

TODD D. TRUE (WSB #12864)
ttrue@earthjustice.org
STEPHEN D. MASHUDA (MSB #4231)
smashuda@earthjustice.org
Earthjustice
705 Second Avenue, Suite 203
Seattle, WA 98104
(206) 343-7340
(206) 343-1526 [FAX]

THE HONORABLE JAMES A. REDDEN

DANIEL J. ROHLF (OSB #99006)
rohlf@lclark.edu
Pacific Environmental Advocacy Center
10015 S.W. Terwilliger Boulevard
Portland, OR 97219
(503) 768-6707
(503) 768-6642 [FAX]

Attorneys for Plaintiffs

UNITED STATES DISTRICT COURT
DISTRICT OF OREGON

NATIONAL WILDLIFE FEDERATION, et al.,

Plaintiffs,

and

STATE OF OREGON,

Intervenor-Plaintiff,

v.

NATIONAL MARINE FISHERIES SERVICE, U.S.
ARMY CORPS OF ENGINEERS, and U.S. BUREAU
OF RECLAMATION,

Defendants,

and

NORTHWEST IRRIGATION UTILITIES, PUBLIC
POWER COUNCIL, WASHINGTON STATE FARM
BUREAU FEDERATION, FRANKLIN COUNTY
FARM BUREAU FEDERATION, GRANT COUNTY

Civ. No. 01-0640-RE (Lead Case)
CV 05-0023-RE
(Consolidated Cases)

DECLARATION OF
ERNEST G. NIEMI

DECLARATION OF ERNEST G. NIEMI

Earthjustice
705 Second Ave., Suite 203
Seattle, WA 98104
(206) 343-7340

FARM BUREAU FEDERATION, and STATE OF
IDAHO,

Intervenor-Defendants.

COLUMBIA SNAKE RIVER IRRIGATORS
ASSOCIATION, and EASTERN OREGON
IRRIGATORS ASSOCIATION,

Plaintiffs,

v.

CARLOS M. GUTIERREZ, in his official capacity as
Secretary of Commerce, NOAA FISHERIES, and D.
ROBERT LOHN, in his official capacity as Regional
Director of NOAA Fisheries,

Defendants.

I, ERNEST G. NIEMI, declare and state as follows:

I. INTRODUCTION AND SUMMARY

1. My name is Ernest G. Niemi. I am an economist and vice president of ECONorthwest, a consulting firm that provides analysis in economics, finance, planning, and policy evaluation for businesses and governments. I received a Master of City and Regional Planning from Harvard University. My professional experience includes analyzing the economic consequences of resource-management decisions throughout the Pacific Northwest, and teaching courses on economic development and benefit-cost analysis at the University of Oregon. I've attached hereto, as Exhibit A, a copy of my vita.

2. I am familiar with the regional and subregional economies of the Pacific Northwest states, the structure of those economies, the forces affecting them, and the changes occurring in them. Over the past several years I have devoted considerable time and attention to reviewing and understanding the economic effects of various proposals and options for protecting and restoring salmon populations in the Pacific Northwest. This work includes studies of "Economic Consequences of Management Strategies for the Columbia and Snake Rivers" (funded by the Confederated Tribes of the Umatilla Indian Reservation), "Economic Consequences of Fish Hatchery Management Decisions" (funded by the Columbia Basin Fish and Wildlife Foundation), "Economics and Salmon Conservation Along the Pacific Coast of North America" (funded by the Ford Foundation), "Economic Impacts of Watershed Restoration" (under a contract with the Environmental Protection Agency), and "Columbia Transitions," a study of the economic transition that would occur if the four federal dams on the lower Snake River in Washington were bypassed (funded by Trout Unlimited).

