life. I do not want to see it destroyed.



For more information about how dams might benefit a region, watch the AFG video segment: "Snake River Dam Controversy."

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

Statement of Mr. Hishogi Daishowa, owner of Daishowa of America Paper Mill.

I have owned the Port Angeles Pulp Mill since 1987. This pulp mill directly provides employment for 12% of the citizens of Port Angeles and indirectly supports numerous others. At this point 70% of the power for this pulp mill comes from the Elwha River and Glines Canyon Dams. Because of it's local situation, these dams provide us power at a much cheaper rate than we would get from the Bonneville Power Administration which is the major energy provider in this area. This enables a small business owner such as myself to be able to be competitive in the larger market. If these dams were to be closed, I would have to start charging higher prices. Higher prices would mean that I would not be as competitive and I would have to lay off some of my employees. I believe that this would have a ripple effect in a community as small as Port Angeles and that it could cause an economic slump. I understand that the dams are inhibiting the migration of anadromous fish species, but we have to get our priorities straight.

In addition, my mill depends on water from the Elwha reservoirs. If these dams are removed the water supply to my mill will be lost.



For a similar perspective and more information, watch the AFG video segment "Snake River Water Management."

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

Statement of Dennis R. Gaithard, Consulting Engineer, Summit Technology, Inc.

I would like to testify regarding the engineering aspects of restoring the Elwha River ecosystem and fisheries in the State of Washington.

Artificial reservoirs on glacial streams trap large amounts of the sediment that the stream system is carrying from the mountains to the seashore. That is what has happened on the Elwha for more than 70 years. The feasibility of removing the dams without causing an uncontrolled release of stored sediments is the most critical issue involved with dam removal. In order to resolve that issue with a high degree of confidence, our engineering team deliberately explored very practical, conservative techniques of dam removal and sediment management. A conservative solution would then provide a backdrop against which to evaluate more innovative alternatives.

Although additional work is needed to specify the details of construction, we have identified reliable, orthodox methods for draining the reservoirs, reconfiguring and stabilizing the trapped sediments, taking down the dams, and protecting water supplies. This can be done without unacceptable environmental consequences and at a lower cost than predicted by the dam owners.

In order to return Elwha River to its natural pre-dam condition, three primary engineering tasks must be carried out.

1. Remove sediment trapped in the dam's reservoirs from the river's path, restore the river channel, and stabilize the removed sediment.
2. Remove the dam structures and power generating and transmission equipment, and
3. Protect structures and water supplies downriver from the effects of dam removal.

None of the proposed actions is based on speculation or unproven research. In some cases, additional information will need to be gathered to refine the details of construction. However, enough information exists to conclude that the approach is feasible.



For information about the effects of dam removal, watch the AFG video segment "Re-evaluating Dams: Pottstown Pennsylvania."

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

Statement of John Michael Hayden, Assistant Secretary for Fish and Wildlife and Parks, Department of the Interior

The Department supports the restoration of the Elwha River ecosystem and fisheries through the development and implementation of a fully cost-shared Elwha River ecosystem and fisheries restoration plan. This will permit the federal government to fulfill trust responsibility to Indian Tribes through the Bureau of Indian Affairs, commitment to preserve the resources of Olympic National Park through the National Park Service, mandate to conserve fish and wildlife resources and habitats through the Fish and Wildlife Service, and obligation to protect living marine resources and endangered marine species through the Department of Commerce's National Marine Fisheries Service.

Olympic National Park is internationally important and is an International Biosphere Reserve and a World Heritage Site. The Elwha River is the largest watershed within Olympic National Park. The Glines Canyon project is located on the Elwha River within Olympic National Park boundaries. The Elwha project is outside the park boundary, about 8 miles downstream of the Glines Canyon Dam.

Historically, large runs of anadromous fish, including all five species of Pacific salmon (Chinook, coho, pink, chum, and sockeye), steelhead and cutthroat trout, and Dolly Varden char returned from the ocean to spawn in the Elwha River. The runs of these fish have declined dramatically because the Elwha and Glines Canyon dams on the Elwha River block access to more than 65 miles or 90% of the spawning and rearing habitat formerly used by these fish, and prevent the replenishment of the needed spawning gravel to the habitat still accessible below the lower dam. The upper Elwha River habitat, all of which lies in Olympic National Park, is without salmon and steelhead. Lower Elwha River stocks of spring-run Chinook salmon and pink salmon are at risk of extinction, while Elwha sockeye salmon may already be extinct.

