

March 29, 2008.

Dave Kaunhelmer
U.S. Bureau of Reclamation
Pacific N.W. Region
Upper Columbia Area Office
1917 Marsh Road
Yakima, WA 98901-2058

RE: Yakima River Basin Water Storage Feasibility Study
Dear Mr. Kaunhelmer:

I am writing as a resident of Bothell, Washington (near Lake Washington) to express opposition to the Black Rock Dam and Storage Facility in the Yakima River Basin.

Many residents in Western Washington are concerned about impacts to groundwater that enters the Columbia River. This project, located ^{within} five miles of Neford's western boundary (according to the study) would seep water from the dam & reservoir. This increased seepage could easily mobilize contaminated plumes and force them into the Columbia.

The current F.I.S./ Feasibility Study should be ~~considered~~ ^{considered} only as a Feasibility Study. It is not adequate to meet

the rigorous F.E.S. requirements under
N.F.P.A. No decisions should be
made based on this document.

Thank you for your careful
consideration of this expensive and
environmentally dangerous project.
Citizens on both sides of the
Cascade mountains have grave
concerns.

Sincerely,

Ann Agard

16524 704th Ave. N.E.

Bothell, WA 98011

From: <cbaudrand@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Mar 30, 2008 11:26 AM
Subject: Black Rock

David Kaunheimer:

I have read parts of the Yakima River Basin Water Storage Feasibility Study, newspaper articles, and newsletters about the topic. Thank you for the opportunity to express my many concerns.

First, the study appears to be a feasibility study and not an Environmental Impact Study. Is this shrub-steppe habitat? I just attended the Sandhill Crane Festival and heard biologists speak about the reduction of habitat and its effect on wildlife. The public has been told in the last few years that dams should be removed to save salmon. This report is trying to tell us the dam will be good for salmon. Salmon are sensitive to their river waters, and the water in two rivers should not be exchanged. Second, the geologic study says that more investigation into possible landslides are needed, and there is the possibility of earthquakes because the dam is being built on faults. I read that the removal of soil and a large roller can solve the problem. Really? It does not sound reasonable to build a dam that cost billions of dollars on a fault. There should be no chance that water from the dam could enter Hanford, the contaminated Hanford groundwater, and contaminate the Columbia River. Third, the recreational visitor dollars seems greatly exaggerated. Looking at the maps it appears the only access would be from the area that drains leaving 4.5 miles of what? Mud flats? Fourth it costs too much money!

Sincerely,

Cherie Baudrand
Teacher, Kennewick

From: jeff marty <jeffmartysworld@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Mar 30, 2008 10:33 AM
Subject: Blackrock Reservoir Study

I wanted to comment on the proposed Reservoir. I have lived in the Mid Columbia for over 30 years and I know that this reservoir is needed. Water use continues to increase and the need for water storage will continue to increase. We have been fortunate for the last few years, but a drought will eventually arrive. When this occurs several bad things will happen. Agriculture will suffer severely. A large number of jobs will be lost, and several businesses (farms) will either be lost, or will file for bankruptcy protection. State and federal tax revenues will decline, and overall economic growth will be put on hold. (And my yard will die, again.)

If a reservoir is built, a number of positive effects will occur. Economic development will continue, and residential as well as commercial real estate investment will continue. A very diverse job market will continue to flourish and employment numbers will at least remain steady. Without secure water supplies a great deal of investment money will look elsewhere for investment opportunities.

I have read several articles in newspapers about fears of landslides and instability in some of the barren hills in Yakima County. This is inconsequential to me. If that is the best scare tactic that can be devised, it failed on me. The short term need for water is here, and the long term need for increased reserves is coming fast and certain groups want to only criticize good ideas, and provide no workable solutions for future needs. I urge the panel that reviews this proposal for the Blackrock reservoir to see the need for increased water storage, and if not at the Blackrock site, somewhere else in the Yakima river drainage.

Sincerely,

Jeff Marty
1127 Foxtrot Lane
Richland, WA 99352

From: "Pat Tucker" <pat@sandpiperfarms.com>
To: "Black Rock" <storagestudy@pn.usbr.gov>, "Claude Oliver" <claudeoliver@aol.com>
Date: Sun, Mar 30, 2008 5:58 PM
Subject: Comment on Black Rock Study

Simply put: Black Rock is too expensive and of too little value.

AN ALTERNATIVE SUGGESTION: Develop the Horse Heaven North High ditch currently promoted by Benton County. Buy out water rights from the Roza and other Valley districts and place them in the Horse Heavens. Because of increased efficiencies each acre of rights bought out in the Valley would irrigate 1.5 acres in the Horse Heavens. The rights could be purchased from willing sellers at market rates and sold to willing buyers at a markup rate. USBR would build the ditch and the market would take care of the rest.

ADVANTAGES:

- * Those remaining on the Roza will have firm water in drought years.
- * Water from many valley farms would go back into the Yakima for the fish.
- * It adds irrigated ag land in Benton County with the same water volume.
- * Capital outlay is reduced since the ditch will be cheaper than Black Rock.
- * Frees up land in the Valley for development.
- * Environmental impacts are less than Black Rock.

DISADVANTAGES

- * No momentum.

The area needs to put the Black Rock idea to sleep. Replacing it with an idea that might actually work is one way to do it. Let's study this for a while and quit wasting time on Black Rock.

...Pat Tucker, Paterson WA.

CC: "John Trumbo" <jtrumbo@tricityherald.com>, "Brian Iller" <brian.iller@rettiglaw.com>, "Chuck Wyckoff" <chuckw@wyckoff-farms.com>, "Chuck Dawsey" <chuck@bentonrea.org>, "Dave Wyckoff" <davew@wyckoff-farms.com>, "Tim Reiersen" treier@nwinfo.net

From: Margie Van Cleve <vanclave@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Mar 30, 2008 9:59 PM
Subject:

March 29, 2008

Mr. David Kaumheimer
Environmental Program Manager
Bureau of Reclamation
Upper Columbia Area Office
1917 Marsh Road
Yakima, WA 98901-2058

Dear Mr. Kaumheimer:

Thank you for the opportunity to comment on the Draft EIS for the Yakima River Basin Water Storage Feasibility Study.

Even if the supporters of the dam were able to get the federal government pay 100 percent of the dam=s construction cost the local farmers could not afford to pay the yearly pumping cost. The only sensible decision of the EIS is to choose the no action alternative or the State alternatives as the preferred option.

Besides cost there are two many negatives with the Black Rock Dam to allow it to be a preferred alternative. The negatives include:

- Impacts to the ground water under the Hanford Reservation.
- The dam being located on a fault.
- Impacts to the Columbia River because of the water diversion.

The preferred alternative should be the no action alternative or the State Alternatives of:

- Enhanced water conservation.
- Market based reallocation
- Groundwater alternative

Kind regards,

David Van Cleve
272 Mapleway Road
Selah, WA 98942

From: Margie Van Cleve <vanclave@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Mar 30, 2008 9:48 PM
Subject: Comments regarding Draft EIS for the Yakima River Basin Water Storage Feasibility Study

March 29, 2008

Mr. David Kaumheimer
Environmental Program Manager
Bureau of Reclamation
Upper Columbia Area Office
1917 Marsh Road
Yakima, WA 98901-2058

Dear Mr. Kaumheimer:

Thank you for the opportunity to comment on the Draft EIS for the Yakima River Basin Water Storage Feasibility Study.

All efforts regarding the continuation of studies or construction of Black Rock Dam should stop as soon as possible. The proposed dam is too expensive and too dangerous to be built.

As a taxpayer I am greatly offended by the potential use of my tax dollars to fund a project with a benefit cost ratio (per the recent EIS) of sixteen cents to the dollar. As I stated in my comments on the scoping document, my husband and I own six + acres serviced by the Naches Selah Irrigation District. Other than what I now pay, I do not know what these proposals would cost me if built. I was also hoping for clarity on items such as who would pay for annual costs (such as the electricity needed on an annual basis to pump water from the Columbia upstream behind the proposed Black Rock dam).

01

It is wrong to put forth an environmental impact statement on this proposed dam without knowing the potential impacts of seepage from the proposed dam on contaminated groundwater under or near the Hanford Nuclear Reservation.

02

If anything goes forward it should be measures such as those suggested in the Enhanced Conservation Measures.

Kind regards,

Margie Van Cleve
272 Mapleway Road
Selah WA 98942

From: <svest3@verizon.net>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Mar 30, 2008 7:03 PM
Subject: [Fwd: FW: Black Rock Project(Southeastern Washington)]

Forwarded message showing my support for the Blackrock Project.

Hello Senator Murray, I recently attended a real estate seminar in Kennewick, Wa, in which I learned of the Black Rock Project. This is a proposed reservoir pumping water from the Columbia river into the Black Rock valley, during peak flows of the Columbia. This would provide a reliable source of water for irrigation, and a constant, steady flow of water for the Yakima river, improving habitat for salmon and other fish species. Presently, 10,000 salmon return to spawn in the Yakima each year. Biologists/scientists estimate that 200,000 could return with improved stream flow, and habitat improvements. Several projects are planned around the reservoir, including a world-class fishing/golf resort, and 2 planned housing developments. Being a realtor in the Tri-Cities, I could see the benefits for myself, but for the community as well. According to scientists, the reservoir would resolve water issues in the area for the next 100 to 150 years. Engineers have indicated that any reservoir has a percentage of leakage, and Black Rock would be no exception. But, because it would be a slow leakage, it would have the effect of restoring underground aquifers in the area. I see this as a win-win situation for the area and the state, resulting in increased tourism and revenues for the region, not to mention the jobs provided in building the dam, which would require 3 years to build, at an estimated cost of 3 to 4 billion. I, as a realtor, strongly support this project, and urge you to do the same. Thank you for your time and consideration. Take care. Best Regards, Steve Vest Realtor
ReMax First Advantage 1110 N Center Pkwy Ste A Kennewick, Wa 99336
Office: 509-736-3344 Fax: 509-735-9755 Cell: 509-378-5597
Toll Free: 800-736-2964 email: stevevest@remax.net website: www.FirstAdvantageInc.com



March 31, 2008

Mr. David Kaumheimer
Environmental Programs Manager
Upper Columbia Area Office
U.S. Bureau of Reclamation
1917 Marsh Road
Yakima, WA 98901-2058

Mr. Derek I. Sandison
Central Regional Director
Washington State Department of
Ecology
15 W. Yakima Ave., Suite 200
Yakima, WA 98902-3401

Via email: storagestudy@pn.usbr.gov

Dear Mr. Kaumheimer and Mr. Sandison:

Thank you for the opportunity to comment on the Draft Yakima River Basin Water Storage Feasibility Study, Planning Report, and Environmental Impact Statement (DEIS).

American Rivers is a national, non-profit conservation organization. We are dedicated to protecting and restoring healthy natural rivers and the variety of life they sustain for people, fish, and wildlife. American Rivers has a growing membership of over 65,000 members and supporters. Our Northwest office serves over 4,500 members and supporters in Washington, Oregon, and Idaho. American Rivers' programs focus on dam removal and hydropower dam reform, water management, and protecting and recovering clean, free-flowing rivers. We also advocate for protecting and restoring self-sustaining, harvestable populations of wild salmon and steelhead, which are a key indicator of the health of many Northwest rivers, including the Yakima and its tributaries. Along with our conservation efforts, American Rivers promotes public awareness of the importance of healthy rivers and the threats rivers face.

American Rivers supports improving water management and water supply for people, fish, and wildlife in the Yakima Basin. However, examining only the joint federal-state alternatives, all of which would involve the construction of large new storage dams, artificially constrains the discussion of the most biologically effective, as well as the most economically prudent, ways to improve water management and river and fish health in the Yakima Basin. Indeed, the DEIS concludes that none of the storage dam options meets the Bureau of Reclamation's (BOR) criteria to even be eligible for federal funding, which would

almost certainly be required to construct these multi-billion dollar proposals. On the other hand, the state-only alternatives, which examine potential alternatives to new dam construction, deserve further consideration as potential pieces of an instream flow, water supply, and habitat restoration package that poses much less risk than Black Rock, carries a smaller price tag, improves the basin's ability to be resilient in the face of the local/regional effects of global warming, and is more likely to be implemented in the near future.