3. I prepared this declaration in response to a request from plaintiffs, who asked me to describe the economic consequences of the actions, described in their proposed injunction,

which would increase water velocity through the federal reservoirs and dams of the lower Snake River and Columbia River, from June 20 through August 31, 2005. I understand that these faster flows would be accomplished through a combination of minor drawdowns (a foot or two) of three of the four reservoirs on the lower Snake River and one reservoir (McNary) on the Columbia plus a deeper drawdown of the reservoir behind Lower Granite dam on the Lower Snake River, together with augmentation of river flows from up-stream reservoirs (Grand Coulee, Banks Lake, Hungry Horse and Libby on the Columbia, and some of the Bureau of Reclamation projects in the upper Snake River basin). I first address the proposed injunction's potential economic costs and discuss the various factors that will determine the significance of their impacts on the regional economy as a whole or on individual sectors. I then address the proposed injunction's potential economic benefits and discuss the factors that will determine whether or not they will outweigh the costs. In preparing this declaration, I draw on the experience I describe above, my general knowledge of the economy of the Pacific Northwest, and my review of information both within and outside the record submitted by other parties in this litigation.

4. The evidence I describe below indicates the proposed injunction would have many economic costs and benefits. No detailed analysis has been completed, however, and the foreseeable, net impact remains unclear; it could be positive or negative.

5. The proposed injunction's potential costs, as identified by defendants and intervenor-defendants, include increases in the wholesale cost of electricity of \$52 million in 2005 and \$50 million in 2006, losses of \$2.5 million because barge traffic through Lower Granite Reservoir and Dam would be limited from mid-June to the end of September, and several hundred thousand dollars of additional costs for operating the federal dams and

associated facilities. The actual impact probably would be less, as the consumers and producers bearing these costs probably would take mitigative steps, such as implementing energy-conservation measures in response to higher prices or finding substitute means of transporting goods past Lower Granite Dam if barge traffic were impeded. Even at the levels offered by defendants and intervenor-defendants, the costs would be small relative to the regional economy as a whole, and their influence on the economy, and on individual sectors probably would be smaller than the influence of numerous other factors.

6. The proposed injunction's potential economic benefits stem primarily from increases in salmon populations and reductions in risks to salmon, in this and future years, resulting from the injunction. The dimensions of these impacts can never be known with certainty, as it is impossible to conduct a with-versus-without experiment to determine the injunction's economic effects. It is clear, though, that any increase in salmon populations and decrease in risks resulting from the injunction would have a positive economic value. This value would be larger, the more the injunction contributes to avoiding further serious reductions in salmon populations. One indicator of the value of salmon comes directly from residents of the region, who have expressed a willingness to pay to increase salmon populations and reduce the risk of extinction. In one survey, cited below, Washingtonians expressed a willingness to pay \$132.58 per year per household, or \$339 million per year total, for an increase of 1 million, or 50 percent, in the overall population of Columbia River salmon and steelhead. These numbers indicate an average willingness to pay \$339 per additional fish for a substantial increase in population. If households in Oregon, Idaho, and Montana have the same willingness to pay, the total would be \$670 per fish. Economic theory indicates the value per additional fish would be

even higher in situations such as this one, where the injunction is intended to prevent populations from dwindling toward extinction.

II. THE PROPOSED INJUNCTION'S POTENTIAL ECONOMIC COSTS PROBABLY WOULD BE SMALLER THAN ESTIMATED BY THE DEFENDANTS, AND THEY ALSO WOULD BE SMALL RELATIVE TO THE OVERALL ECONOMY AND TO OTHER FACTORS INFLUENCING IT.

7. In this section I discuss potential costs associated with the proposed injunction's potential impacts on electricity, transportation, industrial sectors, and Idaho irrigators.

A. Electricity Costs

8. In his declaration for defendants, Roger Schiewe stated that the proposed injunction would increase the costs of electricity the Bonneville Power Administration (BPA) sells to its wholesale customers by \$52 million in FY 2005 and \$50 million in FY 2006, for a total cost of \$102 million. Schiewe ¶¶ 13-15. He also stated that, if all \$102 million were charged to customers during a single year, the wholesale-power rates charged by Bonneville Power Administration (BPA) would rise by \$1.52 per megawatt-hour (MWh), from a base of about \$30 per MWh. Schiewe ¶ 16. For the purposes of this discussion I assume these estimates are correct.