Wildlife populations within the Elwha River Basin and Olympic National Park have also been severely impacted by the loss of anadromous fish which are an important food source. The re-establishment of anadromous fish to their former habitat would greatly benefit at least 22 species of wildlife, including the black bear, river otter, and bald eagle, and would contribute to the recovery of these populations.



To learn more about the impact of dams on fish populations, watch AFG video segment "Grand Canyon Fish Study."

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

Statement of Jim Chee, S'Klallam tribal elder

The people of the S'Klallam tribe are here to demand that the government honor their agreement made in the Treaty of Point-no-Point here in the Olympic National Park in 1855. This agreement, made between the American Government and my people, gave our heritage, the land of Olympia, to the American people in exchange for unlimited fishing rights on the Elwha River Dam. This dam restricts the migration of salmon and other fish so that they are dwindling in number. There are now very few fish on the Elwha and my people have no land. They have been treated very badly, but now we see the opportunity to correct this egregious wrong by taking down the Elwha River and Glines Canyon Dams.

After the dams were built, and fishing became difficult, my people began to collect shellfish from the Elwha River Delta, the sandy area where the river meets the sea. However, in recent years, this delta has begun to subside or disappear. Our scientists say that the dams are responsible for this disappearance too. They say that sediment is trapped by the dams so that the beaches are not being replenished. Now the American Government is cheating us out of our right to collect mussels on the coast because they are stealing the sand behind the dams. Once again, removal of those dams is the only course of action that can correct this error.

Our tribe arose from the rocks on the Elwha River. The rocks that gave birth to our people lay along side the river and our people worshipped at them to thank the great being for giving us our lives and this wonderful land to live in. However, when the American government built the dams on the Elwha, they flooded this holy ground, so that now the S'Klallam people cannot worship at their holy sites. According to our scientist, the water in the dam has now deposited the sand that should be in the delta over the holy site. We want to see it removed completely so that S'Klallam people can once again thank the Great Being.



To understand more about the history and activities of Native Americans in this controversy, watch the AFG video clip "Returning Salmon to the Umatilla River."

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

Statement of Beatrice Charles, Tribal Elder, Lower Elwha S'kallam Tribe.

I grew up on a farm alongside the riverbanks of the Elwha River. The farm that I grew up on is now the State fish hatchery and the diversion pipe for the ITT Rayonier water runs through. When the dam was built some 20 years before, I was a young child then. My elder, Sam Almer, used to talk about the places that were the spiritual places for the Klallam people to go to. When the dam was built the water went over this spiritual ground where my ancestors used to go for spiritual guidance and help.

I also heard about the dam when it broke in 1912 and the damage and devastation that it had done to my grandmother's farm. To top it off the Indians weren't notified that there was danger. My late father was around 18 years old, and he was out washing his face out on the porch where we used to have our water for washing our faces and so forth and so on, and he heard the big roar. He knew right away what it was. So he told his mother and the rest of the family to run for higher ground.

I was young at the time that we lived on the farm, but I remember how the fish runs were because our family used to gather on the bank in front of the house and we used to have probably a family conference there because I was a child. I used to run around, but I saw the fish runs. It was just ripples of salmon going up and they were big salmon. I remember. I saw it and I know that it was there. We all felt it was always going to be there that it wasn't going to be depleted but I was wrong.

The dam used to open their gates and a lot of water would come down. The they would close it up. There were pools of water where the little fish were stranded and when the pools went dry, the fish were dead. That's what happened to the fish.

I feel we should remove the dam because I know the devastation that it had done to my people because I've seen it and I know it.

As the years went by, the fish depleted to the point where it's nothing. Our creator gave us this fish to live on, and it was rich and an abundance of fish. It was given to us and we cherished it and we respected it. We never got more than what we could use. We used it and every bit of it. We didn't waste it.

I feel again I would like to see the dam removed while I'm still alive. I may not see the abundance of fish come back in my lifetime, but I would like to see it come back for my grandchildren, my great grandchildren and for the rest of my people in the following generations to come. It was a gift from our creator; it was our culture and our heritage.



To learn more about Native Americans like Beatrice Charles, watch the AFG video clip "Nez Perce and Chinook Salmon."

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

Hon. Malcom Wallop U.S. Senator from Wyoming.