I. The Purpose and Need of the DEIS is Artificially Constrained

The "Purpose and Need" of the federal portion of the DEIS is based exclusively on a narrow reading of Section 214 of the Act of February 20, 2003 (Public Law 108-7). As we mentioned in our comments on the scoping of the EIS, not only could this law be read to permit at least a somewhat more inclusive examination of alternatives, the 1994 reauthorization of the Yakima River Basin Water Enhancement Project (YRBWEP) gives the BOR authority to look at water management alternatives other than new storage. *See* Public Law 103-434, Section 1201 (Title XII).

The specific federal authorization for this EIS, even absent the YRBWEP authority, calls on the BOR to study "options for additional water storage in the Yakima River Basin." As the EIS does not restrict examination of storage alternatives to *surface* storage, this must include looking at aquifer/groundwater storage and recharge. As shown by the state alternative examining groundwater storage, aquifer/groundwater storage and recharge is a reasonable alternative to surface storage or no action, and NEPA regulations require a federal agency to "rigorously explore and evaluate *all reasonable alternatives.*" 40 CFR 1502.14 (emphasis added). This regulation also requires discussion of why an alternative was eliminated from study, and no such discussion is provided for aquifer/groundwater storage in the DEIS.

The existing YRBWEP authorization would appear to allow the BOR to incorporate all the state-only alternatives discussed in the DEIS into the joint federal-state alternatives. Given that the State of Washington's Department of Ecology (Ecology) has already developed an analysis of those alternatives and included it in the DEIS, it would take minimal resources to incorporate, for federal purposes, the state's analysis of enhanced water conservation, market-based reallocation of water resources, and groundwater storage. While current federal limitations under YRBWEP may limit the federal funding available for a particular alternative, this should not be an obstacle to the BOR's consideration of the state alternatives presented in the DEIS – NEPA regulations require an EIS to include not just those alternatives for which an agency would bear primary responsibility, but "reasonable alternatives not within the jurisdiction of the lead agency." *Id.*

A. The Basis for Study Goals is Not Sufficiently Justified

In addition to its narrow scope, the DEIS suffers from a lack of sufficient justification for key assumptions with respect to its water supply goals for fish, water supply for proratable irrigators, and municipal water supply. The assumptions on future demand for water associated with each goal seems formulated to justify a massive new storage dam rather than to encourage evaluation of whether more targeted solutions might be preferable. Instead of taking this seemingly biased approach, the BOR and Ecology should take a harder look at likely future water needs for fish, farms, and communities – these needs should be analyzed in the context of the expected regional climate changes due to global warming, and the tools selected to meet those needs should be flexible enough to help the Yakima Basin’s human and ecological communities adapt to a changing climate. The global warming analysis in the DEIS better addresses the former point than the latter one.

i. Improving Fish Returns

The study assumes that restoring a natural hydrograph is the best way to increase steelhead and salmon numbers in the Yakima basin. Restoring the natural flow regime would undoubtedly be beneficial, but given limited resources, an examination is necessary of whether spending billions of dollars on a new dam for improved flows is better than spending a smaller amount of money on restoring flow in key river and tributary reaches, and spending at least a portion of the savings from that more focused approach on other salmon and steelhead recovery measures such as fish passage, floodplain restoration, ensuring sustainable development, hatchery and harvest reform, etc.

ii. Improving Water Availability for Farms

While it is clear that various processes in the Yakima basin have concluded that a 70 percent prorationing goal even in dry years is desirable for interruptible irrigators, the DEIS should determine whether meeting this goal is economic in light of the costs and benefits of the full range of alternatives (including the state alternatives alone or in combination). How would the picture change if the goal was 50 percent or 60 percent instead of 70 percent? What would be the economic effects of relying on water markets to reallocate water versus building the infrastructure necessary to meet a certain prorationing goal even in dry years? The appropriateness of looking at a lower threshold of “firm” water supply is particularly clear when one considers the limited economic benefits to agriculture relative to the costs of dam construction and operation.

iii. Municipal Water Supply

With respect to municipal water needs, our understanding is that the projected need for an additional 82,500 acre-feet of water by 2050 is based on an

assumption that future residents of the area will use as much water per capita in 42 years as they do today. Given that water conservation and efficiency measures are far cheaper and have lower environmental impacts than building new storage, this assumption is unacceptable. In a basin facing water shortages, any new surface water rights for municipalities should be contingent on implementation of a set of best conservation practices for outdoor and indoor water use (a similar requirement for implementation of best practices should also be in effect for new agricultural water rights). At the very least, the EIS should assume that municipal water consumption per capita will decline over time as it has in other areas of the West that have implemented aggressive water conservation and efficiency programs.

iv. Global Warming

Finally, while facilitating adaptation to the altered precipitation and runoff patterns associated with global warming is not an official goal of the study process, the DEIS should consider in more detail which alternatives are best suited to help the Yakima Basin adjust to a changed climate. The DEIS does look at the likely general effects of a changed climate on the basin's hydrology, but it would benefit as well from discussion of the effects of global warming on reservoir evaporation rates and the (presumably) increased amount of pumping that would be required from the Columbia River. The DEIS should also compare how well alternatives such as surface storage, groundwater/aquifer storage, increased conservation and efficiency, and water markets can help facilitate efficient adaptation by human and ecological communities to the effects of global warming and at what relative cost.¹

II. State Alternatives Constitute the Beginning of the Broad Analysis Needed in the Yakima Basin

As noted above, a clear understanding of likely future demand for water (taking into account the effect of efforts to conserve water and use it more efficiently, as well as technology that will likely make it more feasible to do so) is crucial before deciding to implement a particular water management strategy, as is considering a full range of water management strategies to meet that demand. By developing non-structural water management tools – the “state alternatives” – Ecology has helped make the analysis in the DEIS less artificially constrained than it would have been if only the joint alternatives were examined. That said, the state alternatives need to be fleshed out further to provide the public with a better understanding of their potential to meet a legitimate demand projection. Without

¹ For more information on factors to consider when evaluating the effects of global warming on surface storage proposals, see *In Hot Water: Water Management Strategies to Weather the Effects of Global Warming*, Natural Resources Defense Council (2007), p. 35. Available at <http://www.nrdc.org/globalwarming/hotwater/contents.asp>.

that, water management decisions are likely to be based more on politics than on meeting the needs of communities, farms, and ecosystems.

As noted above, the state alternatives should be adopted as joint alternatives by BOR. Even if the BOR does not join in analyzing these options in violation of NEPA, given the clear environmental risk associated with Black Rock and the low benefit-cost ratio for all of the new surface storage proposals examined, we encourage Ecology to further develop its analysis of the potential of the three state alternatives, perhaps in combination with other salmon habitat restoration and water management options. In particular, Ecology should:

- Analyze the potential of municipal/domestic water conservation and efficiency, including working with the Washington Department of Health to propose policies that could help meet this potential (only agricultural conservation projects are specifically highlighted in the DEIS);
- involve a range of stakeholders in further discussions of the best way(s) to pursue market-based reallocation of water resources and come up with a recommended course of action;
- Continue to develop more specific information about the instream and out-of-stream water supply benefits of groundwater/aquifer storage and recharge;
- Work with the Washington Department of Fish and Wildlife, the Yakima Nation, and the Yakima Basin Fish and Wildlife Recovery Board to identify the most cost-effective specific salmon and steelhead recovery actions, including, but not limited to measures to improve flows in critical river and stream reaches.

It was appropriate for Ecology to decide not to include discussion of Columbia River off-channel storage, such as the Crab Creek dam proposal, in its state alternatives analysis. A decision on whether further study is warranted on the Crab Creek proposal will only be appropriate after more information is available on water demand in the Columbia basin at large, and after the information on potential water management tools other than large new surface storage dams catches up with what is already known about Crab Creek and other storage dam proposals. If the Black Rock/Yakima Storage Study process had gone forth in the way the larger Columbia River Water Management Program process is proceeding, we would have had a good handle on non-surface storage alternatives *before* a decision was made to go forward with an EIS/feasibility study focused (on the federal side) exclusively on expensive, environmentally risky new surface storage.

III. Black Rock Dam Poses Substantial Risk to the Health of the Columbia River

The Black Rock dam proposal appears to pose a significant risk to water quality in the Columbia River and human health, as it threatens to speed the movement of contaminated groundwater plumes underneath the Hanford Nuclear Reservation toward the Columbia River. This could pollute the Columbia with dangerous contaminants, and it could pose problems for the current clean-up process at Hanford. The DEIS states:

At present, it appears there could be impacts to deep vadose zone contamination at a minimum, and those remediation technologies and programs either currently implemented or under development at the Hanford Site could be *significantly impacted* by seepage from the Black Rock reservoir.

DEIS at 4-71 (emphasis added).

The DEIS notes that the U.S. Department of Energy (DOE) will be completing a study prior to the release of the final Yakima Storage Study EIS on the risks Black Rock reservoir would pose to the Columbia and the Hanford clean-up. As the Hanford groundwater contamination issue is one of the most important issues surrounding the Black Rock proposal, American Rivers requests a supplemental public comment period on the DOE study before the EIS is finalized.

While the Hanford groundwater issue is the most striking risk associated with the Black Rock proposal, it is not the only one with the potential to harm the Columbia River and its salmon. Other issues include (but are not necessarily limited to) impacts of the project on Columbia River flows during the spring and summer salmon migration season, impacts on dam operations and flows to protect fall chinook that spawn in the Hanford Reach, and false attraction for Yakima and/or upper Columbia salmon and steelhead populations. These issues should be addressed in the final EIS.

i. Effect on BiOp Flow Targets

With respect to flow, since summer flows are protected under RCW 90.90, we are primarily concerned with the effects of pumping from the Columbia to fill Black Rock in the spring. While the National Academy of Sciences noted in 2004 that summer flows are the most important to protect from biological perspective, migrating juvenile salmonids also depend on a substantial spring freshet to carry them out to sea. The biological opinions for the Federal Columbia River Power System (BiOp) have included separate spring and summer flow targets for over a decade. While summer flow targets are almost always missed, spring targets are also missed frequently, especially in late spring. Pumping to fill Black Rock is anticipated to draw 4.7 percent of the river's flow in June (DEIS at 4-109). This

would make hitting BiOp flow targets that much harder, and could measurably slow the downstream migration of juvenile salmon and steelhead. Pumping in September also has the potential to harm already slow migration travel times for late-migrating Snake River fall chinook. Accordingly, these potential impacts should be evaluated in the final EIS.

ii. Hanford Reach Fall Chinook

Discussion in the DEIS of the potential effects of pumping to fill Black Rock reservoir on fall chinook that spawn in the Hanford Reach is inadequate. The DEIS asserts that operations will be within the constraints of existing operating agreements, but does not attempt to quantify how pumping from Priest Rapids pool would actually affect the health of the Hanford Reach fall chinook population. The final EIS should include that information.

iii. False Attraction

Regarding the issue of false attraction, there is some risk that both upper Columbia salmon and steelhead and Yakima salmon and steelhead could become confused about which river is which as they travel past (or to) the mouth of the Yakima. The DEIS indicates that there could be a particular risk of false attraction for the first generation of post-Black Rock fish returning to the Yakima, which might not recognize the Yakima as their home river. While the DEIS suggests that this issue would be resolved in successive generations as they acclimate to an altered chemical signature in the Yakima, the issue of how big the risk is to the first generation is not resolved in any detail (DEIS at 4-108). Since large impacts to one generation of fish impact future generations as well, the final EIS should be clearer about the magnitude of this risk.

IV. Economics/Cost

The benefit-cost ratios for all of the surface storage options considered in the DEIS fall below the standard for recommendation as a preferred alternative in a draft EIS. Factors other than economics can lead to a recommendation of a preferred alternative in a final EIS, but the economics on the surface storage projects discussed in the DEIS appear such that selecting any as a preferred alternative would be unwise and unsubstantiated.