9. Although \$50 million, \$52 million, and \$102 million are certainly large numbers when viewed in isolation, their significance can be determined only when viewed in their larger economic context. Electricity prices in the Pacific Northwest, historically some of the lowest in the nation, continue to be well below national averages, as indicated in Table 1. Even after altering river flows to benefit salmon as the plaintiffs request, electricity rates in the region would remain below national averages.

Table 1. 2003 Electricity Prices.

Sector	U.S. Average	Oregon	Washington	Idaho	Montana				
	¢/ kilowatt hour	¢/ kilowatt hour	Percent of U.S. average	¢/ kilowatt hour	Percent of U.S. average	¢/ kilowatt hour	Percent of U.S. average		
Residential	8.70	7.06	81.2%	6.31	72.5%	6.24	71.8%	7.56	86.9%
Commercial	7.98	6.38	79.9%	6.07	76.0%	5.56	69.7%	7.10	89.0%
Industrial	5.13	4.63	90.3%	4.76	92.9%	4.16	81.1%	4.01	78.1%

Source: Energy Information Administration. "U.S. Average Monthly Bill By Sector, Census Division and State, 2003." http://www.eia.doe.gov/cneaf/electricity/esr/esr_tabs.html (accessed May 5, 2005).

10. All consumers in the region, both those that derive electricity from BPA and those that do not, spent approximately \$9.5 billion dollars on electricity in 2003.¹ An increase of \$52 million in expenditures on electricity represents an increase of only 0.56 percent in this amount. Residential consumers in the region spent \$4.1 billion on electricity in 2003, or 43.4 percent of the region's total expenditures on electricity. These residential expenditures on electricity were 1.06 percent of total household income in the four states.² If residential consumers were to bear 43.4 percent of the \$52 million in additional costs, their payments, \$22.4 million, would equal 0.0058 percent of total household income in 2003.

11. Other factors are likely to have far greater economic impacts. For example, the Bush Administration has proposed requiring BPA to charge market rates for the electricity it sells. Although the details of the proposal remain unspecified, an analysis by the Northwest Power and Conservation Council has estimated that, if implemented, consumers in the region

¹ Source: Energy Information Administration (2005). Electric Sales and Revenue 2003 Spreadsheets (Data Tables). http://www.eia.doe.gov/cneaf/electricity/esr/esr_tabs.html (accessed May 5, 2005).

² Personal income for Washington, Oregon, Idaho and Montana totaled \$389.4 billion in 2004. Source: Bureau of Economic Analysis. SA1-3 - Personal income. <http://www.bea.doc.gov/bea/regional/spi/drill.cfm> (accessed May 6, 2005).

would increase their annual payments to BPA by 65 percent, or \$1.4 billion.³ This amount is 30 times greater than the \$52 million, which defendants and intervenor-defendants have identified as the costs the proposed injunction would generate in 2005.

12. Because BPA's current rates are based on costs, additional costs stemming from the proposed injunction would materialize as higher rates charged consumers. This probably would not be the case if BPA were to charge market-based rates substantially higher than cost-based rates. With market-based rates, consumers would be charged the market rate for electricity, regardless of BPA's costs, including any additional costs stemming from the injunction.

13. If BPA were to raise its 2006 wholesale power rates the full \$1.52 per MWh to recoup all of its injunction-related costs in a single year, it would be reasonable to anticipate that consumers would take steps to offset the increase to the extent they viewed them as significant enough to require a response. Previous price increase have induced consumers to use less energy, implement conservation measures, shift to other sources of energy, or substitute other factors of production, such as labor, for electricity. These adaptive steps would reduce the overall economic costs of the higher wholesale-power rates and stimulate economic activity in the energy-conservation and other sectors.

