



# Northwest Resource Information Center

**March 2002**

Idaho Economic Effects of  
Breaching/Not Breaching the  
Army Corps of Engineers'  
Snake River Dams in  
S.E. Washington

A Survey of the Disconnect Between  
Economic & Political Realities

**IDAHO ECONOMIC EFFECTS OF  
BREACHING/NOT BREACHING  
THE ARMY CORPS OF ENGINEERS'  
SNAKE RIVER DAMS IN S.E. WASHINGTON—  
A SURVEY OF THE DISCONNECT BETWEEN  
ECONOMIC & POLITICAL REALITIES**

**This document was created by the  
Northwest Resource Information  
Center as part of its Columbia/Snake  
Rivers Salmon Project.**

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**March 2002**





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# **preface**

This document surveys the economics of the disconnect between economic reality and political realities in Idaho vis-à-vis breaching the Army Corps of Engineers' four dams on the lower Snake River in southeastern Washington.

The economic reality is that breaching—partially removing—the dams would restore Idaho's valuable anadromous salmon and steelhead to productive levels, and produce significant economic benefits for the state.

The political reality is that the State of Idaho, including its congressional delegation, opposes breaching.

That political reality purports to find support in the conclusions of a 4-year, \$20 million draft study completed by the Corps in December 1999.

In that study, and in its February 2002 final document, the Corps concluded that breaching the dams would result in significant economic cost to the Nation, to the Northwest, and to Idaho.

In this survey we focus on the Corps' counter-intuitive finding that breaching the dams would have negative economic consequences for Idaho.

Importantly, we rely on

economic data produced for the Corps' study by its staff, by private sector contractors hired by the Corps, and by other government agencies.

In addition, we simply accept many underlying Corps assumptions and methodologies which characteristically were designed to maximize the costs and minimize the benefits of breaching.

Our objective in accepting those considerable limitations and biases for purposes of this analysis is to ensure an extremely conservative result.

This survey compresses a large amount of economic data and analyses into compact form in order to facilitate access by policy makers and influencers.

Readers are encouraged to examine the supporting information cited in the endnotes.

breaching = \$93 million/yr  
Idaho benefit

## executive summary

### Executive Summary

The U.S. Army Corps of Engineers did not design the four lower Snake River dams in southeastern Washington to pass migrating juvenile anadromous salmon and steelhead as Congress intended in authorizing the projects.

The resulting catastrophic mortalities caused salmon and steelhead populations to plummet relative to pre-project levels. Once-productive naturally-produced populations were pushed to or over the threshold of extinction.

This has had, and continues to have, serious adverse economic impact on the State of Idaho.

The Corps spent hundreds of millions of tax dollars retrofitting the dams, but finally concluded inherent design flaws cannot be corrected.

Using only part of the available data, the Corps concluded that breaching—partially removing—the dams to restore the free-flowing river to safely pass migrating juvenile fish would have a net economic cost to the Nation and the Northwest of \$267 million per year.

By rationalizing the Corps' estimate, and by including values produced for but omitted by the Corps, we

produce a fundamentally different result: \$677 million per year in net aggregate national and Northwest economic benefits.

By separating and rationalizing Northwest costs/benefits—including keeping whole the current irrigation and barge transportation beneficiaries of the dams—we produce a net economic benefit to the Northwest of more than \$1 billion per year.

The Corps also concluded that breaching would cost Idaho \$32 million per year.

By rationalizing the economic data produced for the Corps we produce a dramatically different result: \$93 million per year net economic benefits to Idaho, with a net present value of \$1.4 billion.<sup>1</sup>

If the dams are not breached, these numbers represent the annual amount of lost economic activity and the net present value of future economic loss to Idaho.

In addition to the future economic effects on Idaho of breaching/not breaching the dams, we estimate \$1.6 billion in past loss to Idaho to date. This loss is due to the Corps' failure to meet its long-standing obligation to compensate for the loss of

salmon and steelhead at the lower Snake River dams.

In late December 2001 the Corps announced that on the basis of its analysis, the dams should not be breached. In late February 2002, the Corps released its final feasibility analysis/environmental impact statement in purported support of its earlier conclusion.

These events received a positive reception among Idaho political policy makers and influencers.

*The Gilded Age, A Tale of Today*, by Mark Twain and Charles Dudley Warner, was published in 1873.<sup>2</sup> The book gave the era of giant pork barrel water projects its name. It chronicles a scheme to extend waterway transportation inland up the “Columbus River” at taxpayer expense. Readers of this document will find apt the book’s subtitle.



The Columbia River is the fourth largest river in North America. From its source in British Columbia, Canada it flows 1,200 miles [1932 km] to the Pacific Ocean. It drains an area of about 260,000 square miles [673,400 km<sup>2</sup>] including southeastern B.C., much of the States of Washington, Oregon, and Idaho, and portions of Montana, Wyoming, Utah, and Nevada. This is an area larger than the county of France.

The Snake River is the largest tributary to the Columbia River. It originates in the State of Wyoming and flows 1,038 miles [1671 km] to its confluence with the Columbia. The Snake drains an area of about 109,000 square miles [282,310 km<sup>2</sup>].

# introduction

## Introduction

This survey presents perspective on the economic costs and benefits to Idaho of breaching the four Army Corps of Engineers' dams on the lower Snake River in southeastern Washington. In order to explicate those costs and benefits, we place them in national and Northwest context.

The dams were constructed in the waning years of the Nation's prodigal Gilded Age of giant pork barrel water projects.

The original vision was to extend waterway commerce from the Columbia River up the Snake River roughly 140 miles [224 km] to Lewiston, Idaho. That couldn't be economically justified even with the accounting slight of hand in vogue at the time. But the idea got the Corps of Engineers engaged.

In time, instead of building a series of low dams and locks for barges as on other big rivers, giant hydropower dams were built. They generated cash which subsidized waterway transportation.

Congress authorized these dams with the intent that they would be designed, constructed, and operated to maintain valuable Snake River migratory salmon and steelhead at pre-project levels. Large hatcheries and related

artificial propagation facilities were authorized to compensate for a projected unavoidable 48 percent loss of the pre-dam fish populations.<sup>3</sup>

Congressional intent notwithstanding, the Corps' project design inexplicably failed to make any provision whatsoever for juvenile Snake River salmon and steelhead to migrate through the reservoirs and past the dams.<sup>4</sup>

Consequently, chronic high levels of juvenile fish mortality eventually reduced once enormous naturally produced fish populations to or over the threshold of extinction. Hatchery-produced fish suffered similar mortalities, thwarting achievement of compensation objectives.

The Corps spent hundreds of millions of dollars on post-construction add-ons attempting to improve juvenile fish passage at and between the dams. The agency finally concluded the dam and reservoir complex cannot be modified sufficiently to overcome the inherent design flaws.

Instead, the Corps decided to leave the dams in the river, take the fish out, and haul them in barges and trucks 400 miles [644 km] to the Columbia River estuary for release.

State, federal, tribal, and independent salmon and steelhead authorities reached a different conclusion. They proposed breaching—partially removing—the dams in order to meet the fish protection intent of law.<sup>5</sup>

“... there is no scientific basis for concluding Snake River salmon and steelhead are likely to recover with non-breaching alternatives.”

Edward Bowles, Anadromous Fish Manager, Idaho Department of Fish and Game, September 2000.<sup>6</sup>

“... studies conducted over the last 30 years have definitively shown that transportation [barging and trucking] has failed as a mitigation tool and is not reversing the decline of Snake and Columbia River salmon and steelhead.”

Oregon Department of Fish and Wildlife.<sup>7</sup>

"I really thought this was going to be a different kind of study for the Corps," said Bengé, a 20-year veteran of the Corps. "It tears me up that it got hung up in politics."

Michael Grunwald, *The Washington Post*, September 12, 2000.

"... This stacking of the analytical deck conflicts with commonly accepted standards of professional economic analysis and yields results biased against the [breaching] alternative."

Economic consulting firm ECONorthwest.<sup>12</sup>

Direct beneficiaries of the dams and allied political and economic interests strongly objected to the prospect of breaching the dams. These objections typically were cast in economic doomsday terms.

The Corps in December 1999 released the draft results of a 4-year, \$20 million study of the costs and benefits of breaching the dams.<sup>8</sup> The Corps concluded breaching the dams would result in \$246 million per year cost to the Nation and to the Northwest.

Corps staff, Corps contractors, other government agencies, and many independent analysts documented that the Corps had "cooked the books" to exaggerate the costs and minimize the benefits of breaching. We deal with this issue at length elsewhere.<sup>9</sup>

In its December 1999 study the Corps also concluded that breaching the four lower Snake River dams in southeastern Washington would result in a net economic loss to the State of Idaho.<sup>10</sup>

Independent analysis of the Corps' data produced results opposite to the Corps' counter-intuitive conclusion; in fact, Idaho would gain significant economic benefits from breaching the dams.

Notwithstanding these findings, it is Idaho's official state policy,

unanimously supported by the Idaho congressional delegation, that the dams should not be breached.

The disconnect between economic and political realities is difficult not to notice.

Many obviously have made the necessary effort.

In late February 2002 the Corps released its final feasibility report/environmental impact statement.<sup>11</sup> It concluded that breaching would result in \$267 million annual net economic cost to the Northwest and Nation.

The Corps also concluded that Idaho would incur a net cost of \$32 million per year.

In the following analysis we untangle, correct errors and omissions, rationalize, and summarize the voluminous economic data relative to Idaho that was produced for the Corps' 1999 draft report and its 2002 final report.