The bill pending before the committee would expose the Department of the Interior to spending hundreds of millions of taxpayers dollars to due the following: 1) to take over and tear down two privately-owned, operating hydroelectric dams. 2) to restore environmentally, the river on which the two dams are located. 3) to make up for the increased cost of cheap power the dams supply to a corporation; and 4) to provide "high quality" water to the city of Port Angeles and others.

A FERC draft environmental impact statement has placed the cost of removal of the two dams and hydroelectric projects at a \$245 million.

It should also be noted that although the Department would acquire the two dams and the associated hydroelectric projects, removal would still be dependent on the feasibility of actually tearing the dams down. It is entirely possible that the Department would just end up owning and operating these dams and hydroelectric projects for the foreseeable future.

Based on the cost estimates made by FERC, I question the cost-effectiveness of this bill- particularly when the actual costs of dam removal and river restoration could ultimately prove to be far higher than that estimated by FERC. Moreover, there are other costs not included in the FERC cost estimate. For example, the city of Port Angeles has shown that the capital cost of the facilities to provide high quality water is \$30 million, plus yearly operational expenses of \$2.5 million.

The question is: Do we look before we leap or do we leap before we look?

On a wholly unrelated matter, the bill also requires the Department of the Interior to transfer some land back to the Indian tribes. This is a very significant provision. As stated by the City of Port Angeles: "In a nut shell, Port Angeles would not be Port Angeles without this land". The city also states that it "would be unimaginable for our City to lose control of this land". Unfortunately, this is exactly what the legislation would require.



For more information about issues Senator Wallop might be interested in, watch the AFG video clip "Water Tug of War."

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

Statement of Hon. Al Swift, U.S. Representative from Washington

The eight historic fish runs on the Elwha River have often been described as legendary. Those who can remember a time before the Lower Elwha and Glines Canyon dams were built remind us that massive salmon, some as big as 100 pounds, once moved freely up the river. Tens of thousands of salmon returned one year to find a wall of concrete where a river had once been. Sadly, yet predictably, those legendary runs soon ceased to exist.

Those salmon were more than an ecological wonder. They were an economic resource for the people of Port Angeles. Our goal is to see those runs flourish again. It is unquestionably a worthwhile goal, but getting there means far more than simply contemplating the removal of two dams.

There are some interesting legal issues at stake here. These include the treaty of Point-No-Point of 1855 in which the federal government promised local Indians fishing rights on this river. Also included is the issue of whether it is legal for the Federal Energy Resource Council to license a dam in a National Park such as the Glines Canyon Dam. It is certainly illegal now to build a new dam in a national park, so the question is does the Glines Canyon Dam have precedence over the law since it was built before the park was created? At the same time, the Endangered Species Act requires that the federal government look after the interest of species that are in danger of becoming extinct. On the Elwha River, there is at least one species of salmon that is borderline and many other species are headed that way. On the other side of the coin, the Safe Drinking Water Act of 1974 requires that the federal government ensure its citizens clean water. If the dams are removed, we will have to find an alternative water source.

If we find that the Glines Canyon Dam is not to be relicensed, then we need to decide who will be responsible for the dam. It cannot be left unoccupied because over time that could lead to a dangerous situation for the people living downstream. If the dams are unlicensed, we need to ensure that some provision is made to dismantle them. Otherwise, the fish will not improve and the Daishowa Corporation will be without power. Therefore, we should not act hastily.

Finally I come to cost. Recent estimates say that the entire package, including dam removal and fish restoration, could cost between \$60 and \$80 million dollars. This is substantial I admit, but put it into the proper prospective when we look at far-larger sums being spent for fish restoration on other rivers in the Northwest.



For more information watch the AFG video clip 'Nez Perce and Chinook Salmon' (OID-SP-0013)

Note: You can access and view the video clips used in this lesson in the Teacher Resources section of the AFG Web site (www.pbs.org/americanfieldguide/teachers).

Historical Background on the Elwha River Dams

This information was compiled by Roger Oakes, teacher at Lakeridge High School, Lake Oswego, OR

Introduction

In the 1850's the Klallam Indians inhabiting the shores of the Strait of Juan de Fuca made a bargain with the United States: they gave this country the timberlands and other resources to which they held claim in exchange for promises that the white man's law would provide them a decent place to live and protect the fisheries which were essential to their way of life. They understood that the United States, which was very desirous of obtaining these new lands by peaceful means, would keep faith with its promises. More to the point, they were led to believe that the government in far away Washington, D.C. was competent to carry out its undertakings. Those beliefs have been severely tested. In the case of the Elwha Klallam, the United States, when it remembers its obligations, seems unable to carry them out. Since the treaty, Elwha Klallam history has been one of repeated dislocations coupled with the destruction of their most important economic resource. Even today, after pleas, lawsuits, administrative proceedings and patient but endless negotiation of new bureaucratic obstacles, the Elwha Tribe still has not seen the performance of the simple guarantees Governor Isaac Steven's gave on behalf of the United States more than 140 years ago.