14. Geoffrey H. Carr, in a declaration on behalf of intervenor-defendants BPA Customer Group, estimated that the potential increase in wholesale electricity rates would cause the loss of 1,150 jobs. Carr, ¶ 26. This number almost certainly overstates the actual impact on employment. To derive this number, he "applied the methodology contained in the U.S. Army

³ Northwest Power and Conservation Council. 2005. *Staff Discussion of the Effects of the Administration's Budget Proposals Requiring Bonneville Power Administration to Sell at Market Rates* February 25. http://www.nwccouncil.org/news/2005_03/16.pdf (accessed May 6, 2005).

Corps of Engineers Lower Snake River Juvenile Migration Feasibility Study.” Carr, ¶ 26. The authors of the Corps’ study, however, acknowledged that the methods they used tend to overstate the impacts of rate increases, as indicated by these statements: “Regional economic impacts are measured in this analysis using input-output models.... Input-output analysis tends to overstate long-term impacts because it assumes that all possible adjustments to disturbance are permanent, and that individual responses to disturbances are limited. People who lose jobs, for example, are assumed to stay unemployed. In reality, people and businesses adjust over time, as they consider and try alternative occupations, technologies, and locations (IEAB 1999).”⁴ In settings such as the one at issue here, it is reasonable to anticipate that such adjustments would occur and would happen quickly. Consumers, for example, might respond to higher electricity prices by turning the thermostat on the air conditioner down slightly, or replacing incandescent light bulbs with more efficient fluorescent bulbs.

B. Transportation Costs

15. In his declaration for the federal defendants, Gregory S. Graham stated that the proposed injunction would draw down the reservoir behind Lower Granite Dam so low that barge and other traffic on the Snake River navigation system to and from the Lewiston area would be impeded. Graham ¶ 13. He estimated the disruption of traffic on the system would generate “economic losses” of \$2.5 million, and he went on to say, “This assumes there is capacity to handle changes in transportation modes, which in the short-term may not be adequate unless much higher costs are paid.” Graham ¶ 13. To estimate the costs, he referred to a 2002 report, which he says “demonstrated that the long term loss of the Snake River navigation system

⁴ U.S. Army Corps of Engineers, Walla Walla District. 2002. *Final Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement, Appendix I: Economics*, pp. 16-3 and 16-4. http://www.nww.usace.army.mil/lsr/final_fseis/study_kit/main_report/appendix_i.pdf (accessed May 6, 2005).

would result in annual economic losses of \$37.8 million.” Graham ¶ 13. He then estimated that traffic above Lower Granite Dam accounts for 26 percent of this amount, and he calculated the pro rata share for 2.5 months. He concluded that the result of the calculation, \$2.5 million, equals the costs that would be imposed if the proposed injunction were to halt shipments of cargo through Lower Granite Dam. Graham ¶ 13.

16. His analytical method and his findings, however, almost certainly overstate the actual economic costs that would materialize. The 2002 document from which he obtained the \$37.8 million states that this is the upper bound of the estimated additional transportation costs that would materialize if all four dams on the lower Snake River were breached and barge transportation along the river permanently halted.⁵ Graham did not account for the range of costs below this upper bound. Moreover, he did not account for two other factors not included in the 2002 document: changes in the transportation system that have reduced the attractiveness of shipping containerized cargo down the Snake-Columbia River waterway to the Port of Portland, and differences between a short-run interruption and a permanent closure of the waterway.

17. Since 2002 there have been some important changes in the transportation system that indicate an interruption of shipping above Lower Granite Dam is likely to have lower costs than in the past. Most notably, two of three shipping lines carrying cargo containers to and from the Port of Portland have recently ceased their service. The Port of Portland is the only

⁵ The document states: “The loss of barge transportation under Alternative 4—Dam Breaching would likely lead to an increased use of other more costly cargo transportation systems. This would entail longer truck travel to more distant barge terminals or a shift to rail transportation services. The net NED costs incurred by cargo shippers are expected to be approximately \$25.1 to \$37.8 million per year for the 100-year study period ... depending on the discount rate.” U.S. Army Corps of Engineers, Walla Walla District. 2002. *Final Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement, Appendix I: Economics*. p. I13-4. http://www.nww.usace.army.mil/lsr/final_fseis/study_kit/main_report/appendix_i.pdf (accessed May 6, 2005).