# analysis

## Analysis

The following analysis relies on the economic data produced for the Corps' 6-year, \$20 million-plus study of breaching the four lower Snake River dams.

To ensure a conservative result, with limited exceptions, we simply accept underlying Corps assumptions and methodologies which characteristically were designed to maximize the costs and minimize the benefits of breaching.

The Corps' analysis was broken into two major categories, national and Northwest-wide economic effects—National Economic Development Account (NED in economist's shorthand)—and subregional effects—Regional Economic Development Account (RED).

The State of Idaho and a small part of northeastern Oregon comprise the Corps' RED Upriver subregion.

To explicate the economic effects on Idaho, it is necessary to provide the national and Northwest context.

Readers will note that we refer to both the draft and final Corps reports. There are two reasons for this.

First, the Corps' initial conclusions in its December 1999 draft document drove the

political decision making process. The Corps' final document merely reinforced its initial assertions.

Second, in transitioning from the draft to the February 2002 final document, the Corps made it even more difficult to backtrack its economic reasoning; data from the 1999 draft report and the accompanying endnotes help overcome that difficulty.

**"You want to ruin a system that we have today that's the most cost-effective and cheap for energy production in the world. You want to ruin the economy of America and rural America . . ."**

**John Brenden, former Montana Member, Northwest Power Planning Council.**



The first of the Corps of Engineers' lower Snake River dams in southeastern Washington, Ice Harbor, was completed in 1961 about 10 miles [16.1 km] upstream from the confluence of the Snake and Columbia Rivers.

Completion of Lower Monumental [1969], Little Goose [1970], and Lower Granite [1975] extended slack water navigation upstream to Lewiston, Idaho about 450 miles [725.5 km] from the Pacific Ocean.

## National and Northwest Costs/Benefits

Table 1

Rationalized NED (National and Northwest) Annual Economic Costs/(Benefits) of Breaching the Lower Snake River Dams (In \$Millions)				
COE Cost Estimates		Draft	Final <sup>15</sup>	
1	Implementation Cost [breaching]	48.787	48.790	
2	Waterway transportation	24.034	37.813	
3	Irrigation & Water Supply	15.424	15.424	
4	Energy	271.000	271.000	
Total COE Cost		359.245	373.027	
COE Benefit Estimates				
5	Avoided costs	(29.178)	(33.570)	
6	Recreation	(82.000)	(70.524)	
7	A-Fish (commercial fishing)	(1.593)	(2.218)	
8	Flood Control	(0.000)	0.000	
Total COE Benefit		(112.771)	(106.312)	
COE net total cost/(benefit)		(246.474)	(266.715)	
COE Omitted Benefits				
9	Flow Augmentation	(39.975)	(39.975)	
10	Water Quality	0.000	0.000	
11	Recreation	(114.425)	(109.832)	
12	Passive Use Values	(745.000)	(745.000)	
13	Native American Indian Issues	(48.787)	(48.790)	
14	Flood Control	(0.367)	(0.367)	
Total Omitted Benefit		(948.554)	(943.964)	
Total net cost/(benefit)		(702.080)	(677.249)	
Note: For details on each economic sector evaluated see corresponding item in body of document and the accompanying endnotes.				
<sup>1-8</sup> COE 1999, Appendix I, Economics, Table 10-2, p. II0-3, 4.				
<sup>9</sup> Midpoint of cost estimates to use 1 million acre feet of Idaho stored water to flush juvenile fish through the lower Snake River reservoirs and past the dams. BOR 1999.				
<sup>10</sup> The Corps accounted for CWA compliance with effluent standards in Irrigation/Water Supply. U.S. Environmental Protection Agency asserts that breaching is the most economical way to achieve CWA compliance by the dams/reservoirs per se; the cost of breaching is accounted for in Implementation Cost.				
<sup>11</sup> Corps did not omit all recreation values. This number is the difference between the midpoint of estimates produced by Corps economics study team and the low-end value substituted by the Corps.				
<sup>12</sup> Midpoint of estimates developed by Corps economics study team.				
<sup>13</sup> Corps' estimated cost of dam breaching used here as token economic proxy for economic benefit to Native American Indian Tribes.				
<sup>14</sup> Corps' estimate to reduce flood hazard to Lewiston created by sediment filling reservoir impounded by uppermost lower Snake River dam.				
<sup>15</sup> COE 2002, Appendix I, Economics, Table 10-2, p. II0-3.				

In Table 1 we present the Corps' draft and final NED (aggregate national and Northwest) costs and benefits of breaching the dams.

In its final document the Corps concluded that breaching would cost the Nation and the Northwest an aggregate \$267 million per year.<sup>13</sup>

For this presentation we ignore the bias of the Corps' underlying assumptions and accept that number. In Column 2 we add the values prepared for but omitted by the Corps, resulting in \$677 million per year aggregate net national and Northwest economic benefit.

breaching = \$1 billion/yr  
NW benefit

## Northwest Costs/ Benefits

In Table 2 the first column of numbers reproduces the Corps' aggregate national and northwest values presented in the Final column in Table 1. The second column of Table 2 displays the results of rationalizing Northwest costs/benefits of breaching the dams.

Note that the national cost of breaching the dams (Implementation Cost) is an investment, or

benefit, at the Northwest level. Avoided Cost—expenditures that would cease upon breaching—is a benefit at the national level, but a cost at the Northwest level.

For Barge Transportation we assumed shippers would be reimbursed for any increased shipping costs for a 15-year transition period. We include \$15 million per year as the current annuity value of potential future cost increases.

Of course, those who currently benefit from this subsidy do so at the cost of other shippers and the Nation's taxpayers.

However, it is the Corps' negligence in designing the dams that compels breaching.

In our view is not reasonable nor realistic that people who structured their economic lives around the availability of barge transportation should bear the full brunt of remedying the Corps' error.

Table 2

Rationalized Northwest Annual Economic Costs/(Benefits) Of Breaching the Lower Snake River Dams (In \$Millions)		
Economic Sector	COE Natl	NRIC NW
1 Implementation Cost [breaching]	48.790	(46.913)
2 Barge Transportation	37.813	14.880
3 Irrigation & Water Supply	15.424	0.593
4 Energy	271.000	10.423
5 Avoided costs	(33.570)	33.570
6 Recreation	(70.524)	(180.356)
7 A-Fish (commercial fishing)	(2.218)	(2.218)
8 Flood Control	0.000	0.000
<b>total cost/(benefit)</b>	<b>(266.715)</b>	<b>(170.021)</b>
<b>COE Omitted Benefits</b>		
From Table 1	(943.964)	(834.112) <sup>9</sup>
<b>Total net cost/(benefit)</b>	<b>(677.249)</b>	<b>(1004.153)</b>

NOTE: For details on each economic sector evaluated refer to the corresponding item in the body of the document and the corresponding endnotes.

<sup>1</sup> This cost at the national level is a benefit at the Northwest level. For the latter we deduct the Northwest share of federal taxes.

<sup>2</sup> At Northwest level assumes shippers would be reimbursed for any increased shipping costs for a 15-year transition period. This number is the current annuity value of potential future cost increases.

<sup>3</sup> At Northwest level assumes Treasury assumes cost of mitigating the effect of remedying the Corps' error. The value here is Northwest share of federal taxes.

<sup>4</sup> At Northwest level assumes energy forgone to breaching is replaced at lower cost on open market, and that remaining debt on breached dams is returned to the Treasury, given it is Corps' design error that compels breaching. This number represents Northwest share of taxes on remaining debt.

<sup>5</sup> This benefit at the national level is a cost at the Northwest level.

<sup>6</sup> Middle value of range of recreation benefits developed for the Corps. (Sum of Corps' estimate and the difference between Corps' estimate and middle value presented in item 11 Table 1.)

[breaching the dams would be like]" . . . taking a sledgehammer to the Northwest economy."

Editorial page, The Oregonian, May 1, 2000.

For the same reasons, we eliminate Irrigation and Water Supply costs to the Northwest.

Thirteen irrigators pump water from the reservoir behind Ice Harbor Dam. These irrigators get windfall benefits from the presence of the reservoir which reduces pumping lift and energy costs.

However, these people made their investments in good faith. Given that it is the Corps' negligence that compels breaching the dams, in our view it is not reasonable that these irrigators should be stuck with the cost of adapting their operations to a restored free flowing river.

The big ticket item is the Corps' energy cost estimate. It exceeds the Corps' total net cost of breaching.

In the National column of Table 2 we present the Corps' estimated replacement energy cost of \$271 million per year. This estimate was based on the assumption that Bonneville Power Administration would be the low-cost provider and would replace at higher cost the energy forgone by breaching the dams. In our view those assumptions are not realistic.

It is more reasonable to assume that the power is replaced at lower cost on the open market. Current market wholesale prices are 10 mills (\$0.01) per kWh less than Bonneville's price. At current rates, replac-

ing the power foregone by breaching the dams on the open market would result in a \$109 million per year net energy savings to the Northwest.<sup>14</sup>

Furthermore, given it is the Corps' design error that compels breaching, it is appropriate the remaining debt on the breached dams be returned to the Treasury to be spread among the Nation's taxpayers. The Northwest's share would be about \$10 million per year.<sup>15</sup>

Rationalizing only the values the Corps used, and keeping current irrigation and barge transportation subsidy beneficiaries whole, replacing foregone energy on the open market, and returning remaining debt on the breached dams to the Treasury, produces a \$170 million per year net economic benefit to the Northwest.