While the Black Rock and Wymer proposals would provide some local economic benefits both during and after construction, the benefits to the federal and state taxpayers that would likely foot most of the bill for their construction falls well short of justifying their considerable expense – \$6.7 billion for Black Rock, and \$1.4 billion to \$5.9 billion for Wymer. In addition, some of the economic assumptions regarding new surface storage, such as the recreational value of reservoirs that will need to be drawn down dramatically in the summer to serve

their water supply missions, are highly suspect. The final EIS should provide more detail on how the purported recreational benefits of the storage reservoirs will be affected by the need to operate the reservoirs for irrigation, or vice versa. More generally, it does not make sense for taxpayers to subsidize a new recreational resort of this magnitude, particularly given the associated environmental risk and the fact (not considered in the DEIS, though it should be in the final EIS) that the visitors the resort would draw would to some extent come at the expense of visitation to reservoirs and lakes with existing resorts elsewhere in the state and region, such as Lake Chelan and Crescent Bar.

On the other hand, a package of alternatives including the State alternatives and targeted fish recovery actions may have the potential to deliver substantially more “bang for the buck” for communities, farms, and the river system. Such a package of alternative actions should be examined in the final EIS. An alternative package of actions should be evaluated not only in terms of its direct benefit-cost ratio, but should be balanced against the surface storage alternatives in light of opportunity cost. It would be worthwhile to see what could be accomplished if the nearly \$7 billion it would take to build and operate Black Rock dam were made available to improve municipal and agricultural water availability through other water supply and demand reduction tools, improve instream flows at least in key reaches, and fund other salmon recovery actions such as fish passage into currently inaccessible but nearly pristine headwaters habitat.

Thanks again for the opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Garrity". The signature is stylized and includes a long horizontal flourish at the end.

Michael Garrity
Associate Director, Columbia Basin Programs

Leo Bowman
District 1
Max Benitz, Jr.
District 2
Claude Oliver
District 3

**Board of County Commissioners
BENTON COUNTY**

David Sparks
County Administrator

Loretta Smith Kelty
Finance Manager

Received in Mailroom

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Yakima, Washington

31 March 2008

David Kaumhaimer, Environmental Program Manager
United States Bureau of Reclamation – Upper Columbia Area Office
1917 Marsh Road
Yakima, Washington 98901-2058

Re: Yakima River Basin Water Storage Feasibility Study – Draft Planning Report and EIS

Dear Mr. Kaumhaimer:

Benton County appreciates the work by the US Bureau of Reclamation (Reclamation) and the Washington Department of Ecology (Ecology) in producing the *Yakima River Basin Water Storage Feasibility Study – Draft Planning Report and Environmental Impact Statement (Study)* recently issued by your offices. We thank you for the opportunity to review and comment on this report.

Reclamation oversees substantial water storage and conveyance infrastructure that was built as part of the "Yakima Project" during the first third of the 20th Century. However, while the Project's facilities ceased to expand after 1933 (Cie Elum Lake); agriculture, industry, and communities have continued to grow. The Yakima Project's capacity to meet all water needs has been surpassed; and growth and accelerating drought cycles are combining to put strains on the system that the region can no longer absorb the way it could in previous decades. As such, Benton County's primary goal is development of a comprehensive, regionally-supported program of storage and non-storage measures that assure a reliable Yakima River Basin water supply for current and future needs. We have been consistent and forceful in pursuing this goal for many years.

In support of this goal, Benton County has been at the forefront of efforts to stabilize and improve reserve water supplies in the Yakima Basin to provide more dependable instream flows in the Yakima River, and to better insulate the agricultural and industrial economies of the Basin from the severe adverse impacts of cyclical drought. The County has provided leadership through action and funding in support of these efforts; particularly in the areas of systems improvements, conservation, and enhanced storage capacity. Specifically, Benton County has and continues to support water projects in areas such as:

- Increased storage capacity in existing reservoirs;
- Creating new, off-stream storage capacity;
- Implementing "aquifer storage and retrieval" where viable;

- Moving points of diversion (such as "pump exchange" projects);
- Inter-basin (Columbia to Yakima) water transfers where viable and appropriate.

Federal, state and local entities have long recognized that the YRBWEP is the framework for a comprehensive "fix" of the water resource related problems of the Yakima River basin.

Yakima River Basin Water Enhancement Project

Recognizing both the need to respond to the impacts of cyclical drought, and the Yakima Basin's promise for significant salmon recovery efforts, Congress authorized and appropriated funding for the "Yakima River Basin Water Enhancement Project" (YRBWEP) in 1979. Since its inception, programs derived from YRBWEP have substantially improved water conservation, fish passage, and water quality throughout the Basin.

Benton County has long been a supporter of YRBWEP, and the progressive, effective actions associated with it. YRBWEP has a multi-decade track record of producing positive results in the Basin, based on the following six goals:

- Protect, mitigate, and enhance fish and wildlife through improved instream flows; improved water quality, protection, creation and enhancement of wetlands; and by other appropriate means of habitat improvement (target flows were established at Parker and Prosser and "biologically - based" flows were to be evaluated for future adoption);
- Improve the reliability of water supply for irrigation;
- Authorize a Yakima River basin water conservation program that will improve the efficiency of water delivery and use; enhance basin water supplies; improve water quality, protect, create and enhance wetlands, and determine the amount of basin water needs that can be met by water conservation measures;
- Realize water savings from the Yakima River Basin Water Conservation Program in the first eight years of the program in amounts specified in the Act.
- Encourage voluntary transactions among public and private entities which result in the implementation of water conservation measures, practices, and facilities; and
- Provide for the implementation by the Yakama Indian Nation at its sole discretion of an irrigation demonstration project on the Yakama Indian Reservation using water savings from system improvements to the Wapato Irrigation Project, and a Toppenish Creek corridor enhancement project.

The YRBWEP is being implemented in phases: Phase One - improved fish screens at major diversion intakes (completed); Phase Two - water conservation, water acquisition, and water quality improvement (ongoing); and Phase Three - evaluation of new storage alternatives (ongoing).

The Storage Feasibility Study and Draft Planning Report / EIS

Through its process of creating the Study, Reclamation developed three guiding goals:

- Improve anadromous fish habitat by restoring the flow regimes of the Yakima and Naches Rivers to more closely resemble the natural hydrograph. Through a collaborative process with the Storage Study Technical Work Group (SSTWG) Reclamation developed nonbinding flow objectives to assist in measuring goal achievement.
- Improve the water supply for proratable (junior) irrigation entities by providing a not less than 70-percent irrigation water supply for irrigation districts during dry years relying on diversions subject to proration. This 70-percent goal equates to 896,000 acre-feet of proratable entitlements.
- Meet future municipal water supply needs by maintaining a full municipal water supply for existing users and providing additional surface water supply of 82,000 acre-feet for population growth to the year 2050.

As stated, these goals are used to measure and compare the relative accomplishments of the alternative water supply projects evaluated in the Study. The "measurement" is of concern to Benton County for the following reasons:

With respect to the first goal..... Reclamation and the SSTWG developed a table of desired flows for five Yakima River reaches for each fisheries life cycle. Monthly flows are expressed in cubic feet per second and acre feet for an average water year condition. The factors used in selecting these flows are the water needs for spawning, incubation, rearing and migration. Since these flows significantly affect the merit of a water supply alternative, we have the following questions and concerns: (1) Are these flows intended to be "biologically-based" in the context of YRBWEP? (2) These flows are referred to as "non-binding" and "informal" in the report. Although they may provide a base for comparison of project alternatives, are they not, in effect, meaningless as a true measurement of the fisheries needs? (3) The flows apply to an average water year condition. What flow criteria were used to measure goal accomplishment in wet and dry years? (4) For the average water year condition, these flows should be reported as to annual fisheries needs (acre feet/year), the current available supply subtracted, and the net annual additional supply required be quantified.

With respect to the second goal..... The irrigation water requirement to achieve a 70-percent supply for proratable contract deliveries is 896,000 acre-feet. The derivation of this number is not explained, but it appears that the goal is to supply at least 70-percent of the entire proratable entitlement of approximately 1.28-million acre-feet. In the Yakima River Basin Storage Alternative Appraisal Assessment (May 2006) the additional irrigation water supply required in a dry year (such as 1994 and 2001) is stated at less than half of the Study's figure - 422,000 acre-feet. It should be noted that recently, the Sunnyside and Yakima-Tleton Divisions have stated they have no interest in additional water supply. Also, some water rights of proratable water users have been modified by the "Acquavella" adjudication and "settlement agreements". The 422,000 number is itself probably high. This goal should be re-visited, refined, and clarified.

With respect to the third goal..... The need for storage water for future municipal water supply needs will depend on future policies for determining the availability of ground water for new water rights. Such policies will rely on the results of the on-going Reclamation-Ecology-Yakima

Nation-Geological Survey ground water study. Given this uncertainty, we support the goal as stated.

Supply Alternatives

It is Benton County's opinion that the current water supply goals cannot be achieved by any single or combination of alternatives currently being evaluated internal to the Yakima River Basin. Either importation of water from the Columbia River via a project such as the Black Rock Reservoir is required or the goals must be significantly modified/reduced with respect to water supply needs. Benton County supports continued study of the Black Rock Reservoir alternative with emphasis on resolving the critical issue of potential effect of reservoir seepage on the Hanford Reservation, the degree of such effect, and the opportunities for mitigation of such effects.

Benton County further urges Reclamation and Ecology to not be constrained to limiting the final PR/EIS to "stand alone" alternatives. Combinations of alternatives should be evaluated in the context of this study being an element of the on-going YRBWEP program.

Conclusions

When evaluating the current Study in the context of the past and ongoing actions of Benton County and the Yakima Basin region, we conclude:

- That additional flow alone will not fully achieve the fisheries enhancement goal of the Study. Therefore, system improvements that aid fish migration and enhance fish habitat should continue, in concert with the work of the Yakima Basin Fish and Wildlife Recovery Board.
- That additional water supplies sufficient to meet the needs of the Basin (as defined by the YRBWEP or the Study goals) cannot be developed internal to the Yakima Basin. Either Columbia River water must be imported or the Study goals must be revisited.

Recommendations

Based on our conclusions, Benton County recommends:

- That the goals of the Study should be considered as a sub-set of the YRBWEP goals; and that the Study should be considered a part of and a continuation of the YRBWEP.
- The current rights of junior irrigation entitlements should be determined and identified.
- Required additional water supplies for irrigation use should be quantified.
- That the proposed Black Rock Reservoir project be fully-examined. The Lower Yakima Basin would benefit enormously from the Black Rock project, which would assure an adequate and reliable water supply and neutralize the biggest risk to the Basin's economy – drought. Irrigators and municipalities would be protected and could depend on sufficient supplies to support a growing region. Lower Yakima River flows, which drop dangerously low for fish during water-short years, would be improved. Water quality problems would be significantly reduced or eliminated. A clean, high flow river would attract more recreational users and fisheries would be greatly enhanced.

Benton County appreciates the work of the planning team that developed the Study, and the opportunity to provide comment. We commend the collaborative effort involving federal and state agencies, tribal nations, stakeholders, and the public at large. The County looks forward to continuing to work with you to find creative solutions for complex problems.

Sincerely,

BOARD OF COUNTY COMMISSIONERS



Claude Oliver, Chairman

cc: Board of County Commissioners, Kittitas County
Board of County Commissioners, Klickitat County
Board of County Commissioners, Yakima County
Derek I. Sandison, Central Region Director, Washington Department of Ecology
Jeff Tayer, Region Three Director, Washington Department of Fish and Wildlife
Yakima Basin Fish and Wildlife Recovery Board
Yakima Basin Storage Alliance

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Yakima, Washington

March 24, 2008

Dave Kaumheimer
U.S. Bureau of Reclamation
Pacific Northwest Region
Upper Columbia Area Office
1917 Marsh Road
Yakima, WA 98901-2058

Dear Mr. Kaumheimer:

I am writing to ask several questions about the proposed Black Rock Reservoir.