Columbia River port that handles containers. This reduction in service has increased the incentives for shippers, including those in the Lewiston area that otherwise would have shipped through Portland, to seek other alternatives, such as shipping through the Puget Sound ports. These incentives reinforce other forces that already have induced shippers in Lewiston to divert cargo away from the Snake River waterway. These forces are indicated by Potlatch Corporation's diversion, over the past several years, of its products from the Columbia River to Puget Sound. As the data in Table 2 show, in 2003, only 12.9 percent of its production of pulp and paper products was shipped by barge, down from 25.9 percent in 2001. The decisions by shipping lines to cease service for containerized cargo at the Port of Portland is expected to drive Potlatch Corporation's barge shipments even lower.

Table 2. Potlatch Pulp and Paper Production at Lewiston Compared to Shipments of Pulp and Paper on the Lower Snake River.

	2001	2002	2003	2004
Potlatch Production (Pulp Sales plus Paper and Tissue Production, tons) ^a	523,000	565,000	588,000	624,000
Pulp and Paper Barge Shipments at Lower Granite (tons) ^b	135,300	120,600	74,600	80,700
Barge Shipments as a Percent of Potlatch Production	25.9%	21.3%	12.7%	12.9%

^a Potlatch Corporation Annual Reports for years 2001 through 2004.

^b Walla Walla District Corps of Engineers. *District Tonnage Totals*.

18. With a short-run interruption of traffic, shippers have alternatives that would not be available to them with a long-run closure and, consequently, there is a higher likelihood that they can adjust their shipping schedules and maintain their productive operations. Shippers might shift shipments that otherwise would have occurred when the Lower Granite Dam would be closed to the periods immediately before and after. Or, while the dam is closed, they might temporarily divert shipments from barges to other modes, or divert shipments that would have gone to ports in the Lewiston area to ports below Lower Granite Dam. Such adjustments have

occurred in the past, when shipping along the waterway has experienced short-run interruptions. Shipping was interrupted in March, 2005, when the lock at Lower Granite Dam was closed for annual maintenance, and in 2002, when the lock was closed for emergency repairs.

Understandably, the barge companies and those who are affiliated with their services would prefer not to have the interruption. But other economic interests would see economic benefits from it. Storage companies, for example, would benefit if cargo that otherwise would have been shipped would, instead, be stored during the period of interruption. Trucking and rail companies would benefit if they were to carry cargo that otherwise would have been barged.

19. Precisely how all these adjustments would sort themselves out is an empirical issue that could not be resolved until after the fact. The information currently available, however, indicates that some adjustments would surely occur, that the degree of adjustments would be similar to what the region has experienced in the past, that there would be costs for some and benefits for others, and that the net cost would be less than that indicated by Mr. Graham in his declaration, perhaps substantially so.

C. Impacts on Industrial Electricity Consumers

20. Several declarations submitted on behalf of intervenor-defendants BPA Customer Group describe potential adverse impacts on the operations of farms and manufacturers that would accompany the potential increase in wholesale power rates. To understand the significance of the potential impacts, however, one must place them in the appropriate context. I describe some of the general elements of this context above: the potential rate increases are small relative to current rates, current rates are below those elsewhere in the U.S., and customers have options, such as implementing energy-conservation measures, for mitigating the impacts of rate increases. In the following paragraphs I offer some additional contextual information regarding individual firms.

21. *Longview Fiber Company.* Richard Wollenberg, President and CEO of Longview Fiber Company, estimated that if the company had to bear an increase in BPA's wholesale rates of 2.8 percent in 2005 and 8 percent in 2006, its operating costs would increase by \$600,000 and \$1.7 million, respectively. Wollenberg ¶ 4. These amounts are 0.087 and 0.25 percent, respectively, of the company's total production expenditures of \$689.5 million in 2004.⁶