Adding values estimated for the Corps but omitted from its results, raises total Northwest net economic benefits to more than \$1 billion per year.

## Idaho Costs/Benefits

Table 3 column 1 replicates that portion of the Corps' 1999 draft table which purported to summarize the economic effects on the Upriver subregion [for all practical effect, Idaho] of breaching the four lower Snake River dams.<sup>16</sup>

The Corps incorrectly summed the total increase and decrease in long term business sales to produce a cost to Idaho of \$15 million per year. We corrected the math in column 2 to produce a benefit of \$10 million per year.

As noted in column 3, two years later, in its final document the Corps corrected the math. It also reduced Idaho recreation benefits, and added implementation benefits and barge transportation costs not included in its draft summary table. These actions produced \$32 million per year net economic loss to Idaho from breaching.<sup>17</sup>

Even with the noted additions, the Corps' final summary results still omitted the majority of Idaho costs/benefits of breaching.

In Table 4 we rationalize the Corps' results presented in Table 3 for a more reasonable presentation of the agency's own data. We also account for all the costs and benefits developed for the Corps but which, for one reason or another, the agency

inappropriately omitted from its summary presentation of Idaho costs and benefits.

The following briefly describes each economic sector evaluated.

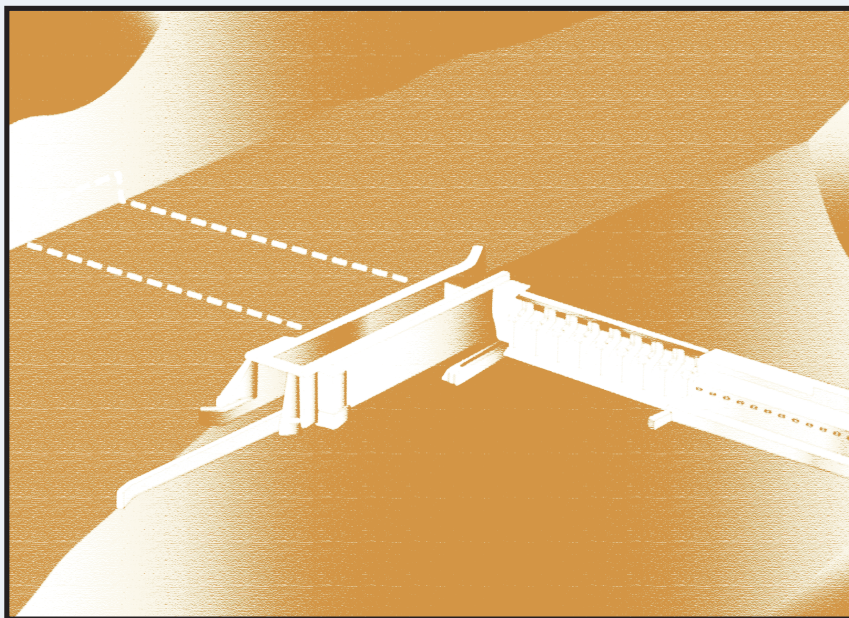
### Idaho Values the Corps Included

The following economic sectors were included in the Corps' final summary of costs/benefits to the Upriver subregion (Idaho) reproduced in Table 3.

### 1 New Power Plant and Transmission Line O&M.

As shown in Table 3, the Corps assumed there would be no Idaho economic benefits from operation and maintenance of new power plants and transmission lines assumed necessary to replace energy forgone from breaching the dams. This is unrealistic. One power plant has been constructed in Idaho since the Corps study began. Others are planned.

In Table 4 we include \$1.08 million per year benefit to Idaho, the cost of staffing two combined gas cycle turbine power plants.<sup>18</sup> This is a conservative, more accurate number than the Corps' clearly inaccurate estimate of zero.



Breaching involves removing a portion of each dam to allow the river to flow freely around the remaining portion.



Table 3

Corrected/Updated Corps of Engineers' Annual Long-term Business Sales Effects (\$Millions) Upriver Subregion [Idaho] <sup>1</sup>			
	COE Draft <sup>2</sup>	NRIC Corrected	COE Final <sup>3</sup>
<b>Total Business Sales<sup>4</sup></b>	<b>7,964.66</b>	<b>7,964.66</b>	<b>7,964.66</b>
<b>Increase</b>			
O&M on Replacement Power			
Plants & New Transmission Lines	00.00	00.00	00.00
Recreation (including Angling)	(24.90)	(24.90)	(15.89)
Implementation Cost	00.00	00.00	(0.36)
Total Long-term Increase in Business Sales	(24.90)	(24.90)	(16.25)
<b>Decrease</b>			
Reduction in Irrigated Lands <sup>5</sup>	00.00	00.00	00.00
Avoided Cost	6.54	6.54	14.00
Reduced Cruise Ship Operations	8.39	8.39	8.39
Barge Transportation	0.00	0.00	25.47
Total Long-term Loss in Business Sales	14.93	14.93	47.86
Net Long-term Change in Business Sales	14.93	( 9.97)	31.61
Net Change as % of Existing Business Sales	0.19	(0.13)	0.40

NOTE: In the left column of numbers, the Corps neglected to subtract long-term decrease in business sales from long-term increase. In the center column we correct that error. In its final report the Corps corrected the error. The Corps also reduced recreation benefits and added waterway transportation costs which changed Idaho long-term business sales effects from a net benefit to a net cost in the final document.

For details on each economic sector evaluated, refer to the corresponding heading in the body of this document and to the accompanying endnotes.

<sup>1</sup> Upriver subregion includes a small part of northeastern Oregon.  
<sup>2</sup> COE 1999, Appendix I, Economics, Table 6-17, p. 16-21.  
<sup>3</sup> COE 2002, Appendix I, Economics, Table 6-33, p. 16-31.  
<sup>4</sup> The Corps uses business sales to represent total economic effects. Business sales are the driving force behind the economy from an input-output perspective.  
<sup>5</sup> At the NED level the Corps used the heading Irrigation and Water Supply.

## 2 Recreation.

The Corps' contractors produced a range of estimated total national and Northwest recreation values with a midpoint of \$196 million per year.<sup>19</sup> The Corps selected a low-end value of \$82 million per year in its draft.<sup>20</sup> In the final document the midpoint was reduced to \$180 million per year, and the Corps' selected value reduced to \$71 million.<sup>21</sup>

As presented in Table 3, of \$71 million per year total (NED) recreational benefits, the Corps attributed \$16 million per year to Idaho. This Corps estimate is interesting and instructive.

For comparison, the Idaho Department of Fish and Game used a scientific sampling technique for salmon permit holders and determined that the 2001 Idaho salmon season alone produced \$46 million in economic value to the state.<sup>22</sup> This is only direct expenditures, and does not include substantial secondary economic effects.

Independent economic studies funded by the Idaho Fish and Wildlife Foundation in the late 1990's concluded that fully restoring Idaho salmon and steelhead runs and recreational fisheries would have an economic impact of \$160 million per year on Idaho's economy.<sup>23</sup>

In Table 4 we use the midpoint NED estimate of \$180 million

per year produced by Corps contractors to derive a very conservative net recreational benefit to Idaho of \$41 million per year.<sup>24</sup>

## 3 Implementation Cost.

Breaching the dams would be a major deconstruction project. The Corps estimated it would cost \$709 million.<sup>25</sup>

Spending of this magnitude represents a significant cost at the NED (national) level, and would provide proportionate economic benefits to affected communities at the RED (sub-regional, i.e., Idaho) level.

In its draft summary of economic costs and benefits to Idaho reproduced in Table 3, the Corps omitted the economic benefits of

deconstructing the dams that would accrue to Idaho. The Corps unrealistically added only \$0.36 million per year benefits to Idaho in its final document.<sup>26</sup>

**"It was a classic case of best professional practices saying one thing, and our fearless military leaders caving into politicians and doing something else."**

**John Loomis, Colorado State University economist hired by the Corps to estimate the recreational benefits of breaching the dams.<sup>27</sup>**



The Corps of Engineers' preferred method of juvenile salmon and steelhead migration.

“We built those dams to reclaim Idaho’s lands, and build a future of prosperity for our people and our state.

“But what happens to Idaho if [the four lower Snake River dams are breached]?

“No Irrigation.  
No Hydroelectric Power.  
No Commerce.  
No Recreation.  
No jobs for Idaho.”

Idaho Senator Larry Craig (R),  
1996 reelection campaign.

#### **4 Reduced Irrigated Land.**

No Idaho land is irrigated from the reservoirs impounded by the four lower Snake River dams. The reservoirs are in the State of Washington.

This geographic fact has escaped many in Idaho, including its senior U.S. Senator, Larry Craig, who in campaign literature exhorted his Idaho constituents to the contrary.

#### **5 Avoided Costs.**

The Corps’ draft estimated \$6.54 million dollars per year cost to Idaho from dam-related expenditures that would cease upon breaching.<sup>28</sup> In its final report this number was increased to \$14 million.<sup>29</sup> In Table 4 we use the Corps’ number.

#### **6 Cruise Ship Operations.**

The Corps assumed that breaching the dams would stop all cruise ship operations up the lower Snake River to Lewiston, Idaho with resulting economic loss to Idaho of \$8.39 million per year.<sup>30</sup>

This assumption ignores the obvious alternatives of cruising the restored free flowing river with large jet boats such as those currently plying the Snake River above Lewiston, and of people using land or air transportation to Lewiston thence into jet boats to cruise the upper river.