My first question stems from the fact that the proposed dam would be located on a thrust fault. What is the basis for determining that the risk of earthquakes or landslides is inconsequential?

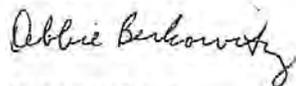
An article appeared in the Tri-City Herald on March 16, 2008 by a Washington State University geologist who, based on his publications, is a recognized expert in this area. In this article, he questions whether the reservoir would be able to hold water given the extent of the permeable zones. Where in the EIS are his concerns addressed and could you summarize why they have been dismissed?

Another question is associated with the possible impact of leakages on groundwater flow that could increase the flow rate of contaminants from the Hanford area into the Columbia River. Since the study by DOE on this potential impact has not yet been finished, how have you been able to address this concern in the EIS?

I am also concerned about the cost to benefit ratio associated with the proposed dam. The idea of this area becoming a major recreational facility which would somehow mitigate the project cost seems at odds with other similar developments in Eastern Washington, e.g., Desert Aire. What is the basis for this optimistic projection of use of the proposed dam as a recreational facility? What is the basis of your estimation of the cost in electrical power to pump water to the project? How does this compare to the current cost of electrical power and projected future costs? What evaporation and leakage rates have you used in your calculations and on what are they based? What impact will the pumping have on the power supply in the project area and what is the basis for this determination? What is the probability that BPA will be forced to buy power from outside the region at a higher rate and how will this affect the cost to benefit ratio?

I am looking forward to your responses.

Sincerely,



Debbie Berkowitz

From: Randy Bowerman <gbowerman98@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 1:57 PM
Subject: Comments on Blackrock Res.

To Whom it man Concern;

It's ridiculous to have this issue still in the planning process and only further illustrates that there is no conscience when spending public money. I never planned on having to comment on the feasibility of this project because it is so ill conceived and fraught with environmental and technical issues that it should have died long ago. But after spending hundreds of thousands of taxpayer dollars we have promoted a project that will never stand the scrutiny of a thourough Environmental Impact Statement because of the ecological and cultural concerns and very likely won't stand seismic concerns. What is point of that? You can not inundate the area with water and not create problems for the wildlife that inhabits the area, and not create major ground water concerns and you can not remove large volumes of water from the Columbia without creating problems for already endangered salmon. It's a plan doomed to failure and so please let it die. I agree that it could be a

boon to agricultural and recreation interests and if those that benefitted from it were the ones financing it, it might seem somewhat palatible but it's another case of minority interests trying to get a publically financed windfall. There are other more pressing needs, please let us spend our resources and efforts in resolving problems associated with them.

Regards

George Bowerman

From: carole byrd <carole_byrd@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 7:53 AM
Subject: Yakima River Basin Water Storage Feasibility Study

Dear Mr. Kaumheimer,

The Yakima River Basin Water Storage Feasibility Study is unacceptable as an EIS because it lacks sufficient information on the impacts of the project. One major flaw is the absence of the Department of Energy report on the results of a study of possible impacts of seepage from Black Rock on Hanford ground water. Without this critical information, this report cannot be an EIS.

Another example is that the study raises the issue of stress faults, landslides and potential for earthquake but does not adequately address them.

Yet another example, on page 35 under Large Dam Height, the report states that such a design would need to be independently reviewed by an expert board of consultants, but such independent review has not been done.

The study acknowledges a benefit of 16 cents on the dollar. This is a totally unacceptable benefit.

The report misrepresents Black Rock as if it would be a mountain lake, and greatly over estimates the visitor traffic and revenue. In fact the reservoir will be drawn down and be a mud flat in an arid area for a part of the year.

The project should be dropped because of the low benefit. However, if it is pursued, the EIS must be redone and resubmitted to the public for review.

Carole Byrd
427 Shoreline Court
Richland, WA 99354
509 371-0789

OMG, Sweet deal for Yahoo! users/friends: Get A Month of Blockbuster Total Access, No Cost. W00t

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Yakima, Washington

Our Comments:

March 29, 2008

Carpenter Farms
400 Carpenter Road
Granger, Washington
98932

Bureau of Reclamation
Upper Columbia Area Office
Mr. David Kaumheimer, Environmental Program Manager
1917 Marsh Road
Yakima, Washington

“Enclosed for your review and comment regarding the Draft Planning Report/Environmental Impact Statement (Draft PR/EIS) for the Yakima River Basin Water Storage Feasibility Study, prepared jointly by the Bureau of Reclamation and the State of Washington through the Department of Ecology. This Draft PR/EIS examines alternatives to create additional water for the Yakima River basin for the benefit of threatened and endangered fish, irrigated agriculture, and municipal water supply. A joint scoping process was held during January 2007.”

The above is your statement under Dear Ladies and Gentlemen, that went on to ask for comments orally, electronically, or by regular mail. Our family farm chooses to offer this statement by regular mail that states our concerns regarding the issues that must be addressed in this Feasibility Study as outlined in the Federal Authorization provided by Congress for this study in the first place.

What the Authorization said was: “SEC. 214. The Secretary of the Interior, acting through the Bureau of Reclamation, shall conduct a feasibility study of options for additional water storage in the Yakima River Basin, Washington, with emphasis on the feasibility of storage of Columbia River Water in the potential Black Rock reservoir and the benefit of additional storage to endangered and threatened fish, irrigated agriculture, and municipal water supply. There are authorized to be appropriated such sums as many be necessary to carry out this Act.”

For the attention of The Bureau of Reclamation represented by Mr. David Kaumheimer - Environmental Program Manager. Carpenter Farms presents the following comments:

We start our comments with a review of the short history why this Feasibility Study came into being in the first place: This happened because of the people who live and work here in the Yakima River Basin made the request to specifically examine the feasibility of the proposed Black Rock Reservoir. When these people made their request to congress through our local delegation the people's wish was formally initiated to secure funding for a study that emphasized the Big Black Rock Reservoir, which we knew to be best of all alternatives. This was an informed opinion derived from the Black Rock Reconnaissance Study initiated by the same people who live and work here in the Yakima Basin. It took the courage and foresight by the Commissioners of Benton County to secure its funding and see its completion. The conclusion of that Reconnaissance Study was that the Big Black Rock Reservoir was feasible and a site-safe to build the Big Black Rock Reservoir. A lot of time, effort, and money went into this reconnaissance study, which even then stated that seepage would not be a problem as stated by Bentley who was one of the geologists who delivered his assertive opinion at the time suggesting then that any ground water flows would head towards Horn Rapids, not Hanford. (Since that time even important people within the Bureau of Reclamation have said, "any seepage issues can be successfully mitigated".)

With the assurance and confidence that we gained from the Reconnaissance Study we urged that the Feasibility Study about to be concluded by the Bureau of Reclamation provide a multi-interest and multi-purpose storage facility. The people strongly feel that this time there must be a multi-Interest multi-purpose storage facility or we will be headed for failure one more time without adequate storage in place for the Yakima River Basin's water crisis.

Now we are nearing the conclusion of the present Feasibility Study knowing that we have a water crisis on our hands but as of yet we have no assurance that the Bureau of Reclamation is ready to conclude that it is time to build the Big Black Rock Reservoir. It should be added here that "NO Action alternative" is unacceptable"! Any other partial band-aid solution is also totally unacceptable!

Yes it is time to fix the problem. How many times does the Bureau put on its dusty shelf another site that has been studied with no new water storage reservoirs being constructed, to take care of the Yakima River Basin during short water years? Over many decades now we have failed to provide any kind of solution for the shortage of water in our basin. This time we are finally considering a multi-interest multi-purpose water storage reservoir that can provide answers to long standing problems that need solutions now!

Procrastinating about the cost only increases cost. Is it fair to say that this Feasibility Study has estimated costs with contingences added that are really unrealistic, but added considerably to the overall estimates as to cost of the Big Black Rock Project? It is outrageous and sad that the Bureau has taken actions that seem an attempt to kill Big Black Rock Water Storage Reservoir even before it gets out of the chute as this Feasibility Study has progressed. Cost, cost, cost has been a consistent a chant by the Bureau right from the start, rather than show benefits that are real for the local, regional and state plus the real federal benefits that you seem to wish denied so far within this Feasibility Study. It is true that the Bureau of Reclamation has been forced to use criteria already set in place by federal law and those are very limiting. It is unfair to the taxpayer who wants to know what the most appropriate alternative is for water storage in our basin when the Bureau does not clearly emphasize that the study fails to consider all relevant criteria. Many readers of the Bureau study are being misinformed by the incomplete review. The media adds to the misinformation at times by not clarifying that point either. It would be fair and more complete if the Bureau clearly identified those areas that should be included in the study but aren't. Then, the Bureau should add up the benefits from those areas not included and disclose those values in some kind of addendum to the study.

Real benefits are regional, state, and Federal when you consider recreation, economic, real fish returns, farm values, and the overall benefits to the region as to salmon recovery, and power generation, along with the recreational perks to all. Why hasn't the Bureau of Reclamation shown in this study the real benefits for the region that would show tremendous economic gain stimulated by the Big Black Rock Reservoir? Your cost benefit ratios are out of whack in this report in light of the real benefits that will come to the region and state when a Big Black Rock Reservoir is in place. You are remiss for not considering the real benefits that will far exceed the low cost/benefit ratio you have shown to date, how come?

The Bureau of Reclamation in this feasibility study has a chance to show real benefits that will come with power generation possibilities that are real. What can happen with the storage battery concept that comes with a Big Black Rock Reservoir that will offer tremendous perks to creative power generation concepts? They are there, but have you really addressed them in this feasibility study yet? Why not explore the potential by addressing positive benefits of power generation with creative ideas that are available today regarding Storage Battery benefits? What could happen that will come with a blend of wind-power using this to show real benefits of the Black Rock Concept with some enthusiasm that is real? Is pumping into the Black Rock Reservoir when power rates are cheaper, using this body of water as a storage battery then selling back power at a higher rate really unrealistic? Some experts say this is probable in fact, yet you have not tailored this feasibility study to show benefits such as this one that would be very helpful, again as it relates to the cost-benefit ratios that could show a much brighter picture. What would be wrong with that for crying out loud?

The request for comments now as The Bureau of Reclamation winds down this Feasibility Study is cause for certain questions that the Bureau of Reclamation ought to provide responsible answers for now:

- There is not enough water in the Bureau of Reclamation's present bucket to meet the demands of water required by federal mandated laws on the books today, yes even now, as it relates to endangered species act, clean water mandates, and Salmon recovery mandates. Add to that the demand for irrigation requirements for water that the Bureau has under contract for delivery of water to various irrigation districts only compounds a very serious problem. Consider continued pumping of wells that are sucking thousands of acre feet of water out of the ground each year then the problem only grows as the aquifers are pumped down. How about the value of power used to pump that water out of the ground, have you considered that? Then consider that increased population and municipal requirements for water makes for a growing demand for water in this Yakima Basin. How will the Bureau of Reclamation meet the demand for water that is here now without additional water storage on the magnitude that a Big Black Rock Reservoir would provide? How are you going to meet the demand that is certain to happen for the future of the Yakima River Basin? Or do you consider it is okay to live with the prospect that Yakima River

Basin will just dry up and blow away without proper actions and answers in place now? Is that the Bureau of Reclamation's wish?