22. *Weyerhaeuser Company.* Thomas Yarborough, the western Regional Energy Manager for Weyerhaeuser estimated that if its electricity costs were to increase by \$0.87/MWh in 2006 and \$2.46/MWh in 2007, its operating costs would rise by \$2.6 million and \$7.4 million in the two years, respectively. Yarborough ¶ 5. These amounts are, respectively, 0.017 percent and 0.0485 percent of the company's total production expenditures of \$15.249 billion in 2004.⁷

23. *Alcoa Intalco.* Mike Rousseau, Plant Manager at Alcoa Intalco, estimated that, if the company had to bear an increase in BPA's wholesale rates of 2.8 percent in 2005 and 8 percent in 2006, its operating costs would increase by \$1.4 million in 2005 and, if they begin operating at full capacity, \$10.6 million in 2006. Rousseau ¶ 14, 15. These amounts are, respectively, 0.006 percent and 0.045 percent of the company's total sales of \$23.478 billion in 2004.⁸

24. Each of these declarations, and the calculations I have performed above, are based on wholesale rate increases that represent a worst-case scenario. I provide these numbers not to suggest that these companies will not experience additional costs if electricity rates rise but to

⁶ Longview Fiber. *Annual Report: 2004.* Retrieved from the Web on May 6, 2005 from <http://www.longviewfibre.com/investor/financial.htm>.

⁷ Weyerhaeuser. *People and Places: Weyerhaeuser Company Annual Report 2004.* Retrieved from the Web on May 6, 2005 from <http://www.weyerhaeuser.com/annualreport/wyar04/>.

⁸ Alcoa. *Annual Report: 2004.* Retrieved from the Web on May 6, 2005 from http://www.alcoa.com/global/en/investment/annual_rep.asp?lc=1.

suggest that these additional costs may be much less significant than many other factors affecting the companies' performance in the next two years, including, for example, interest rates, labor costs, prices for their products, and global economic conditions.

D. Idaho Irrigators

25. Some concern has been expressed regarding the potential impacts if water from reservoirs behind federal dams in Idaho that otherwise would be available for irrigating crops were, instead sent downstream to augment river flows for salmon. As with the impacts on other sectors, to understand the potential impacts one must consider them in context. In addition to the contextual issues I describe above, one should consider some specific to Idaho's farmers.

Kenneth Pedde, in a declaration on behalf of federal defendants, has stated that there may be no impact, because there may be no water to divert from farmers to instream flows. "Assuming there were willing sellers, which is unlikely in this drought year, and state water laws permitted, it is too late to do anything to meet the plaintiffs injunctive relief request this salmon migration season." Pedde ¶ 10. If water were diverted to instream flows despite the lack of willing sellers, it is reasonable to anticipate that farmers would adapt as they have adapted to prior water shortages caused by factors beyond their control. These adaptations were described recently by Joel Hamilton, Professor Emeritus of Agricultural Economics and Statistics at the University of Idaho, in an analysis of the potential economic impacts of restructuring water usage in southeastern Idaho.⁹ In response to his own question, "How Do Farmers Adjust to Water Shortage?" he stated:

"This report has used the \$500 average crop value per acre across south-central Idaho to estimate the value of crop production that depends on springflow. That is obviously only an approximation, since actual crop value varies by region, land

⁹ Hamilton, J.R. 2004. *Economic Importance of ESRPA-Dependent Springflow to the Economy of Idaho*. Hamilton Water Economics. December 2.

characteristics, and typical crop mix. The more interesting and more difficult question is what happens to the value of crop production if water is short?

“Several places in the main text of this report have mentioned the creative things which farmers do in response to water shortage. If they have enough warning, farmers plant crops that use less water. They concentrate what available water they have on high valued crops. They may idle some of their poorest land. If the shortage is chronic, they line canals and install sprinkler systems. If the shortage is sudden, or if they bet wrong, then they may lose some crop yield or crop quality.

“Some of these responses will decrease the value of crops produced. Other responses will increase operating costs or capital costs. Still, these effects will in general be less than the \$500 per acre crop value would imply. Using the \$500 figure will at best give an upper bound on the economic impacts of water shortage.”