It also ignores the even more obvious likelihood that 140 miles of restored desert canyon and river, interspersed with four massive concrete relics of past energy technology, would be an extraordinary tourist attraction.

Given that this survey is strategically anchored to data produced for the Corps, in Table 4 we merely reduce the Corps’ estimate by half to produce a more reasonable—but in our view still overstated—estimate of \$4.195 million per year loss to Idaho due to breaching.

#### **7 Barge Transportation.**

Breaching the dams would eliminate waterway shipment of goods for about 140 miles on the lower Snake River. In its draft report the Corps estimated \$24 million per year in NED (national and Northwest) costs. It uncharacteristically neglected to apportion any of those costs to Idaho.

In its final report the Corps estimated \$38 million per year in total increased cost to shippers. It apportioned \$25 million per year of the total cost to Idaho.<sup>31</sup>

In Table 4 we assume shippers would be reimbursed for any increased shipping costs for a 15-year transition period. We include \$10 million per year as the current annuity value of potential future cost increases to Idaho shippers.



□ Table 4

Rationalized Idaho Costs/(Benefits) of Breaching Lower Snake River Dams (\$Millions)		
Economic Sector □□□ NRIC Revised Corps Values from Table 3	Cost (Benefits) □	
□	Annual	NPV*□
1 New Power Plant & Transmission O&M	(1.080)	(15.689)
2 Recreation □□	(40.637)	(590.312)□
3 Implementation Cost □□	(12.089)	(175.603)□
4 Reduced Irrigated Land □□□	0.000	0.000□
5 Avoided Costs □□□	14.00	203.373 □
6 Cruise Ship Reduction □□	4.195	60.939 □
7 Barge Transport □□	10.023	145.598 □
Corps Omitted Values □		
8 Truck & Rail Transport □□	(0.624)	(9.063)□
9 Energy Cost	0.000	0.000 □
10 A-Fish □□□	(0.011)	(0.161)□
11 Flood Control □□	0.000	0.000 □
12 Flow Augmentation □□	(39.975)	(580.701)□
13 Water Quality- Dams □	0.000	0.000□
14 Water Quality-Effluent □	2.296	33.355 □
15 Passive Use Values	(16.556)	(240.496)□
16 Native American Indian Values □	(12.198)	(177.188)□
<b>Total Costs (Benefits) □□</b>	<b>(92.654)</b>	<b>(1345.950)□□</b>
<p>NOTE: In the left column of numbers, the Corps neglected to subtract long-term decrease in business sales from long-term increase. In the center column we correct that error. In its final report the Corps corrected the error. The Corps also reduced recreation benefits and added waterway transportation costs which changed Idaho long-term business sales effects from a net benefit to a net cost in the final document.</p> <p>For details on each economic sector evaluated, refer to the corresponding heading in the body of this document and to the accompanying endnotes.</p> <p><sup>1</sup> Upriver subregion includes a small part of northeastern Oregon.</p> <p><sup>2</sup> COE 1999, Appendix I, Economics, Table 6-17, p. I6-21.</p> <p><sup>3</sup> COE 2002, Appendix I, Economics, Table 6-33, p. I6-31.</p> <p><sup>4</sup> The Corps uses business sales to represent total economic effects. Business sales are the driving force behind the economy from an input-output perspective.</p> <p><sup>5</sup> At the NED level the Corps used the heading Irrigation and Water Supply.</p>		

# corps omits most Idaho economic benefits

Idaho Senator Larry Craig (R) relentlessly campaigns against breaching the four lower Snake River dams which are located in southeastern Washington.

A Pocatello, Idaho Chamber of Commerce draft report contained a statement that protecting Idaho irrigation water should have priority over protecting dams in Washington. Craig rushed to Pocatello to meet with the Chamber. He urged it not to say anything that might be construed as supportive of dam breaching.

He incongruously claimed that breaching the dams would not remove the threat to Idaho water, and would foreshadow destruction of Idaho's cheap hydroelectric energy base.

"Our greatest threat to our three- to four-cent rates is to our ability to maintain our hydro base. Knocking out four lower Snake River dams is the beginning of the destruction of that hydropower base."

Idaho Senator Larry Craig, before the Pocatello Chamber of Commerce, December 1998.

## Idaho Values the Corps Omitted

In the preceding discussion we rationalize the economic values the Corps included in its February 2002 final summary presentation of breaching costs/benefits to Idaho.

Following we account for additional costs/benefits which were omitted from the Corps' final summary presentation of results.

## 8 Truck and Rail Transportation.

Breaching would force shippers to return to using railroads and trucks as they did before the dams and concomitant subsidies took business away from those modes of transportation.

Railroads serving the project area are a combination of national corporations and regionally owned and operated short-lines. Trucking companies are primarily regionally-owned.

In Table 4 we assume Idaho trucking and rail interests benefit from 33 percent of the Corps' estimated \$38 million per year in total (NED) increased transportation cost, and convert 5 percent of that into income of \$0.624 million per year.

## 9 Energy Cost.

In its summary presentation of data replicated in Table 3, the Corps uncharacteristically neglected to include Bonneville Power Administration's estimate

of the increased cost to Idaho of \$37 million per year to acquire higher cost replacement power.<sup>32</sup> In Table 4 we also put in zero cost to Idaho.

Bonneville's estimate assumed it was the low cost provider. That it would replace at higher price the power foregone from breaching the dams, and the resulting cost would be spread among its customers. Those assumptions are not reasonable.

At this writing wholesale prices are 10 mills (\$0.01) per kWh less than Bonneville's, and the agency has obligations that make lowering rates difficult.

A more reasonable scenario would replace the power at lower open market prices, and would return the remaining debt on the breached dams to the Treasury.

It is, after all, the Corps' design error that compels breaching. The cost of remedying that error is appropriately borne at the national level. Northwest residents would pay their appropriate share through federal taxes.

This alternative scenario easily could result in a net energy cost benefit to the Northwest instead of net energy cost as projected by the Corps.<sup>33</sup> This is doubly true for Idaho, which currently only gets about 7 percent of its power from Bonneville.

In Table 4 we conservatively assume \$0.00 energy cost/benefit to Idaho resulting from breaching.

## 10 A-Fish.

The purpose of the Corps' A-Fish analysis was to identify the net economic value associated with changes in commercial and recreational anadromous fish harvest. This has very little if any effect on Idaho.

In Table 4 we use 0.05 percent of the Corps' NED estimate to derive a token Idaho benefit of \$0.11 million per year.

## 11 Flood Control.

Contrary to widespread belief, the four lower Snake River dams provide no flood control benefits. In fact, the reservoir behind the upper dam is filling with sediment, creating a flood hazard for Lewiston, Idaho.

The Corps has proposed a multi-million dollar levee expansion and perpetual dredging program to reduce the dam-induced flood hazard.<sup>34</sup> Breaching would make this expenditure unnecessary. The Corps characteristically neglected to include this avoided cost in its NED (national and Northwest) benefits of breaching.

In Table 4 we assume the RED (Idaho) cost of increased flood hazard to Lewiston is offset by the Corps' higher NED spending to eliminate the hazard, producing \$0.00 cost/benefit to Idaho.

## 12 Flow Augmentation.

Notwithstanding congressional

intent, the Corps failed to design the dams to allow juvenile salmon and steelhead to migrate through the lower Snake River reservoirs and past the dams.

In all but high-flow years, seaward-migrating juvenile fish are stalled or stopped in the slack water reservoirs. Survivors are forced through successive powerhouses, or into trucks and barges, instead of more safely spilling over the dams. High mortality results.

Fish agencies consider releasing water from reservoirs to flush young fish through the reservoirs as the only, but far from adequate, alternative to breaching. Breaching is the only, and far more efficacious, alternative to flow augmentation.

More than 400,000 acre feet of Idaho stored water currently is earmarked for that purpose. An additional 1 million acre feet has been called for.

The U.S. Bureau of Reclamation did a study for the Corps on the costs and benefits of diverting an additional 1 million acre feet of stored water from Idaho agriculture to flow augmentation in the lower Snake River in Washington.

The Bureau estimated it would take nearly 650,000 acres [263,055 hectares] out of production in southern Idaho at a cost of \$150 million-\$1.3 billion, and result in loss of 4,200-6,500 jobs.<sup>35</sup>

In only one of the past 39 years has the number of adult salmon and steelhead returning to Idaho met objectives established when the dams were built. This has resulted in significant economic loss to the state. Nonetheless, Idaho Governor Dirk Kempthorne aggressively opposes both breaching the dams and flow augmentation.

"We oppose recommendations that propose additional flow augmentation from the Upper Snake River. . .

"We oppose all recommendations that propose breaching mainstem dams because current science does not support dam breaching as an effective fish recovery measure."

Idaho Governor Dirk Kempthorne<sup>36</sup>

“Failing to include the costs of improving water quality could have the effect of seriously under-representing the costs of retaining dams, and therefore overpricing the costs of dam removal in relative terms.”

U.S. Environmental Protection Agency.<sup>41</sup>

[Passive use values are] “. . .the values individuals place on natural resources independent of direct use of a resource by the individual. Passive use values include, but are not limited to: the value of knowing the resource is available for use by family, friends or the general public; and the value derived from protecting the natural resource for its own sake; and the value of knowing that future generations will be able to use the resources. . .”