A Place to Live

To their surprise, the formal treaty approved by Washington did not provide the Klallams a homeland in their aboriginal area. Instead, they were to relocate a considerable distance away, on the Skokomish Reservation at the bottom of Hood Canal. That reservation was far from home in somewhat hostile Twana territory. And there was not enough land on the Skokomish Reservation to accommodate them.

The Klallams remained on the shores of the Strait. But the Elwhas had an especially difficult time keeping their homes. A village located on the waterfront at what is now Port Angeles was displaced as that town developed. Its inhabitants were forced to live year-round in a summer village on Ediz Hook, exposed to the full force of winter storms coming in from the Pacific. But even that was unacceptable to their white neighbors. They were ousted from the Hook by the United States when a military base was placed there.

After 1875 some Klallam families were given "public domain allotments" in the Elwha River area and they built their homes there. Most of these allotments ended up in non-Indian ownership under what are at best legally questionable circumstances or became difficult to farm because of the flood risk posed by Elwha Dam.

Another part of the Tribe lived further West, at the mouth of the Pysht River. They managed to remain there into this century but were unable to obtain title to their homes. They were tolerated until the land was needed and the logging company which had obtained title came in and bulldozed their houses.

Yet another group of Elwhas attempted to stay near what is presently the reservation. They were forcibly removed - some say at gunpoint - by non-Indian settlers.

Finally, there appears to have been an attempt to create a "Port Angeles Reservation" in the late 1800's. But this, too, came to nothing.

In the 1930's, the United States re-assessed its treatment of the Indian people. As part of this process, the Elwha Klallams, essentially refugees, were discovered to be destitute. To remedy this the government purchased several acres of land on the Elwha River floodplain in the late 30's. In 1968, with the "deliberate speed" which has characterized dealings with the Klallams, this land was made the Lower Elwha Indian Reservation by presidential proclamation. It had taken 75 years to provide the Elwha Klallams with the reservation they had been promised at the treaty negotiations. But there was a hitch.

The Elwha River dams

The Elwha River is one of the Olympic Peninsula's major streams. During a period perhaps more notable for reckless optimism than respect for natural resources, two hydropower dams were built on the Elwha River. These dams, which generate relatively little power by modern standards, have virtually destroyed the Elwha River's rich fish runs and completely disrupted the economic and social life of the Elwha Tribe.

Olympic Power Company began construction of the first dam, the Elwha Dam, at river mile 4.9 (about four miles above the present-day reservation) in 1910. In October 1912, the sluice gates were closed and the reservoir began to fill. On October 31 the foundation of the dam failed. Indian families living downstream were sitting down to dinner when their dogs started barking and they heard a roaring sound mixed with the sound of tree trunks breaking. There are still Tribal elders alive who remember the adults grabbing the small children and running to high ground. There was property damage but no loss of life. The Klallams received no warning, although there is some indication that non-Indian farmers in the valley were warned. No compensation appears to have been paid.

The dam had been bedded on a deep gravel deposit and water pressure blew out the foundation. Various methods of repair were attempted. It was finally decided to fill the hole with debris and seal the fill with "mattresses" made of fir boughs weighted in place with dirt and rock. Later a layer of "gunnite" (a type of concrete) was sprayed on top of the fill. What resulted, and what exists today, is a jury-rigged patchwork of trees, rocks, dirt and concrete held in place by gravity and the original concrete structure which "bridged" the blowout. That conglomeration of materials, assembled by trial-and-error to hold back a large mountain river, is the capping irony in the history of the Elwha Tribe's attempts to live in peace.

In 1925-27, under a 1926 Federal Power Commission license, Northwestern Power and Light Company constructed a second dam, Glines Canyon Dam, at river mile 13.5. That dam, like the Elwha Dam, was not equipped with fish passage facilities.