- The Bureau of Reclamation has the example of the Umatilla Project water exchange program to see how results can happen within "your projects that are in place already." In short, water was left in the Umatilla River for fish and the water provided for irrigation purposes then came from the exchange program taking irrigation water from the Columbia River. The value of fish returns there are huge to the Umatilla Tribe for fish and culture needs of the Umatilla people. Why can't the Bureau in this Feasibility Study see similar benefits for fish that will be one hundred fold or even more regarding the value of fish returns up the Yakima River? Experts say that the Yakima River is the most able salmon tributary on the Columbia River, even within the United States, that will produce hundreds of thousands of salmon returning each year up the Yakima River, yet the Bureau of Reclamation can't find a way to come-up with a proper the value for this very important fish benefit? How come? A fair question to ask the Bureau of Reclamation is why not now fix the problem with enough water in the River to impact the return of salmon society wants up the Yakima River? Cooler cleaner water for fish will certainly come when Big Black Rock is built so more mountain reservoir water can be left in the Yakima River for fish is a fact, not a pipe dream. Does the Bureau of Reclamation just intend to continue to take more irrigation water for in-stream flow mandated by law now being the case? Our plea to you is that you realize that this Big Black Rock Water Storage Project is the answer for culture, fish, and traditional interests of the Yakama people. The Cost of doing nothing runs across the very fabric that holds all of us together in this basin when you do not address the issues properly in this Feasibility Study. It is time to answer long standing questions that require additional water of the volume offered by the Big Black Rock Reservoir. The Yakama Nation has waited long enough for the proper solution to long standing problems. Big Black Rock Reservoir offers the best answers to solve these issues.
- Conservation is not going to provide enough water for the needs of the Yakima River period! There is just not enough water available to provide for the needs of the Yakima River Basin today, with the future being dismal without enough additional Water Storage offered by only the Big Black Rock Reservoir. Only Big Black Rock can provide the flexibility we need with our future water supply. Certainly Conservation will be a continuing process always with emphasis to

take care of this precious resource, Water. That is now, and forever in the future. But anybody who suggests that conservation is going to provide the answer now just is not being realistic. In fact many water users realized that we need to take care of our water better and have implemented certain improvements that have caused cleaner water into the Yakima River. This was done with the understanding that new Water Storage was next as mandated first under the enhancement bill. So it is not that conservation is not being addressed as we go. It is and has been! The demand though will not be met without a huge new water storage reservoir in place. Big Black rock takes care of this River Basin's problems like no other project can. Thousands of people who live and work here have a greater expectation of this Feasibility Study with hope that it tailors our future here in this River Basin with positive results, not negative rhetoric that suggest Big Black Rock can't be constructed, sic, because of cost! The real cost to the Yakima River Basin is not doing anything when we have this chance for success! Again, we just cannot afford to fail this time around or the Yakima River basin is doomed because we cannot get our act together with proper perks expected and in place that is offered by the Big Black Rock Reservoir!

- Climate change is an issue more evident all the time. Early run-off without water for late summer appears to be a serious problem projected and more important expected by many folks with astute knowledge about the subject. What that means is more drought years are coming with what water we have in Storage being used up earlier. Therefore we will not have the water to take our irrigation districts through the irrigation season, nor take care of mandated fish requirements. Today strong evidence is certain that Climate Change should not be ignored, so has the Bureau of Reclamation taken this evidence into consideration within this Feasibility Study? More important if you choose to ignore the obvious evidence that has been presented over the past several years showing the effects of obvious climate change, how come? Acting to late for the effects puts all of up a dry creek, or do you expect Salmon to spawn up dry creeks?
- Has the Bureau considered the economic benefits of our global economy today within this Feasibility Study? The Yakima River Basin farms today produce crops that are very important to our balance of trade with millions, if not billions of dollars of impact to our balance of trade to the positive year after year. This includes global shipment of fruit, hops, mint, spuds, hay, onions, and various other crops products

that are shipped around the world for sale in other countries. Included in this today are processed products from each of these crops that raise the ante of benefits offered from our country to the world that gives valuable basic balance of trade perks for the benefit of this great country. Where in this Feasibility Study has the Bureau of Reclamation taken into consideration this importance to our region and country? For instance have you checked for the volume of shipments out of our country from the ports such as the Port of Seattle. Why not confirm just how great of contribution farm products offer with shipment out of the various Ports, in Seattle, Tacoma, Vancouver, and Portland? For example just using Hops produced here in the Yakima Basin, over 3/4 of the hop production in the Yakima Valley is exported out of the country. Just that value is huge in itself for our country's balance of trade issue. Have these value's been considered in this Feasibility Study as a benefit? If not, why not? By the way these important benefits are coming from crops produced in Kittitas, Yakima, and Benton Counties, including Yakama Nation lands. An important look at this scene is to stand on top of the Safeco Stadium at a Mariner baseball game in Seattle and look west. You will see container after container of farm products being loaded on ships headed to other countries. (Of interest also, Safeco Stadium built with creative use of public money injected into a great idea to help launch a great public recreational site!)

- Once again it is important to note that we cannot have a healthy environment without a healthy economy. We must have the adequate water supply now that is offered by the Big Black Rock Reservoir. Otherwise we are doomed in a situation that begs to be answered now or all the people who live and work here are surely going to suffer the dire consequences of our own inaction. It would seem that the Bureau of Reclamation when conducting this Feasibility Study would recognize that we just do not have enough water to take care of all interests as required for our River Basin today? The signs are absolute that we need encouraging results for action at the conclusion of this Feasibility study. Does the Bureau of Reclamation recognize the predicament we all are in here in the Yakima River Basin without proper action very soon to build the Black Rock Reservoir? This is very serious business that you are conducting with this Feasibility Study final status. The people here are counting on the Bureau of Reclamation to provide support with a conclusion that now is the time for this New Big Water Storage Reservoir to be constructed. Yes, with

a one to one water exchange from the Columbia River consummated when the water re-enters the Columbia River down stream. Of course now with abundant fish enjoying enough water to thrive in pouring out into the Columbia River at Richland. Wow, what would be the matter with that?

We have made this statement to the Bureau of Reclamation with earnest concern for our family farm. We plant crops that must have enough water to survive. We are not unlike all other farmers who understand the risk taken without enough water being available in the Bureau of Reclamations Water Distribution system for adequate delivery to the farm. We are not salaried folks with a degree behind our name that seems to give credence to your expertise. But all of your perceived knowledge having studied now one more time the issues of water shortages here in the Yakima River Basin isn't it fair for the people here to expect a Feasibility Study report that provides some enthusiasm for answers now?

We have enclosed some pictures of Drought Damage already experienced here in the Yakima Basin. Please take a look at them then with all of your wisdom there in-house at the Bureau of Reclamation, explain why the people should not expect this Feasibility Study to provide some real enthusiasm with answers for a long standing water shortage here in the Yakima River Basin? Why should the people who live and work here expect anything less than just solution for this definite Water Shortage problem from the Bureau of Reclamation? Please take a look at these pictures understanding that some farmer took risk and planted trees, or for that matter any other crop, then you at the Bureau of Reclamation did not deliver water on your water contracts to that farmer's particular irrigation district so he lost the farm because the Bureau of Reclamation does not have enough water to meet the demand within your distribution system. So it seems okay for a farmer to lose his farm, but show us where a Bureau of Reclamation employee has lost his job because of drought that damaged our ability to farm? You have an awesome responsibility on your shoulders mandated by the people who helped fund this Feasibility Study in the first place. All of us expect a result that launches a new water storage facility that will meet the needs lined out with the authorization by congress of this feasibility study in the first place. It just is unacceptable to even suggest that we have not reached a favorable conclusion to this long standing problem of not enough Water Storage here in the Yakima River Basin. If that ends up being the conclusion of this Feasibility Study you have failed miserably on

behalf of the people who live and work here one more time! People and fish are depending on expertise of the Bureau of Reclamation to provide a solid answer to this mutual problem now.

Allow us to leave you with this thought: Farmers today are risking as much as \$15,000 an acre or more in some cases, planting crops that require water to quench the thirst of growing plants; Farmers continue today to build on the plan that was implemented over a hundred years ago by our forefathers. It offered an opportunity to drive and build a prosperous economy here in this three county Yakima River Basin. Today we have tremendous pressure to farm all the land in our basin because of the great opportunities offered to produce crops today, even on land for instance left idle for many years especially on Yakama Nation lands (but with water rights by the way). Bankers continue to back farmers with loans that offer production from these lands that offer the magnitude of the economy of the Yakima River Basin. (How long will the Yakima River Basin have the confidence of Bankers to make necessary loans without a proper water supply?) Land values continue to increase, which by the way drives our tax base that allows community governments to survive providing services to their people. Schools only thrive when the economy is strong in our three county Basin to provide opportunity for our youth. Enhancement of our fish requirements mandated by law and recently shown as real by the actions of a Federal Judge down in Portland are real and needed. Yakama Nation's economy, along with Yakima, Benton, and Kittitas counties economy is blended together for the best interests of all the people who live and work here in this Yakima River Basin. Note: Water is the breath and life of the Yakima River Basin and all the people who live and work here!

So, the most important issue is that this great basins health is all driven by Water! WE are short on water in this basin and have the opportunity to fix the problem. Today the fact is that required action hinges on the Bureau of Reclamation's Feasibility Study presenting the best alternative for solution. We stake our future, our farms, and family lives on the premise that the best alternative is Big Black Rock Reservoir in place.

All family driven farms depend on adequate water, the need for a stable supply, or we are doomed. The question is: Does the Bureau of Reclamation recognize the importance of conducting this Feasibility Study to a successful conclusion for the families who live and work here in the Yakima River Basin? We hope you can shoulder the responsibility and with the interest of

securing a healthy environment and flourishing economies of all who live in the beautiful Yakima Valley.

Brad Carpenter and Dana

Craig Carpenter and Eva

Tom Carpenter III and Barrie

Mike Carpenter and Deanna

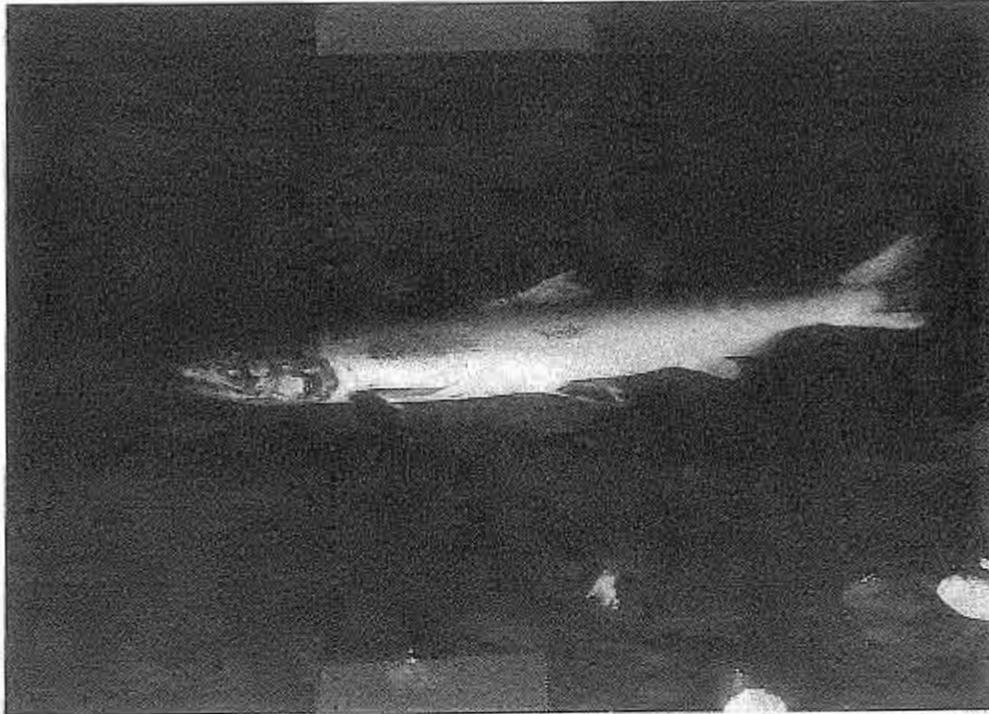
Steve Carpenter and Dianna

Tom Carpenter Jr and Betty Jo

Signed by Brad Carpenter representing the above families.