National Oceanic and Atmospheric Administration.<sup>42</sup>

The Corps’ presentation of Idaho costs and benefits of breaching ignores flow augmentation. Lacking data on the current 400,000 acre feet, we partially correct this omission in Table 4 using the \$725 million middle value of the Bureau’s range of costs for an additional 1 million acre feet of water to derive a cost of \$40 million per year cost to Idaho.

### **13 Water Quality-Dams.**

According to the United States Environmental Protection Agency, the four lower Snake River dams and reservoirs violate national Clean Water Act standards, for example, for temperature.<sup>37</sup>

The cost of Clean Water Act compliance if the dams are not breached has been variously estimated at \$460-\$900 million.<sup>38</sup> The Corps ignored these costs in its summary presentation of NED (national and Northwest) results.

In Table 4 we accept the Environmental Protection Agency’s assumption that breaching appears to be the most economical way to achieve Clean Water Act compliance. Having accounted for the RED (Idaho) costs/benefits of breaching in item 3, Implementation Cost, we enter \$0.00 costs/benefits here.

### **14 Water Quality-Effluent.**

The City of Lewiston and the Potlatch Corporation discharge

effluent into the reservoir behind Lower Granite Dam. Potlatch reportedly already is out of compliance with water quality standards. Breaching would greatly exacerbate Potlatch’s problem, and likely create a water quality problem for the City.

The Corps estimated the cost of bringing the City and Potlatch into compliance with water quality standards, but omitted this estimate in its summary presentation of Idaho costs/benefits of breaching.

In Table 4 we add as an Idaho cost of breaching the Corps’ estimated one-time capital investment of \$33 million to bring Potlatch and the City into compliance with water quality standards.<sup>39</sup>

### **15 Passive Use Values.**

Passive use values, or existence values, are among the most difficult of all values to price in monetary terms. Passive use values are the values people put on things they may not use themselves, but which they value for their own sake, and for their contribution to overall quality of human life now and in the future.

Economists hired by the Corps estimated \$420 million per year in passive use values from breaching the dams and restoring 140 miles of free-flowing river. In addition, they estimated \$142 million-\$508 million per year in passive use

values from restoring Snake River salmon and steelhead populations.<sup>40</sup>

The Corps omitted all passive use values from its cost/benefit conclusions.

## **16 Native American Indian Values.**

The Corps study team acknowledged the special significance of salmon and steelhead to Native American Indians. It acknowledged that the loss of fish and of ancestral fishing and cultural sites to the lower Snake River dams has had and continues to have significant adverse impacts on tribal economic, social, cultural, and spiritual well-being.<sup>43</sup>

It obviously is difficult to develop a monetary proxy value for resources that are priceless. What is the dollar value of the bald eagle? Yellowstone Park? Of Mormon Temple Square? Arlington Cemetery?

Of salmon to Native American Indians to whom the U.S. Supreme Court held salmon were “. . . not less necessary to the existence of the Indians than the atmosphere they breathed.”<sup>44</sup>

In the cost/benefit game, particularly one played with a stacked deck as in the present instance, it is a classic Hobson's choice.<sup>45</sup> Develop a monetary proxy value and play the rigged game. Or refuse to cheapen the priceless resource by converting

its values to dollars, and risk ending up with nothing.

In the present instance, affected tribes' treaty-reserved rights were supposed to make all this moot, but that's another story, and outside the brief of this analysis.

The Corps did not develop a monetary proxy value for breaching costs/benefits unique to Native Americans. In Table 1 we present a token, minimal, proxy economic value of \$49 million per year benefit to all Northwest tribes.

We base this proxy value on the Corps' \$709 million cost of physically breaching the dams, i.e., the cost of restoring tribal values lost to dam construction.

In Table 4 we assume tribes in the Upriver subregion plus Nevada would receive 50 percent of total tribal benefits, and Idaho tribes 50 percent of total Upriver/Nevada benefits, producing an Idaho benefit of \$12 million per year.

“How can I tell you what the salmon are worth? The salmon define who I am. What else can I tell you?”

Antone Minthorn, Confederated Tribes of the Umatilla Indian Reservation, 1984.<sup>46</sup>

“The taking of anadromous fish from usual and accustomed places, the right to which was secured to the Treaty Tribes in the Stevens' treaties, constituted both the means of economic livelihood and the foundation of native culture. Reservation of the right to gather food in this fashion protected the Indians' right to maintain essential elements of their way of life. . .”

United States District Court, 1974.<sup>47</sup>



## Idaho has lost \$1.6 billion to date

### Idaho Economic Loss To Date

In the preceding analysis we estimate the future cost to Idaho of not breaching the four lower Snake River dams to be \$93 million per year with a net present value of more than \$1.4 billion. The economic benefits to Idaho of breaching the dams would be the same.

Here we estimate the additional past economic loss to Idaho to date resulting from the Corps' failure to fulfill its obligation to compensate for fish mortalities at the dams and reservoirs.

The U.S. Congress authorized construction of the four lower Snake River dams with the intent they would be built and operated to allow adult and juvenile salmon and steelhead to migrate to and from the Pacific Ocean.

An unavoidable 48 percent loss of the pre-project populations of spring/summer chinook, fall chinook, and summer steelhead, was projected. This loss was to be compensated by constructing large hatcheries which would release sufficient juvenile fish to maintain pre-project levels of returning adult fish.<sup>48</sup>

At that time, Snake River coho and sockeye salmon populations were at very low levels. They were not included in Compensation Plan objectives. This virtually assured their

eventual extinction. It's now official for coho, and defacto for sockeye, notwithstanding a costly life-support captive breeding program.

The Corps' design for the dams provided for fish ladders to allow adult fish to migrate upstream. The Corps' design inexplicably made no provision for juvenile salmon and steelhead to migrate downstream through the reservoirs and past the dams.

The resulting fish mortalities were catastrophic. Once-productive fish populations were reduced to or over the threshold of extinction. The economic impact reverberated throughout the fishes' many thousand-mile fresh water and marine range.

The Corps spent hundreds of millions of public dollars over the years trying to retrofit the four dams to overcome the inherent design flaw.

This effort was analogous to trying to retrofit pyramids with wings to make them fly. And produced predictable results.

The dams and reservoirs proved to be so deadly that the number of adult salmon and steelhead returning to the Snake River plummeted. Naturally produced fish eventually were threatened with extinction and put on the Endangered Species List.

Congress eventually appropriated

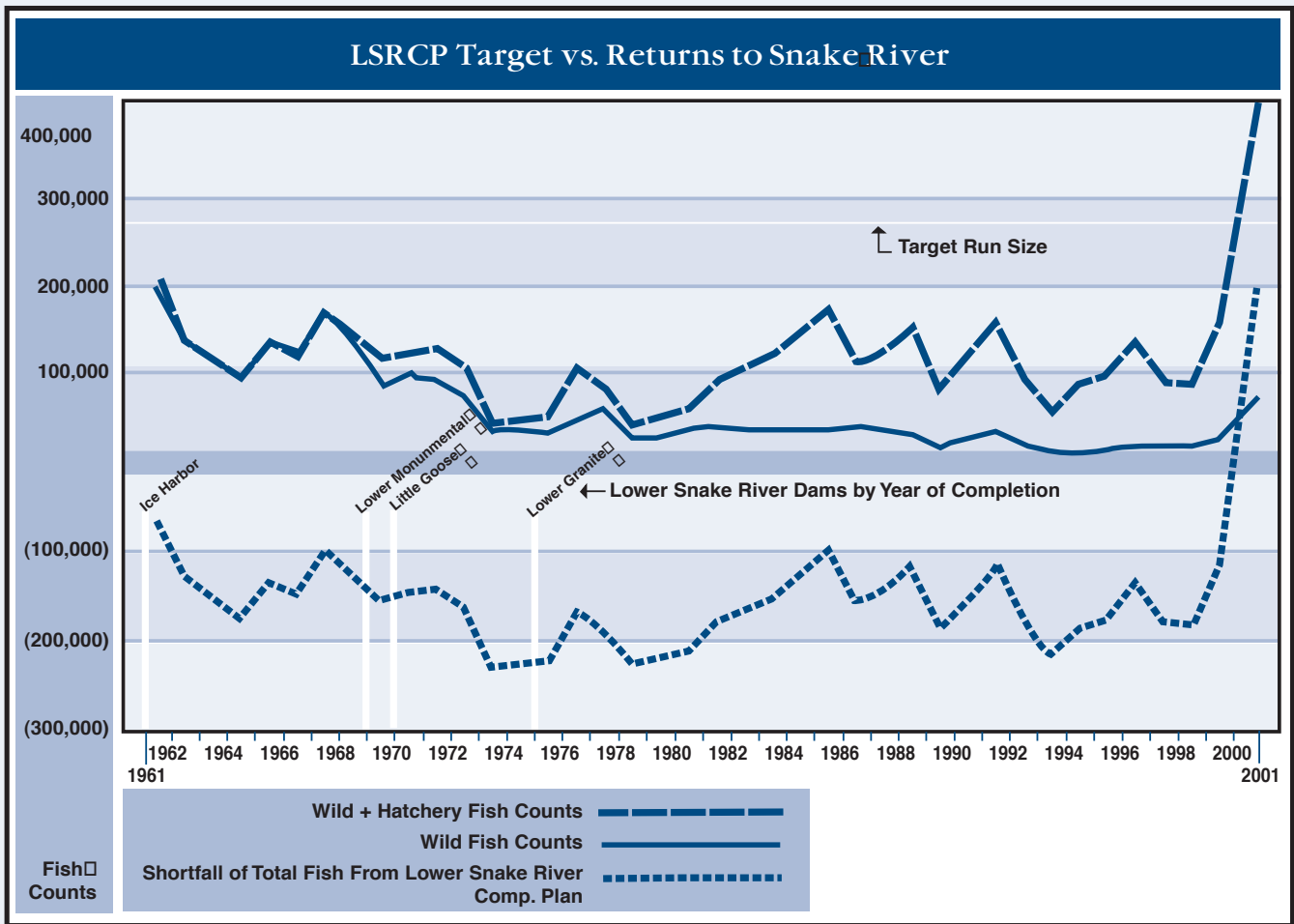
more than \$175 million to build, and more than \$150 million to date to operate, a large complex of hatcheries scattered throughout the Snake River Basin.