Loss of the salmon and steelhead runs

The Elwha had been one of Washington's best salmon streams. The river's chinook run was famous for the size and vitality of the adults returning to spawn. After the Elwha dam was built tribal elders remember watching those big fish waiting below the dam, trying to get upstream. They remember pools below the dam full of dead salmon which had not spawned and they recall their parents protesting. But nothing was done to restore the wild runs above the dam. At the time the dam was constructed it was illegal under state law to obstruct salmon and steelhead streams. After construction, at the behest of the dam builders, the law was changed to allow stream obstruction if artificial enhancement facilities were provided to mitigate for lost wild runs. Such a hatchery was built on the Elwha but it failed and was abandoned in 1922. In the five miles between the dam and saltwater the wild salmon run was further reduced as the result of flow fluctuations, gravel starvation, and other effects of the dam. The Elwhas, when they finally obtained their reservation at the mouth of the river, came into possession of flood plain lands on a largely sterile stream. But this, it turned out, was just one installment of the price they were to pay for the Elwha Dam.

Dam Safety

The Elwhas who lived along the lower river knew they were on the flood plain. Living there was not particularly unusual, since both Indian and non-Indian settlements were often placed in such areas. They had been able to accommodate natural flooding, but the Elwha Dam added a new dimension. Several tribal elders remember sitting up at night during storms, fearing that the power company would suddenly open the spillways - to prevent stressing the dam during high water - and release a sudden surge into the lower valley. Chronic flooding, aggravated by this sudden artificial peaking, made life in the rainy season difficult.

Even in recent years the opening of spillway gates appears to have contributed to increased flooding on the reservation, harassed families fishing in the river, and destroyed their nets. But this harassment was to prove minor compared to the hazard posed by the old patchwork dam. In 1968 President Nixon had placed the land purchased in the 1930's in "reservation status." This was one aspect of the resurgence of the Elwha Tribe. By the mid-1970's the Tribe was fairly well organized, had obtained access to treaty fishing rights and was beginning a program of economic development. With federal assistance, a hatchery, community center, and juvenile group home were all built on the reservation. The Tribe then began to tackle housing, its major problem. At long last the Elwhas, most of them scattered about in substandard habitation, were going to live on their land and in decent homes.

The Tribe obtained a \$1,200,000 funding commitment from the Department of Housing and Urban Development for the construction of 25 homes on the reservation. It also, with the assistance of the Corps of Engineers, began a flood control study with the goal of increasing the habitability of the reservation. The community which had been so effectively broken up was coming back together. With fishing rights, the hatchery and housing the Elwha would be able to keep their families together and establish a realistic standard of living. The Tribe became increasingly confident and effective.

At about the same time the Federal Energy Regulatory Commission required Crown Zellerbach to obtain a periodic safety report on Elwha and Glines Dams. The engineering firm retained by Crown Zellerbach studied Elwha Dam and reported that it was unsafe, subject to failure during high flood levels. Crown disagreed on the levels of flooding possible in the river and declined to undertake repairs.

In due course the Corps of Engineers became aware of the negative safety report. Because a dam had recently failed in Idaho (another was about to fail in Georgia), government agencies were extremely sensitive to dam safety issues. The Corps advised HUD of the problem and notified the Tribe that unless the dam safety issue was resolved it would lose the flood control project. Without a levee designed by the Corps, HUD would not allow housing in the floodplain. In addition, the existence of a flood hazard upstream would itself block both HUD and Corps funding under the Environmental Policy Act.

But Crown did not agree with the engineering conclusions concerning flood magnitude and dam failure. It informed all concerned that it did not intend to repair the dam. HUD and the Corps advised the Tribe that unless some agency with jurisdiction over dam safety ordered repair of the dam, they would withdraw their funding.

The Tribe's momentum had stopped. It had spent its own limited energies taking care of some else's complex engineering problem and it did not wish to delay housing until dam repairs were certified and a new flood control project could be studied and put in place. It purchased land away from the reservation and put a HUD housing project there. The fragmentation of the Tribe continued.

The Tribe's 1986 motion before FERC

During the 1970's the Tribe spent a disproportionate share of its resources overcoming Crown Zellerbach's resistance to dam repairs. More recently, as the result of changes in the law governing FERC, the Tribe had asked that agency to consider a more permanent solution to dam safety, the fisheries impacts of the two Crown Zellerbach dams, and their other downstream effects. In January 1986, the Tribe filed a motion before FERC asking the Commission to implement an interim fisheries restoration plan and a long term plan for the phaseout and removal of the dams. The reasoning behind that motion is set out in the following paragraphs.