Brad Carpenter

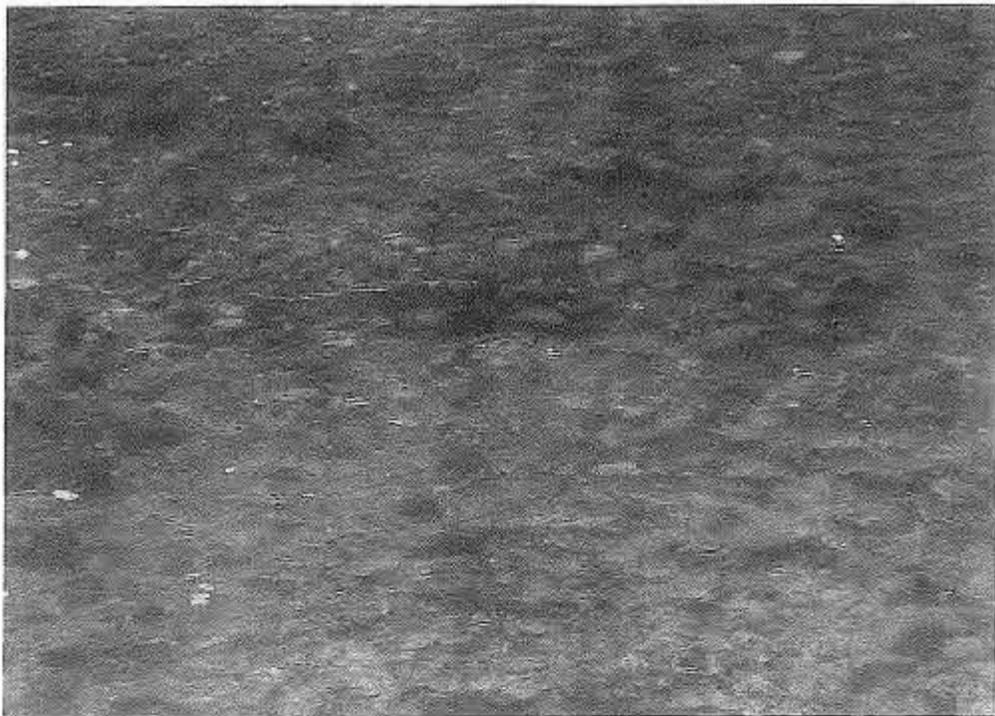
* Please see additional information attached with pertinent comments for your consideration: A series of photographs and statements follow that we hope illustrates points for your consideration.



Water is the gift of life as illustrated in this spawning event of salmon. It is time we take care of making sure that we have enough water in the Yakima River to always have the chance of providing Salmon the opportunity to complete the circle of life.

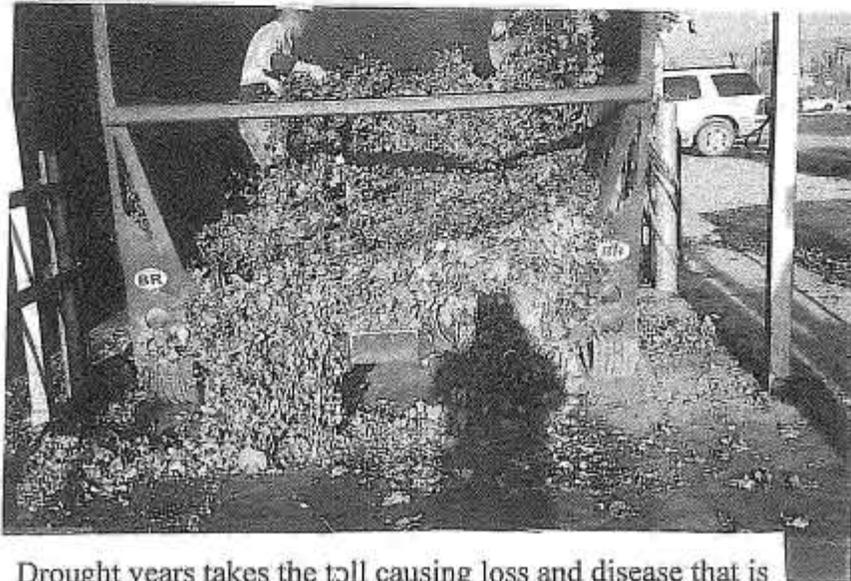
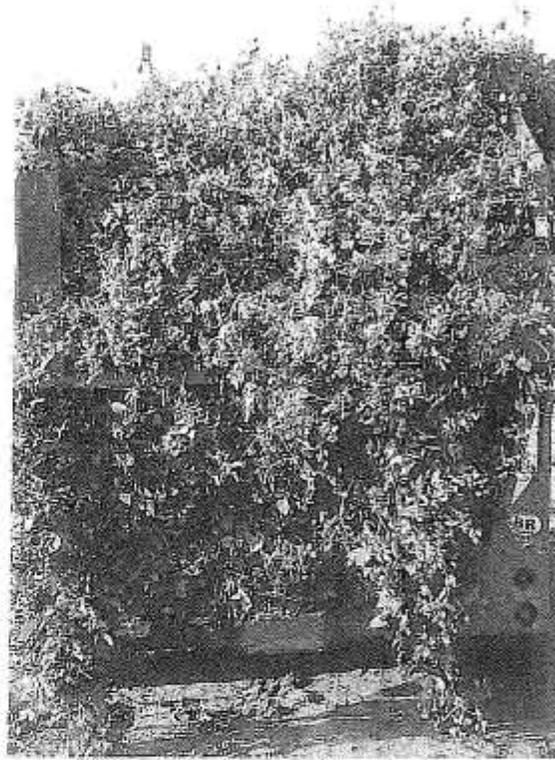
Lets cause enough water to flow into the Yakima River to give our Biologists some real ability to deal with salmon recovery rather than have them set around and spend money studying another ripple with our water! We can do it but we must have enough water in the River with a big water exchange program. Then these hot-shots can make the river produce the Salmon we all want. So now we need to give them the water required to deal with the problem of real Salmon Recovery with water! Abundant water that will flow with construction of the Big Black Rock Reservoir!







Ducks found a puddle in a dry year!
No water going over the dam in a drought year!



Drought years takes the toll causing loss and disease that is "stupid" when we have the ability to fix the problem!



Drought years cause us to wonder
who is full of dry Hops over
at the Bureau of Reclamation?



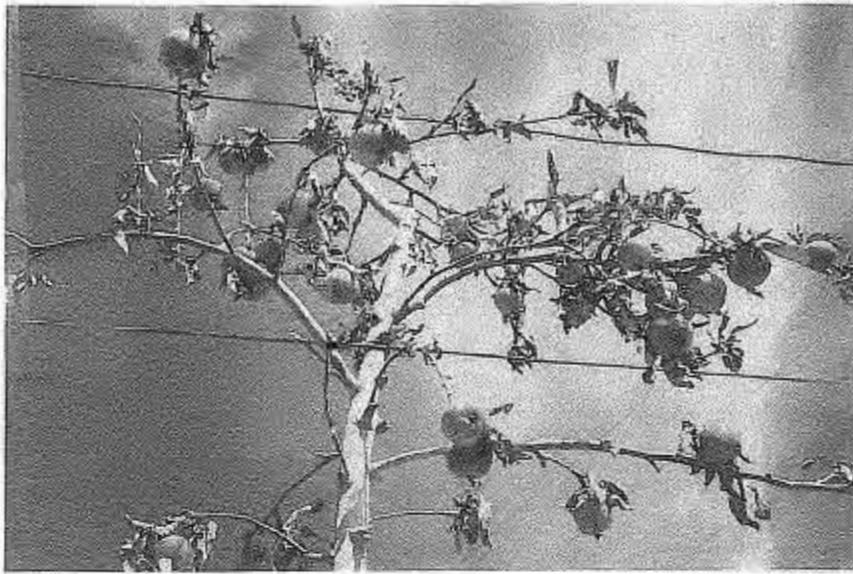


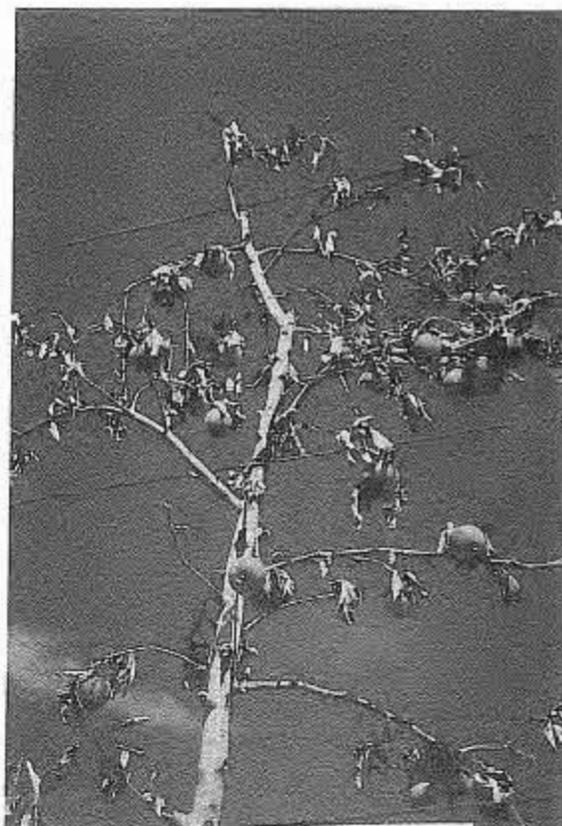
How do you like them apples? Cooked, baked, and ready to go!
We think it is about time that we recognize the issue of why this Feasibility Study has to be successful! Our earnest hope is that wise people will realize that repairing the dike after the storm does not work very well. Why not take care of the issue before the disaster happens that is sure to come without action now?

There goes the Economy. This Drought year cost our economy Over 268 million dollars using A conservative multi-plyer of 3 That is almost a billion dollars gone from our economy forever. Put that in your pipe bureaucratic and try smoking it!

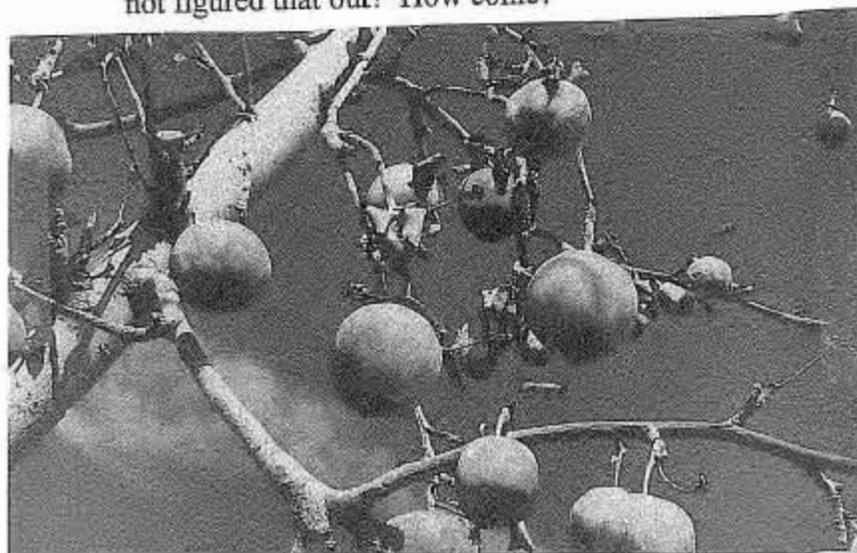


Have a
Dried
Apple!





Drought Damage is not a one year damage event, but some have not figured that out? How come?