Nonetheless, the Compensation Plan objective of maintaining pre-dam fish populations was not met, despite the hatcheries, despite drastic reductions in the pre-project catch of intercepting ocean and Columbia River fisheries, and despite a generally improving trend in spawning and rearing habitats in Idaho.<sup>49</sup>

The dams were completed sequentially 1961-1975. The chart on the next page displays the number of adult wild and hatchery salmon and steelhead migrating past the uppermost dam 1962-2001.

It also shows the difference between the total pre-project adult fish objective and total annual returns. The cumulative deficit 1962-2001 is about 6 million adult salmon and steelhead.

In Table 5 we estimate the cumulative loss of 6 million adult salmon and steelhead 1962-2001 represents an economic loss to Idaho of \$1.6 billion to date.



Total Snake River adult salmon and steelhead run size objective established in the Lower Snake River Compensation Plan, and total adult counts at the uppermost dams, 1962-2001.

The difference between the two totals to date is approximately 6 million adult fish.

In 2001 the total run size objective was achieved for the first time in 39 years. Dam advocates incongruously declared this was proof the dams don't threaten salmon survival.

Unfortunately, according to the fish agencies, extraordinary adult returns to the Snake River in 2000 and 2001 were the result of extraordinary environmental conditions. These included high river flows in prior years which help flush the juvenile fish through the reservoirs and past the dams, coupled with extraordinarily favorable ocean survival conditions.

The dams and reservoirs were not designed to allow juvenile salmon and steelhead to migrate to the ocean. The Corps designed the dams to use all the flow for energy production except during years of highest runoff. Under normal or average conditions, Snake River salmon and steelhead are at peril of extinction.

Table 5

### Estimated Cost to Idaho<sup>1</sup> of Uncompensated Losses of Spring, Summer, and Fall Chinook Salmon and Summer Steelhead at the Four Lower Snake River Dams, 1962-2001

Run Year	Total Target Run Size <sup>2</sup>	Total Upper Dam Counts <sup>3</sup>	Total Annual Deficit	Cumulative Deficit	Cumulative NPV <sup>4</sup>
1962	202,386	269,100	(66,714)	(66,714)	\$ 49,031,888
1963	137,988	269,100	(131,112)	(197,826)	139,194,804
1964	111,828	269,100	(157,272)	(355,098)	240,390,207
1965	92,666	269,100	(176,434)	(531,532)	346,612,466
1966	132,287	269,100	(136,813)	(668,345)	423,682,312
1967	119,236	269,100	(149,864)	(818,209)	502,673,439
1968	167,773	269,100	(101,327)	(919,536)	552,645,822
1969	137,776	269,100	(131,324)	(1,050,860)	613,245,852
1970	113,985	269,100	(155,115)	(1,205,975)	680,219,878
1971	121,832	269,100	(147,268)	(1,353,243)	739,715,482
1972	124,209	269,100	(144,891)	(1,498,134)	794,485,359
1973	104,569	269,100	(164,531)	(1,662,665)	852,678,522
1974	39,077	269,100	(230,023)	(1,892,688)	928,802,130
1975	42,079	269,100	(227,021)	(2,119,709)	999,099,327
1976	46,531	269,100	(222,569)	(2,342,278)	1,063,584,596
1977	101,800	269,100	(167,300)	(2,509,578)	1,108,938,603
1978	79,268	269,100	(189,832)	(2,699,410)	1,157,090,457
1979	38,878	269,100	(230,222)	(2,929,632)	1,211,730,909
1980	46,766	269,100	(222,334)	(3,151,966)	1,261,104,784
1981	59,309	269,100	(209,791)	(3,361,757)	1,304,696,309
1982	89,917	269,100	(179,183)	(3,540,940)	1,339,532,919
1983	102,962	269,100	(166,138)	(3,707,078)	1,369,755,526
1984	116,932	269,100	(152,168)	(3,859,246)	1,395,656,146
1985	147,598	269,100	(121,502)	(3,980,748)	1,415,006,732
1986	169,590	269,100	(99,510)	(4,080,258)	1,429,835,371
1987	109,341	269,100	(159,759)	(4,240,017)	1,452,110,682
1988	124,424	269,100	(144,676)	(4,384,693)	1,470,985,327
1989	149,562	269,100	(119,538)	(4,504,231)	1,485,577,238
1990	80,524	269,100	(188,576)	(4,692,807)	1,507,115,789
1991	111,731	269,100	(157,369)	(4,850,176)	1,523,933,741
1992	154,767	269,100	(114,333)	(4,964,509)	1,535,366,457
1993	90,817	269,100	(178,283)	(5,142,792)	1,552,047,055
1994	52,920	269,100	(216,180)	(5,358,972)	1,570,972,280
1995	83,486	269,100	(185,614)	(5,544,586)	1,586,176,360
1996	96,628	269,100	(172,472)	(5,717,058)	1,599,395,156
1997	133,462	269,100	(135,638)	(5,852,696)	1,609,122,147
1998	87,979	269,100	(181,121)	(6,033,817)	1,621,275,325
1999	85,874	269,100	(183,226)	(6,217,043)	1,632,778,878
2000	156,129	269,100	(112,971)	(6,330,014)	1,639,415,327
2001	461,031	269,100	191,931	(6,138,083)	\$ 1,628,865,684

<sup>1</sup> Includes relatively small loss to southeastern Washington and northwestern Oregon for which separate data are unavailable.

<sup>2</sup> Negotiated total pre-project run size objective in Lower Snake River Compensation Plan.

<sup>3</sup> Adult returns of wild and hatchery spring and summer chinook, and summer steelhead to the uppermost dam on the lower Snake River (Ice Harbor Dam 1964-68; Lower Monumental Dam 1969; Little Goose Dam 1970-74; Lower Granite Dam 1975-99). Source: ODFW and WDFW. 2000. Status Report: Columbia River Fish Runs and Fisheries, 1939-1999. (App. Tables pp. 249-250; 257-258; 262-264) 2000 and 2001 data from Corps' web site. Fall chinook counts are at Ice Harbor thorough 1968 and at Lower Monumental thereafter due to large Compensation Plan hatchery releases in Lower Monumental Reservoir. Fall chinook counts 1970-2001 from

<http://cqs.washington.edu/dart/adult.html>, [cvh@cbr.washington.edu](mailto:cvh@cbr.washington.edu) Columbia Basin Research, School of Aquatic & Fishery Sciences, University of Washington.

<sup>4</sup> Based on \$51.43 per fish discounted to the present using the Corps' discount rate of 6.875%. Source: COE 1999, Economic Appendix I, p. I3-132.



# conclusions

## Conclusions

The four lower Snake River dams and reservoirs were not designed to pass migrating juvenile salmon and steelhead as Congress intended in authorizing the projects.

The Corps' final solution to the problem it created is to remove the fish from the river.

The agency had resolutely committed itself to this course of action many years before its December 1999 draft and February 2002 final reports which purport to present the economic costs and benefits of breaching the dams to restore a free-flowing river.

For this reason, informed observers were skeptical going in that the Corps would conduct an impartial analysis of breaching. They were not disappointed.

At no time did the Corps acknowledge it was, in practical effect, evaluating the costs/benefits of remedying its own failure to properly design the dams and reservoirs.

At no time did the Corps acknowledge that breaching the dams is the only course of action that would meet long-standing fish protection requirements of law.<sup>50</sup>

By cooking the books, and by presenting the exaggerated costs of breaching as falling on current beneficiaries of the dams,

the Corps poisoned the public debate and the political decision making process.

The Corps' draft results were widely and publicly criticized as being biased against breaching.

Using the Corps' own data, independent analysts came to conclusions opposite the Corps'. I.e., that breaching the dams would produce hundreds of millions of dollars in annual net economic benefits to the Nation and the Northwest region, create thousands of new jobs, and help build larger, more diverse, and more sustainable regional and local economies.

In the preceding analysis we show breaching would benefit the Northwest by an estimated \$1 billion per year, while keeping whole all current beneficiaries of the dams.

The Corps' draft and final conclusions focus on national and Northwest costs/benefits.

The Corps selectively presented incomplete data which purport to support a counter-intuitive conclusion that breaching would have negative economic consequences for Idaho. In an obscure technical appendix table this initially was represented to be a \$15 million per year loss, upgraded to \$32 million in the final report.

In the preceding analysis we

rationalize the data produced for the Corps' study to reveal a dramatically different result.

We estimate that breaching the four lower Snake River dams would produce a minimum of \$93 million in annual economic benefits to Idaho, with a net present value of \$1.4 billion.

If the dams are not breached, these numbers would represent the annual amount of lost economic activity, and the net present value of future economic loss to Idaho.

In our view, these values represent a very conservative approximation of the future Idaho economic effects of breaching/not breaching the four lower Snake River dams.