The dams trap the gravel that would otherwise wash downstream and replenish Reservation beaches. As a result, storms coming in from the Pacific are eroding the Reservation's saltwater shoreline and increasing flood risk. The dams also continue to cut off or ruin most of the river's spawning and rearing habitat for anadromous fish. The result is that some of the best salmon and steelhead runs on the Peninsula have been reduced to mere vestiges. The cost to the Tribe and the public has been enormous.

The dams do not generate enough power to justify their cost to the Tribe and the public at large. What power they do generate can be replaced from other sources. Those sources are relatively inexpensive to Crown and considerably less expensive for the Tribe, which has involuntarily subsidized Crown by carrying the costs of its dams for too long.

The relation of the dams to Olympic National Park

Both dams were in place when Olympic National Park was created in 1938. The boundaries of the Park include the Glines Project, although the legislation setting up the park does not mention it. The Federal Power Act appears to "grandfather in" the dam but also seems to deny FERC jurisdiction to relicense Glines.

The Department of the Interior took the position that FERC currently lacks such jurisdiction and proposed a legislative compromise. The Sierra Club, Friends of the Earth, the Seattle Audubon Society and Olympic Park Associates also took the position that the dams must come out. FERC ruled that it had jurisdiction to relicense Glines Dam and an appeal followed. When the Elwha River Ecosystem and Fisheries Restoration Act was passed, the jurisdiction issue was before the Ninth Circuit Court of Appeals. That appeal was subsequently placed on hold because it was hoped implementation of the Act would dispose of the issue.

The Elwha River Ecosystem and Fisheries Restoration Act

In October, 1992, President Bush signed Public Law Number 102-495, the Elwha River Ecosystem and Fisheries Restoration Act. That act directed the Secretary of the Interior to study and report to Congress on river restoration alternatives and authorized him to acquire and remove the dams if he found it necessary. In 1994 the Secretary reported to Congress that dam removal was necessary to restore the river to its natural, self-regulating state. In the period 1994-1996 the Secretary completed an environmental impact statement and record of decision in favor of dam removal and an environmental impact statement and record of decision choosing a preferred method of dam removal.

Chronology: Elway River Dams

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|-------|---|
| 1855: | Treaty of Point-No Point: the federal government promised local Indians fishing rights on this river. |
| 1910: | Olympic Power Company starts construction on Elwha Dam at river mile 4.9 |
| 1911: | County game warden is alarmed that there are no fish above the damsite and that spawners are milling around in stream reach below the blockage. |

American Field Guide Teacher Resources: Salmon vs. Dams

Access this lesson plan online at: www.pbs.org/americanfieldguide/teachers

October 31, 1912:	Elwha Dam foundation blows out during filling of the reservoir.
1914:	Elwha Dam is completed by trial-and-error using fill dynamited and hauled into the breach created by the blowout. There are no fish passage facilities.
August 1914:	Olympic Power Company signs an agreement with the State under which it contributes land and \$2500 for construction of an Elwha hatchery.
1914-1919:	The fill is sealed by various means to prevent leakage.
1915:	The State Department of Fisheries commences hatchery operations.
1919:	Crown Zellerbach Company buys Elwha Dam.
1922:	Elwha hatchery abandoned because of lack of returning brood stock. Flow fluctuation may be a major cause.
1925-1927:	Northwestern Power and Light Company constructs Glines Canyon Dam at river mile 13.5, also without fish passage facilities.
June 6, 1926:	Federal Power Commission (now FERC) issues a 50-year license for Glines Project.
1936:	Crown Zellerbach purchases Glines Project.
June 1938:	Congress creates Olympic National Park, the boundaries of which encompass Glines Dam and reservoir. There is no provision in the legislation for the Glines Project.
July 22, 1968:	Crown Zellerbach applies for FPC license for Elwha Dam under a jurisdiction that is subsequently overruled.
June 1, 1973:	FPC docket application for relicensing of Glines Project.
April 1975:	Crown Zellerbach and the State Department of Fisheries reach agreement on fisheries mitigation: CZ pays 26% (\$145,000) for a spawning channel and agrees to regulate flows. The facility mitigates about 10% of the total loss and does not compensate for the river's two major runs.
March 16, 1979:	FERC affirms Administrative Law Judge's Initial Decision finding jurisdiction over Elwha Dam and orders submission of a schedule for rehabilitation and strengthening of the structure as well as emergency action procedures.
May 23, 1979:	Crown Zellerbach files amended FERC application for license for Elwha Dam.
May 12, 1980:	FERC accepts for filing updated license application for Elwha. January
1986:	The Elwha Tribe files a motion before FERC asking for an interim fish restoration plan and an order providing for phaseout and removal of the two dams.
February 13, 1986:	Department of Interior comments on licensing for Glines and Elwha Dams point out that FERC lacks jurisdiction over the Glines Project and suggest a solution, ask for fish and wildlife studies and restoration measures, and propose other action.
April 1986:	National Marine Fisheries Service intervenes before FERC and seeks resolution of fisheries issues.