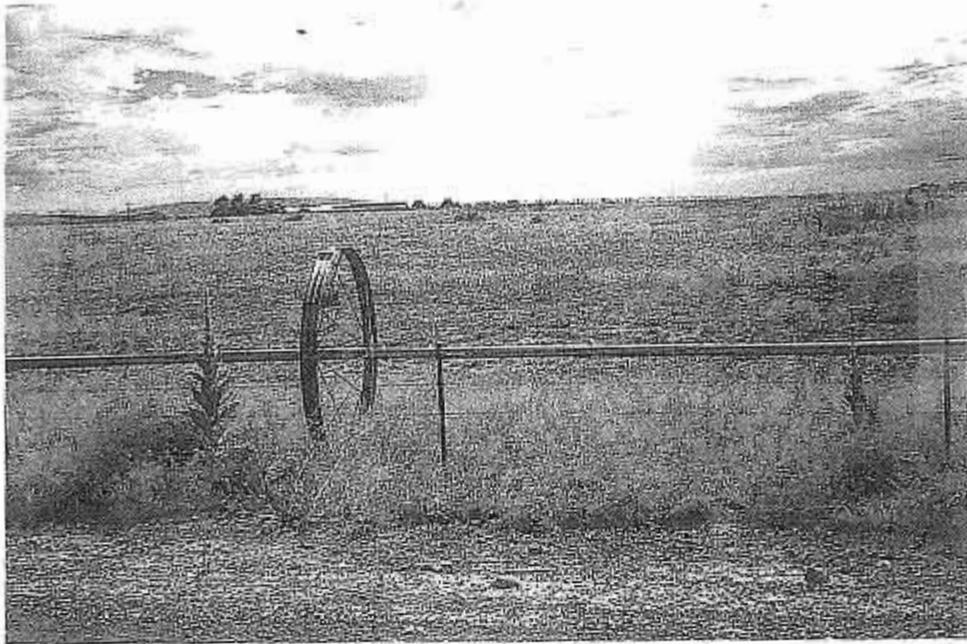




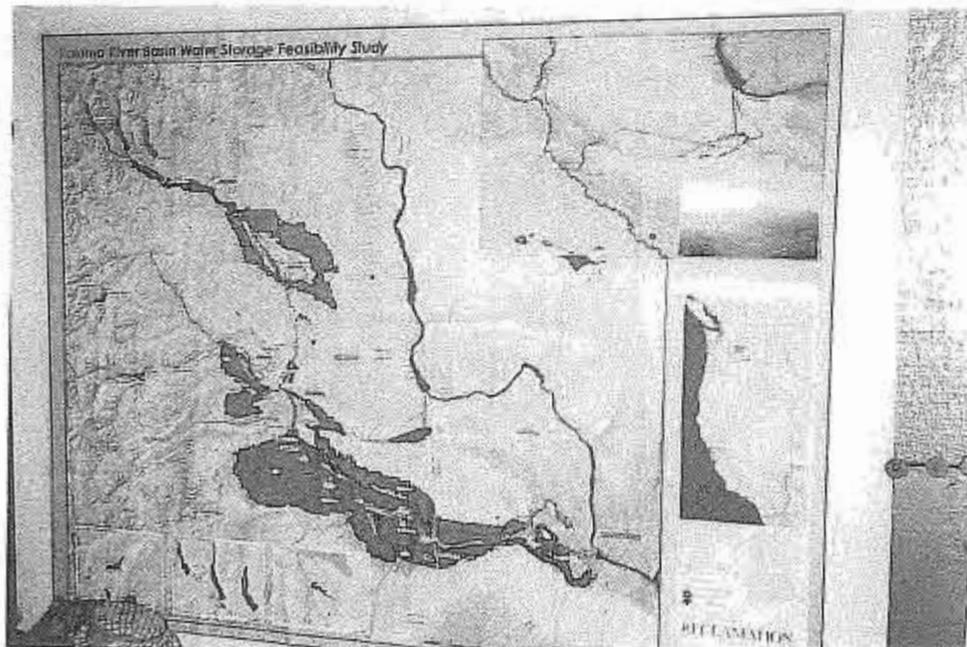
Drought results are long lasting. That is 10 years of hard work piled up in that pile. Can you fathom yourself dealing with this kind of loss?

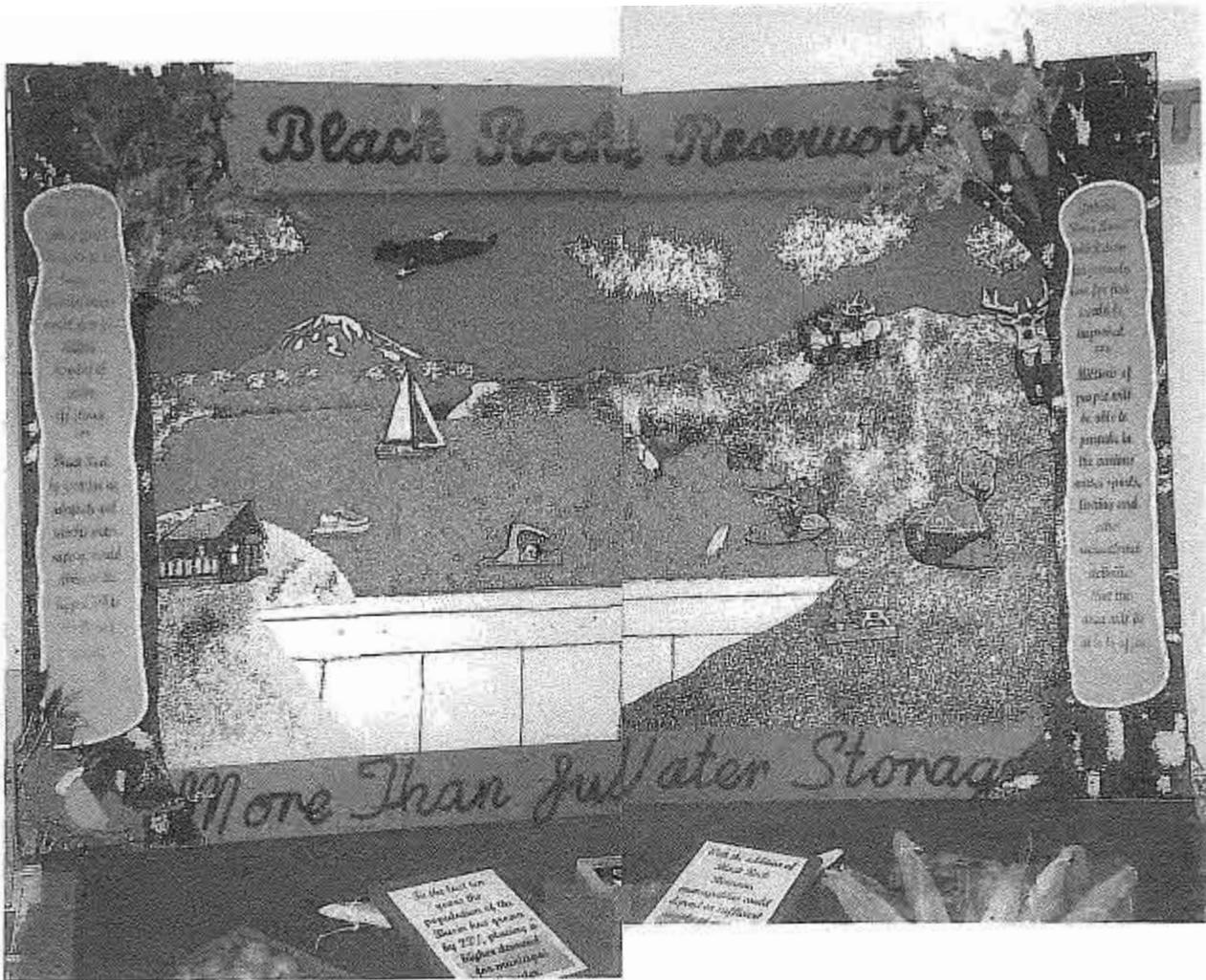


Drought damage that can be stopped when we overcome our fears and react to solve the problem!



Does drought laden land and a Feasibility Study go together?

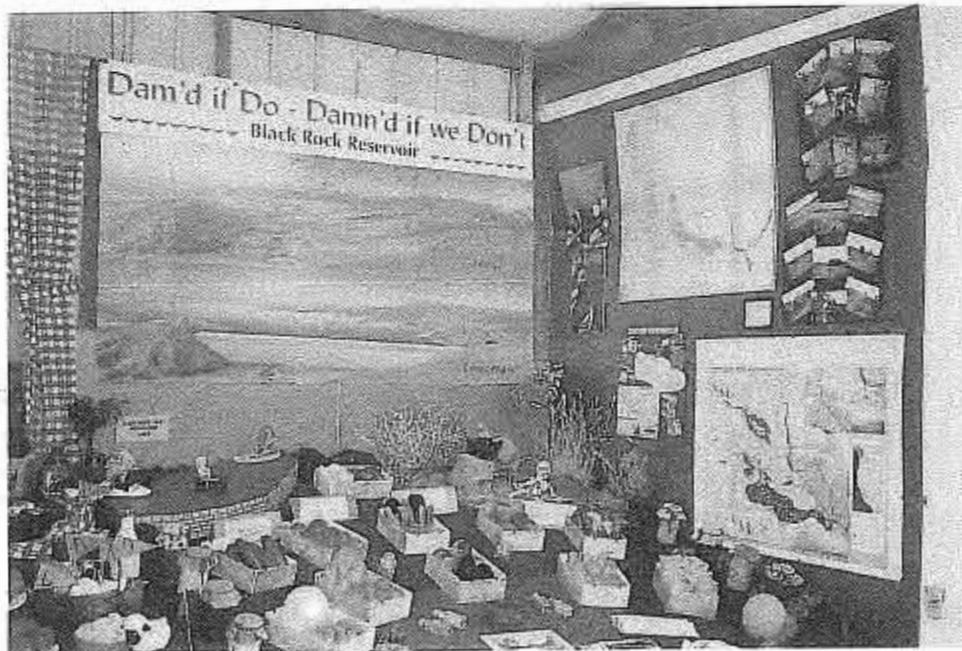
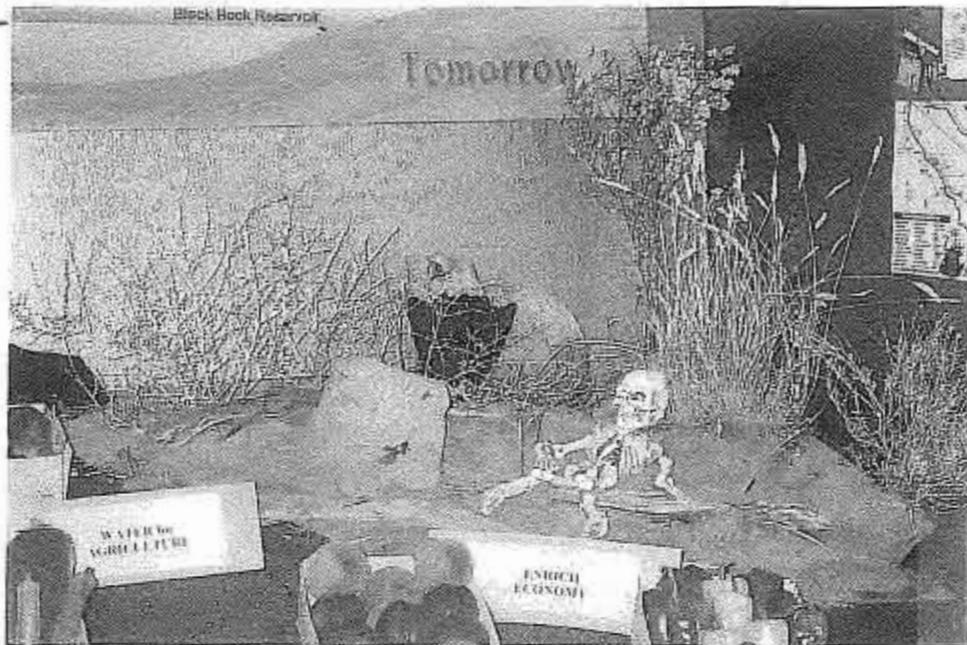