In addition, we estimate a past loss to Idaho of \$1.6 billion to date. This loss is the result of the Corps' failure to meet its long-standing obligation to compensate for the loss of salmon and steelhead at the lower Snake River dams.

In sum, these numbers represent the Idaho economic reality of the four lower Snake River dams located in southeastern Washington.

The Idaho political reality is opposition to breaching the dams, and no interest in unfulfilled compensation for salmon and steelhead mortalities at the dams.

This political reality is outside the brief of this survey.

# “cheap” “green” hydropower is a myth

## epilogue

### Epilogue

The preceding survey validates the common sense intuition, and the findings of previous studies, that Idaho has much to gain economically if the four lower Snake River dams in southeastern Washington are breached, and much to lose if they are not.

Our previous survey of the national and Northwest costs/benefits of breaching reached a similar conclusion.<sup>51</sup>

Additional instructive insights emerge from analysis of the data produced for the Corps breaching study.

The Corps data also debunks the myth of “cheap,” “green,” hydropower and “cheap” waterway transportation.

The physical footprint of the dams is 140 miles of inundated lower Snake River. The resulting ecological and economic footprint, or impact area, covers the migratory range of the fish.

This extended footprint includes millions of acres in central Idaho and northeastern Oregon, about 500 miles [805 km] of the lower Snake and Columbia Rivers, and thousands of square miles of ocean along the Pacific Coast from northern California to southeastern Alaska.

Based on the economic data produced for the Corps’ breaching study, the actual–hidden–cost of the 10.916 million average annual megawatt hours (MWh) of power generated by these dams is approximately \$0.084 per kilowatt hour (kWh).<sup>52</sup>

Bonneville sells the power for \$0.028 per kWh,<sup>53</sup> less than a third of the real cost.

An equivalent amount of energy from a gas fired power plant, with a footprint of about 60 acres [24.28 hectares], would cost about \$0.025 per kWh.<sup>54</sup>

This cost is less than one-third the real cost of the power from the lower Snake River dams, and comes with a footprint that is microscopic in comparison.

The price to ship by barge currently is about \$0.01 per ton-mile.

The economic data produced for the Corps’s breaching study reveals the real–hidden–cost is 25 times that, or about \$0.25 per ton-mile.

That real cost of shipping by barge is more than 8 times the \$0.03 per ton-mile cost of shipping by rail, and 2.5 times the \$0.10 per ton-mile cost of shipping by truck.<sup>55</sup>

The footprint, or impact area, of rail and truck facilities also is miniscule compared to the footprint of the lower Snake River dams.

For example, the footprint of a 140 mile-long rail line would be about 400 acres of land [161.9 hectares] compared to the dams’ many thousand square-mile impact area.

The four lower Snake River dams clearly impose exorbitant economic/ecological costs on society.

But one man’s costs are another man’s pork.

So, even though breaching would produce significant net economic benefits, there would be small, but locally significant, negative economic effects.

Thirteen irrigators pumping water out of the reservoir behind Ice Harbor Dam would have to extend pump intakes to the restored river and would incur higher energy costs.

Waterway shippers would have to return to higher priced truck and rail transport for a short distance to downstream Columbia River ports.

However, another insight revealed by the data produced for the Corps breaching study

is that that these relatively miniscule increased local costs could easily be mitigated.

The resulting cost to society would be lost in the rounding errors of the enormous economic benefits of breaching.

This insight, unfortunately, has so far escaped much notice.

This suits those who seek to evade the rule of law and the discipline of the market.

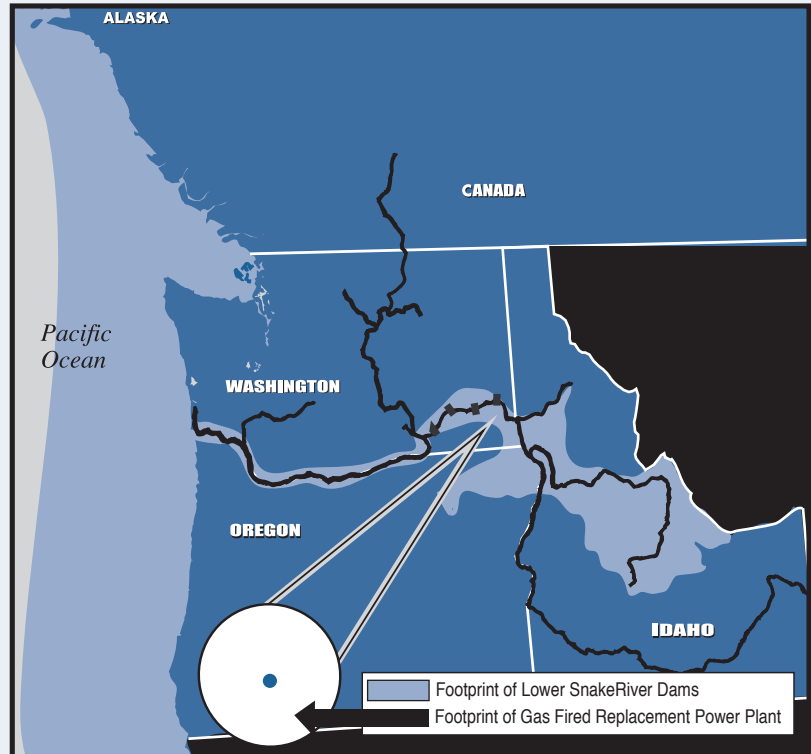
They find strategic advantage in threatening that local individuals will bear the brunt of the cost to remedy the Corps' failure to design the four lower Snake River dams in accordance with the intent of Congress.

**"So what do we get by removing the four Snake River dams? Shattered lives. Displaced families and communities who will have seen their livelihoods destroyed, generations of family farmers penniless, industries forced to drive up consumer costs, air pollution."**

News release from [former] U.S. Senator Slade Gorton (R. WA.), June 27, 1999.

**"The farmer will end up paying the bill," said Jim Fredericks, corps economist. "It's quite possible that some farms... would go out of business."**

Tri-City Herald, March 4, 1998.



This illustration shows the many thousand square mile economic and ecological footprint, or impact area, of the four lower Snake River dams. The 60 acre footprint of a gas-fired power plant producing an equivalent amount of power is a relative pin point.

# notes

<sup>1</sup> Net present value represents the current economic value of future economic activity.

<sup>2</sup> *The Gilded Age, A Tale of Today*, Mark Twain and Charles Dudley Warner, first published in 1873. Contemporary edition by Oxford University Press, 1996.

<sup>3</sup> *Special Report, Lower Snake River Fish & Wildlife Compensation Plan, Lower Snake River, Washington and Idaho*, U.S. Army Engineer District, Walla Walla, Washington, June 1975.

<sup>4</sup> The Corps inadvertently admits this in its 1999 report. “Juvenile bypass facilities were installed at each of the four lower Snake River dams shortly after they were constructed.” *Draft Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, p. 2-6. [Emphasis supplied.]

<sup>5</sup> See, e.g., Comments on the National Marine Fisheries Service’s *An Assessment of Lower Snake River Hydrosystem Alternatives on Survival and Recovery of Snake River Salmonid (Draft Anadromous Fish Appendix)*, Idaho Department of Fish and Game. August 30, 1999; *Technical Comments on the scientific analyses used for the Federal Caucus Draft All-H Paper*, Idaho Department of Fish and Game (as part of the State of Idaho’s comments on the Draft All-H Paper). March 27, 2000; *Technical Comments on NMFS’ draft Anadromous Fish Appendix*, Idaho Department of Fish and Game. April 28, 2000; *A technical review of the National Marine Fisheries Service Leslie matrix model of Snake River spring and summer chinook populations*, prepared by state, tribal, and U.S. fisheries agencies, April 28, 2000; *Comments of the Oregon Department of Fish and Wildlife on the Draft Lower Snake River Juvenile Salmon Migration Feasibility Report and Environmental Impact Statement*, Oregon Department of Fish and Wildlife, April 28, 2000.

<sup>6</sup> *Written Testimony of Edward C. Bowles, Anadromous Fish Manager, State of Idaho Department of Fish and Game, before the United States Senate Committee on Environment and*

*Public Works, Subcommittee on Fisheries, Wildlife, and Water*, September 14, 2000.

<sup>7</sup> *Comments of the Oregon Department of Fish and Wildlife on The Draft Lower Snake River Juvenile Salmon Migration Feasibility Report and Environmental Impact Statement*, April 28, 2000, p. 15.

<sup>8</sup> *Draft Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999.

<sup>9</sup> *Duping the Northwest and the Nation; The U.S. Army Corps of Engineers’ Economics of Restoring Endangered Snake River Salmon*, Northwest Resource Information Center, December 2000. Available at [www.nwric.org](http://www.nwric.org).

<sup>10</sup> The Corps’ presentation of results in its draft *Summary* document, which is all most people see, and in its full draft environmental impact statement, read mostly by specialists, were incomplete and misleading. With effort, the problem could be traced back to the source, i.e., the technical economic appendix, read only by the most obsessive. Many Idaho and other subregional costs and benefits were presented here. However, in the one place the Corps presented a summary of Idaho costs/benefits, Table 6-17 Annual Long-Term Business Sales Effects, page I6-24, the Corps omitted most of the Idaho economic sectors impacted by breaching.