- May 15, 1986: Seattle Audubon Society, Friends of the Earth, Sierra Club and Olympic Park Associates intervene in FERC proceedings and request removal of the dams.
- December 15, 1986: FERC staff visits site to review the status of information on both Elwha and Glines Canyon projects and gives agencies opportunity to comment regarding the need for additional information.
- February 17, 1987: Fisheries agencies and Tribe move that FERC ask Crown Zellerbach for additional data and consider interim relief.
- March 1987: CZ's response.
- May 1987: CZ responds to March 1987, FERC request for data.
- May 1987: FERC asks for additional data. (Pleadings are exchanged with growing frequency; not all are listed here.)
- August 1987: Western Pulp and Paper Workers intervene.
- August 17, 1987: Joint Fisheries Agencies supplemental motion for interim relief.
- September 1987: CZ's response.
- November 30, 1987: CZ changes name to James River Corporation of Nevada.
- March 25, 1988: Environmental intervenors file petition for declaratory order finding that Glines cannot be relicensed by the FERC because it does not have jurisdiction.
- May 31, 1988: James River's II (JR) initial response to May 1987, request for additional information.
- June 1, 1988: Fisheries agencies ask FERC for information on Daishowa purchase of JR.
- August 29, 1988: Fisheries agencies comments on May 31, 1988, response to request for additional information.
- October 28, 1988: Fisheries agencies Supplemental Petition Regarding Application and Information Deficiencies.
- December 1988: JR's supplemental response to May 1987, request for additional information.
- January 13, 1989: Fisheries agencies comments on supplemental response to request for additional information.
- January 26, 1989: National Marine Fisheries Services requests, for the Joint Fish and Wildlife Agencies, that the FERC begin development of EIS.
- February 1989: Tribe's comments on cultural resources portions of May and December 1988, response to May 1987, request for additional information.
- March 21, 1989: National Marine Fisheries Service files study evaluating scope of dam removal/fish restoration on both projects.
- March 24, 1989: Lower Elwha Tribal Council files comments regarding James River II's response to information request.
- April 14, 1989: Joint Fish and Wildlife Agencies provide proposed EIS outline.
- May 3, 1989: Friends of the Earth, for the Conservation Intervenors, submits comments on the Joint Fish and Wildlife Agencies March 21, 1989 filing.

- May 17, 1989: FERC staff meets in Port Angeles, Washington with the National Park Service concerning the NEPA process and Glines jurisdictional issue.
- June 1, 1989: FERC staff meets in Washington, D.C. with the staff of National Park Service concerning NEPA process and Glines jurisdictional issue.
- June 7, 1989: FERC issues notice of June 26, 1989 technical meeting in Seattle and June 27, 1989 public meetings in Sequim, Washington, on both projects.
- June 12, 1989: Representative John Dingell request General Accounting Office conduct an investigation regarding legal issues or project relicensing and dam removal.
- June 26, 1989: FERC staff conducts technical meeting in Seattle, Washington, and public meeting in Sequim, Washington, to discuss the status of projects, explore alternatives to be assessed in EIS, and define additional information requirements.
- June 27, 1989: Joint Fish and Wildlife Agencies file supplemental petition regarding remaining information deficiencies on both projects.
- July 24, 1989: Washington Department of Wildlife submits comments on alternatives review and additional study needs necessary to complete EIS.
- July 31, 1989: National Marine Fisheries Service submits comments on alternatives review and additional study needs necessary to complete EIS.
- August 24, 1989: FERC responds to Representative John Dingell.
- August 29, 1989: Representative John Dingell requests additional information regarding relicensing of Glines Dam.
- November 19, 1990: Conservation Intervenors file request for rehearing of FERC's October 19, 1990 order.
- December 4, 1990: FERC denies Department of the Interior's request for rehearing stating that the request was received one day late.
- December 17, 1990: National Marine Fisheries Service and Tribe file supplement to November 16, 1990 request for reconsideration incorporating Department of the Interior's request for reconsideration.
- December 19, 1990: FERC grants rehearing of October 19, 1990 order "for purpose of further consideration."
- February 1991: FERC releases Draft Environmental Impact Statement concluding that (1) dam removal is feasible, (2) only dam removal will result in the full restoration of the Elwha River ecosystem and anadromous fish, and (3) the cost of power produced by dam retention would equal or exceed the cost of power from the Bonneville Power Administration.
- March 27, 1991: General Accounting Office concludes that "dam removal offers the best prospects for fish restoration" and decides that the selection of an alternative is essentially a public policy decision.
- April 5, 1991: FERC issues order denying requests for rehearing and reconsideration of its October 19, 1990 order claiming jurisdiction over the Glines Canyon Project.
- April 22, 1991: Pacific Fishery Management Council commented that only dam removal would provide restoration of anadromous fish at levels that would support increased recreational and commercial fishing and requested FERC consult with the Council.