26. Hamilton also estimated that agriculture in the upper Snake River area requires approximately 4.5 acre-feet of water to irrigate one acre of farmland. Using the upper-bound estimate of \$500 of crop value per acre, diverting 150,000 acre-feet of irrigation water would result in a lost crop value of \$16.65 million. We know this is an overestimate of the overall impacts for the reasons Hamilton outlined: if water were diverted to accelerate stream velocities, some, if not all, affected irrigators probably would take steps to curtail their losses.

III. THE PROPOSED INJUNCTION’S POTENTIAL ECONOMIC BENEFITS STEM PRIMARILY FROM ITS IMPACTS ON REDUCING THE RISK OF A REDUCTION IN SALMON POPULATIONS.

27. I understand that plaintiffs have requested the proposed injunction to reduce the risk that operation of the Federal Columbia River Power system would cause reductions in the populations of fall chinook salmon in the Columbia and Snake River Basin in this year and future years. In other words, the injunction is intended to increase expected future populations of salmon above levels that would be expected absent the injunction. Any such reduction in risk and increase in expected populations would have a positive economic value. The exact magnitude of the value is impossible to determine, given current understanding of the economics

of salmon management and uncertainties regarding how salmon populations would differ, with versus without the injunction. Thus, to obtain a sense of the general magnitude of the proposed injunction's potential economic benefit, one must look to previous research regarding the value of potential increases in the populations of Columbia River salmon.

28. One relevant study was conducted by three economists: David Layton, Gardner Brown, and Mark Plummer.¹⁰ Using the data from a survey of Washingtonians, they estimated households' willingness to pay for increased populations of salmon. They found that, on average, respondents to the survey expressed a willingness to pay \$132.58 per household per year for an increase of 1 million, or 50 percent, in the overall population of Columbia River salmon and steelhead, assuming that otherwise the population would remain constant, at 2 million.¹¹ Applied to all households in Washington, the total willingness to pay was \$339 million per year. These numbers indicate an average willingness to pay \$339 per additional fish, for a substantial increase in an otherwise stable population. If households in Oregon, Idaho, and Montana have the same willingness to pay, the total would be \$670 per fish. Economic theory indicates the value per additional fish would be even higher in situations such as this one, where the injunction is intended to prevent a dwindling of populations.

29. Incurring costs now to avoid costs and risks in the future is common practice throughout the U.S. economy. Such practice also is found in the operation of the Federal Columbia River Power system. For example, in its "Fifth Power Plan" the Northwest Power and Conservation Council justified investments in energy conservation by observing that, "Although conservation may result in small rate increases in the short term, it can reduce both cost and risk

¹⁰ Layton, David, Gardner Brown, and Mark Plummer. 1999. *Valuing Multiple Programs to Improve Fish Populations*. April.

¹¹ Willingness to pay shown in 2005 dollars.

in the long term.”¹² From an economic perspective, the proposed injunction has similar characteristics: it would increase short-run costs to lower economic losses associated with the risk that, absent the injunction, there would be a significant decline in salmon populations.

IV. CONCLUSION

30. The proposed injunction would generate both economic costs and economic benefits. Though considerable, the costs probably would be smaller than estimated in declarations submitted on behalf of defendants and intervenor-defendants. They also would be small relative to the overall regional economy and their impacts probably would be smaller than the impacts of many other factors, such as decisions regarding the pricing of electricity from federal dams. This is not to say that the costs are immaterial, but that it is reasonable to anticipate that parties affected by the costs probably would be able to take steps to mitigate the costs somewhat. The magnitude of the proposed injunction’s potential economic benefits depend largely on the extent to which the injunction would reduce the risk of a reduction in current and future salmon populations. The greater the reduction in risk, the greater would be the economic benefits.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct. Executed on this 13th day of May, 2005, at Eugene, Oregon.



ERNEST G. NIEMI

¹² Northwest Power and Conservation Council. 2005. The Fifth Power Plan: A guide for the Northwest’s energy future – Executive Summary. <http://www.nwcouncil.org/energy/powerplan/draftplan/ExecSumm.htm> (accessed May 6, 2005)