The information in Table 6-17 is the paternal twin of the information on long-term regional job impacts that appears in Table 6-19 Long-Term Employment Effects (Jobs) on page I6-24 of the economic appendix. The data in Table 6-19 are more prominently presented in identical format in the executive summary of the economic appendix, in Table ES-12, Long-Term Employment Effects (Jobs). The data also are presented in both text and chart formats in the Summary of the draft EIS, in Regional Economic Development, Alternative 4—Dam Breaching, on pages 35 and 36.

With each presentation of these tables and their



data the Corps concludes that keeping the dams intact is the most economical course. Correcting the Corps' math errors, adding omitted costs and benefits, and otherwise rationalizing the Corps' data, compels an opposite conclusion.

<sup>11</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002.

<sup>12</sup> *Review of the DRAFT Lower Snake River Juvenile Salmon Migration FR/EIS*, prepared for Trout Unlimited by ECONorthwest, April 28, 2000.

<sup>13</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 10-2, p. I10-3.

<sup>14</sup> When the issue of breaching the lower Snake River dams first surfaced, electric wholesale market prices were lower than Bonneville prices by 3-5 mills per kWh. This led many analysts to conclude that breaching the dams would result in net energy cost savings. By the time Bonneville did its analysis for the Corps, the first signs of the California deregulation debacle, and return of normal water years, combined to drive market prices well above Bonneville's rates. Given the then existing situation, Bonneville concluded that breaching the dams would result in higher rates to northwest electricity consumers. Since then, the situation has come full circle. Bonneville's fears at first seemed to be corroborated by the stratospheric rates driven by the 2001 drought. However, since that time, the California issue has been resolved, the drought is over, substantial amounts of new generation have been brought on line, and some major consumers (namely Astaris in the Idaho jurisdiction) have left the market.

At this writing, wholesale prices for the Northwest are 10 mills (\$0.01) under Bonneville's rates and have been lower since September 2001. [Source: Dow Jones Mid Columbia spot prices as reported in *The Wall Street Journal* 6/17/97 to date.] At the same time, various issues at BPA, such as residential and irrigation offsets for region-wide investor owned utility customers, and the ongoing threat of fish and environmental

issues will continue to make it difficult for BPA to lower its rates. If the analysis of breaching were performed today, the prediction would be for energy cost savings of about the same magnitude as Bonneville's previously predicted losses. In short, depending on when the analysis is performed, the result could be savings of \$271 million per year, or losses of \$271 million per year.

The difference between BPA's PF-2 rates and the open market price currently is \$0.018/KWh. Multiplied times 10,916,000 annual MWh produces a savings of \$109 million dollars per year.

<sup>15</sup> The hydroelectricity portion of the dams is currently being paid for by Bonneville ratepayers. In the event the dams are breached, the Treasury debt will remain to be paid by either Bonneville ratepayers or the nation's taxpayers. The cost of replacement power will be in addition to the cost of the existing debt. However, for people in the Northwest, the impact may be much smaller. If the debt is returned to the Treasury where it belongs—it is the Corps' design error that compels breaching—people in the Northwest will only pay their portion of the taxes, which reduces the Northwest energy impact on line 4 of Table 1 to about \$10.4 million per year  $[(10/260) \times 271 = 10.423]$ . After accounting for the rate differential between Bonneville and the open market, this number easily could change from a net cost to a net benefit.

<sup>16</sup> *Draft Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, Appendix I, Economics, Table 6-17, p. I6-21.

<sup>17</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 6-33, p. I6-31.

<sup>18</sup> Three people per 8-hour shift, for total of 12 people @ \$60,000 each per year including salary and benefits.

<sup>19</sup> *Draft Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, Economics Appendix I, p. I3-54.

<sup>20</sup> *Draft Lower Snake River Juvenile Migration*

*Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, Economics Appendix I, p. I10-4.

<sup>21</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 10-2, p. I10-3.

<sup>22</sup> Idaho Department of Fish and Game, staff presentation to Commissioners, January 16-18, 2002.

<sup>23</sup> *The Economic Impact of Steelhead Fishing and the Return of Salmon Fishing in Idaho*, Idaho Fish & Wildlife Foundation, Ben Johnson Associates, May 1996. *The Economic Impact of a Restored Salmon Fishery in Idaho*, Idaho Fish & Wildlife Foundation, Ben Johnson Associates, July 1999.

<sup>24</sup>  $(15.9/70.5) \times 180 = 40.6$ . Applied same ratio Corps used to derive Idaho benefits (\$15.9 million) from total recreational benefits (\$70.5 million) to middle value of \$180 million to produce Idaho benefit of \$40.6 million.

<sup>25</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 10-2, p. I10-3.

<sup>26</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 6-33, p. I6-31.

<sup>27</sup> John Loomis, Colorado State University economist hired by the Corps to estimate the recreational benefits of breaching the dams. From an article by Michael Grunwald in the September 12, 2000 *The Washington Post*.

<sup>28</sup> *Draft Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, Appendix I, Economics, Table 6-17, p. I6-21.

<sup>29</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 6-33, p. I6-31.

<sup>30</sup> *Final Lower Snake River Juvenile Salmon*

*Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 6-33, p. I6-31.

<sup>31</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 6-33, p. I6-31.

<sup>32</sup> *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, Appendix I, Economics, Table 6-2, p. I6-7.

<sup>33</sup> See notes 14 and 15.

<sup>34</sup> *Dredged Material Management Plan and Environmental Impact Statement*, McNary Reservoir and Lower Snake River Reservoirs, U.S. Army Corps of Engineers, Walla Walla District and U.S. Environmental Protection Agency, Region 10, Attachment C: Program Costs.

<sup>35</sup> *SNAKE RIVER FLOW AUGMENTATION APPENDIX*, United States Bureau of Reclamation, February 1999.

<sup>36</sup> Letter to Mark Walker, Northwest Power Planning Council, August 1, 2001.

<sup>37</sup> *Detailed Comments from the U.S. Environmental Protection Agency on the Lower Snake River Juvenile Salmon Migration Feasibility Draft Report/Environmental Impact Statement*, April 27, 2000.

<sup>38</sup> *The Three Sovereigns Future Fish and Wildlife Costs Report*, July 30, 1998.

<sup>39</sup> *Draft Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, Economics Appendix I, p. I6-15.

<sup>40</sup> *Draft Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, Appendix I, Economics, p. I4-8.

<sup>41</sup> Letter from Charles E. Findley, Acting Regional Administrator, U.S. Environmental Protection Agency, to Brigadier General Carl A. Strock, Division Engineer, Northwest Division Army Corps of Engineers, July 31, 2000.

<sup>42</sup> *Natural Resource Damage Assessments; Proposed Rules*, Federal Register 58(10): 4602-14, National Oceanic and Atmospheric Administra-

tion (NOAA), 1994, p. 1073.

<sup>43</sup> *Draft Lower Snake River Juvenile Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, December 1999, Appendix I, pp. I3-145-146. <sup>44</sup> *United States v. Winans*, 1905.

<sup>45</sup> A choice of taking what is offered or nothing..

<sup>46</sup> Statement to Ed Chaney, Umatilla Indian Reservation, March 1984.

<sup>47</sup> *United States v. Washington*, 384 F. Supp 312 (W.D. Wash. 1974).

<sup>48</sup> *Special Report, Lower Snake River Fish & Wildlife Compensation Plan, Lower Snake River, Washington and Idaho*, U.S. Army Engineer District, Walla Walla, Washington, June 1975.

<sup>49</sup> *Duping the Northwest and the Nation, The U.S. Army Corps of Engineers' Economics of Restoring Endangered*

*Snake River Salmon*, Northwest Resource Information Center, December 2000, pp. 7-8.

<sup>50</sup> The scientific consensus is that collecting and hauling juvenile fish is unlikely to avert extinction. No one, not even the Corps, pretends barging fish can meet Lower Snake River Compensation plan goals or the even higher restoration standard established under the Northwest Power Act.

<sup>51</sup> *Duping the Northwest and the Nation; The U.S. Army Corps of Engineers' Economics of Restoring Endangered Snake River Salmon*, Northwest Resource Information Center, December 2000. Available at [www.nwrhc.org](http://www.nwrhc.org).

<sup>52</sup> In Table 1, item 4 we present the Corps' estimated energy cost of breaching as given. In Table 3 we rationalize that estimate and assume there will be no energy cost penalty at the RED level. (See note 14). Eliminating the Corps' \$271 million per year in energy costs in Table 1 increases the total NED annual net benefit from \$702 million to \$1004 million. Allocating 91.2% of these benefits to energy (see note 55) and dividing by average annual MWh production results in a per kWh cost of \$0.084.  $(\$1004,000,000 \times .912) / 10,916,000 \text{ MWh} = \$0.084 \text{ per kWh}$ .

<sup>53</sup> Current Bonneville PF 2 Rate. Source: Bonneville Power Administration 2002 *Wholesale Power Rate Schedules*, September 2000, as amended by, Bonneville Power Administration

*"Corrected Final Power Rates with LB CRAC Applied for 10/1/01 - 3/31/02".*

<sup>54</sup> The Corps provides an estimated cost of \$0.0232 per kWh, *Final Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, U.S. Army Corps of Engineers, February 2002, Appendix I, Economics, Table 3.1-10, p. I3-18.

<sup>55</sup> The cost per ton-mile and cost per kWh were derived by allocating annual net benefits of breaching in the same proportions that the Corps allocates the costs of the dams attributable to navigation (9%) and hydro power (91%). The allocations of net benefits are then divided by weighted average annual ton miles shipped on the lower snake (347,610,400), and by the average annual generation (10.916 million MWh) to arrive at \$/ton-mile and \$/kWh values.



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