- May 31, 1991: Conservation Intervenors and Tribe file Petition for Review with Ninth Circuit for court review of FERC orders exerting licensing jurisdiction over Glines Canyon Project within Olympic National Park.
- June 4, 1991: Department of Justice, on behalf of the Department of Commerce and Department of the Interior, files Petition for Judicial Review of FERC's October 19, 1990 and April 5, 1991 orders.
- June 27, 1991: Ten additional conservation organizations file motion for intervention.
- June 28, 1991: In a letter to the Department of Justice, Department of Energy recommends that Petition filed with Ninth Circuit be dismissed citing agreement with FERC's position that it has authority to license the Glines Canyon Project.
- August 6, 1991: Pacific Fishery Management Council requested a response to its April 22, 1991 letter.
- November 13, 1991: FERC requested information from the Joint Fish and Wildlife Agencies, including fish restoration and harvest management plans and provided less than 30 days for a response.
- December 13, 1991: National Marine Fisheries Service questioned assumptions contained in FERC's November 13, 1991 request for information but agreed with the FERC assessment that much information is needed. However, National Marines Fisheries noted that FERC had not ordered the studies requested by the Joint Fish and Wildlife Agencies that would have provided that information.
- January 23, 1992: FERC claims that National Marine Fisheries Service December 13, 1991 response is "irresponsible."
- January 31, 1992: IT Rayonier, Inc filed motion for late intervention.
- February 24, 1992: Congressman Dingell requests that FERC explain the basis of a dispute over information requested by FERC from the National Marine Fisheries Service.
- March 5, 1992: City of Port Angeles filed motion for late intervention.
- March 11, 1992: National Marine Fisheries Service documented information currently available that would assist FERC in its efforts and listed studies requested by the Joint Fish and Wildlife Agencies that FERC had not ordered.
- April 7, 1992: FERC responds to Congressman Dingell's February 24, 1992, letter asking for clarification of a dispute over information requested by FERC from the National Marine Fisheries Service.
- June 2, 1992: Congressman Dingell characterizes FERC's April 7, 1992 response as inadequate.
- June 5, 1992: General Accounting Office concluded that who should pay for dam removal is undecided, although the dam owner could be required to bear the cost if the dams are unlicensed.
- August 10, 1992: FERC responds to Congressman Dingell's letter of June 2, 1992.
- October 24, 1992: President Bush signs the Elwha River Ecosystem and Fisheries Restoration Act as Public 102-495, staying the FERC licensing process.
- October 27, 1992: James River II, Inc. requests license transfer to James River Paper Company Inc.

- November 18, 1992: Conservation Intervenors file motion for FERC to stay its licensing proceedings citing Public Law 102-495.
- December 22, 1992: FERC issues order approving transfer of Glines Canyon annual license from James River II, Inc. to James River Paper Company, Inc.
- December 23, 1992: Joint Motion by Olympic Park Associates, Friends of the Earth, Seattle Audubon Society, Sierra Club, Department of Commerce, Lower Elwha Klallam Tribe, FERC and James River requesting Ninth Circuit issue stay of jurisdiction case.
- February 1, 1993: Ninth Circuit granted stay of jurisdiction case.
- August 4, 1995: First Final Environmental Impact Statement (EIS) released in favor of dam removal.
- February 26, 1996: Record of Decision (ROD) signed in favor of dam removal.
- November 22, 1996: Second Final Environmental Impact Statement (EIS) released choosing a preferred method of dam removal.
- December 23, 1996: Record of Decision (ROD) signed choosing the preferred method of dam removal.