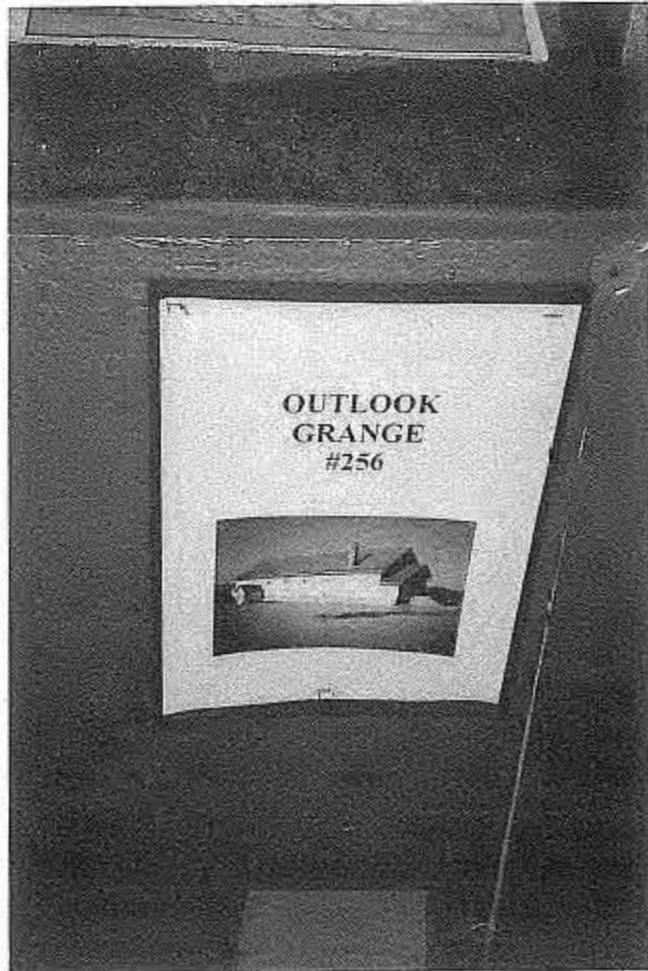
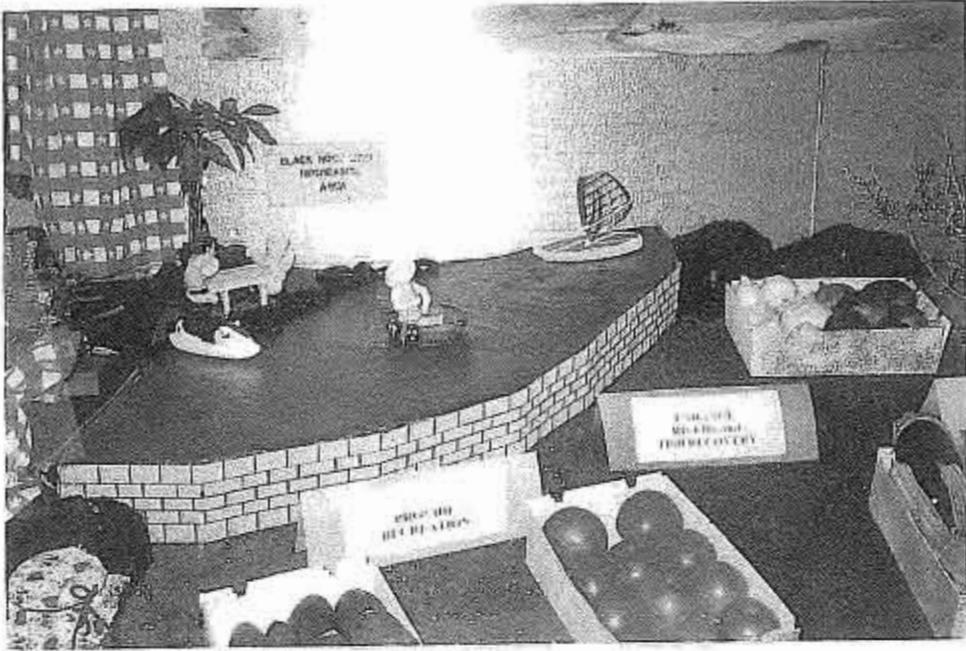
Our youth designed this Booth for The Grandview Fair. It is obvious that they believe the future of the Yakima River Basin requires the multi-interest, multi-interest, approach for success!

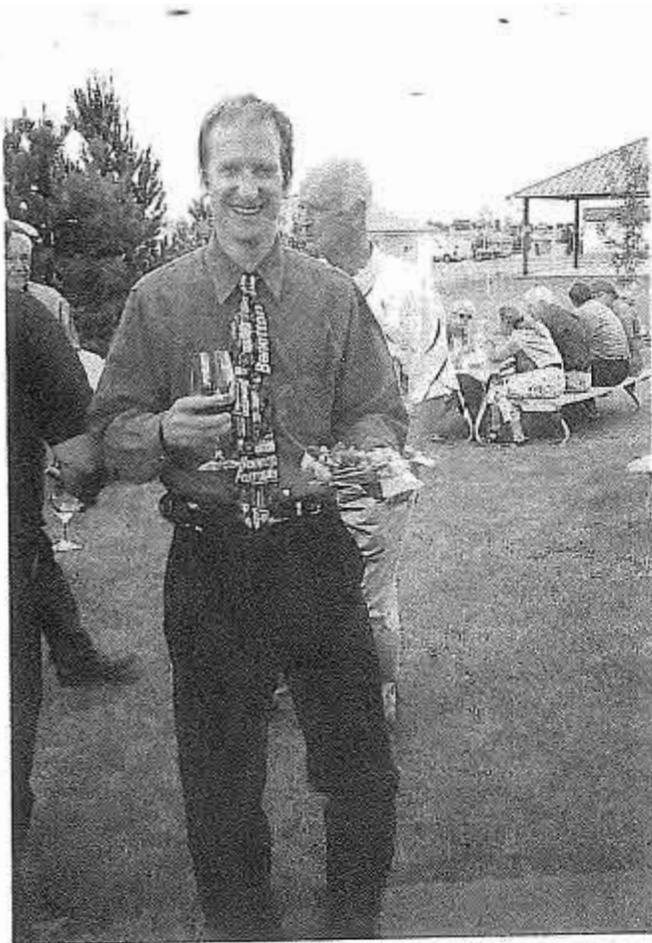


A picture is worth a thousand words!



This Outlook Grange fair booth illustrates the real issue pretty well we think. Certainly you would agree?

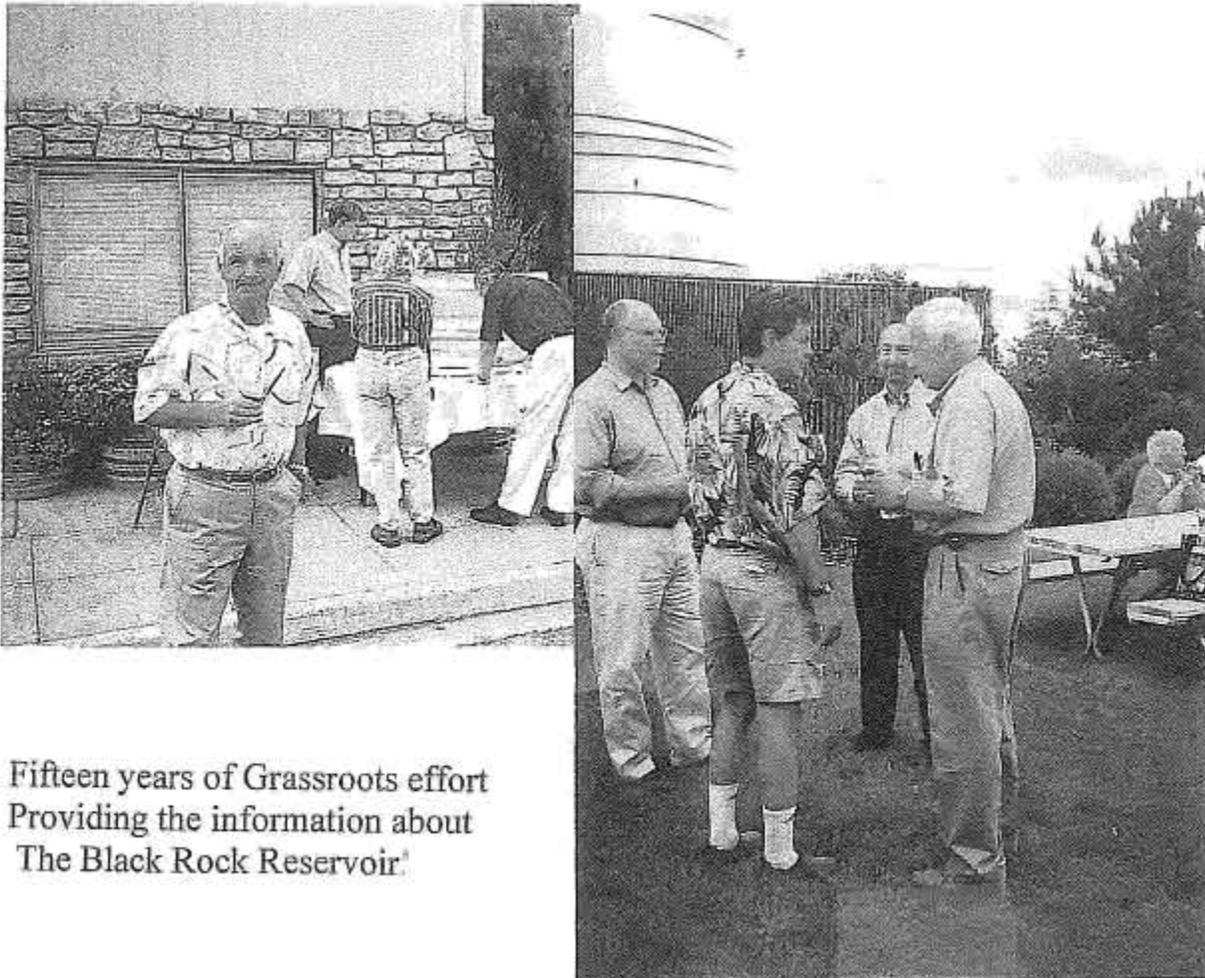




Yakima Basin's Wine, "the best!"
But our fine grapes will not produce
With out a sure water supply!"
Black Rock Reservoir is the Answer!

The old Trooper has it right. Hell,
"Let's built it and quit studying it!"





Fifteen years of Grassroots effort
Providing the information about
The Black Rock Reservoir.



Are you at the Bureau of Reclamation ready to "BR not afraid to think big?" You cannot make Hay without water during drought years!



CLEAN, FLOWING WATERS FOR WASHINGTON

The Center for
Environmental Law & Policy

March 31, 2008

David Kaumheimer
Environmental Programs Manager
U.S. Bureau of Reclamation
1917 Marsh Road
Yakima, WA 98901-2058

Fax: (509) 454-5650
Email: storagestudy@pn.usbr.gov

Re: Yakima Storage Study, Draft Planning Report/Environmental Impact Statement

Dear Mr. Kaumheimer:

Thank you for the opportunity to provide comments on the Yakima Storage Study draft DEIS. These comments are submitted on behalf of the Center for Environmental Law & Policy, Columbia Riverkeeper, Citizens for a Clean Columbia (Wenatchee), Rosemere Neighborhood Association, Wahkiakum Friends of the River, Skippers for Clean Water, and Sierra Club.

Our comments are attached.

Yours very truly,

Rachael Paschal Osborn, Executive Director
Center for Environmental Law & Policy

and for:

Columbia Riverkeeper, Brent Foster, Executive Director
Citizens for a Clean Columbia (Wenatchee), Susan Evans, Executive Director
Rosemere Neighborhood Association, Dvija Bertish
Wahkiakum Friends of the River, George Exum, Chair
Skippers for Clean Water, Peter Wilcox, Executive Director
Sierra Club, John Osborn MD, Chair Upper Columbia River Group

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Spokane: 509.209.2899 Seattle: 206.547.5047 Olympia 360.754.1520
www.celp.org

Comments on Yakima River Basin Water Storage Feasibility Study, Draft Planning Report/Environmental Impact Statement (January 2008)

Submitted by Center for Environmental Law & Policy, Columbia Riverkeeper, Citizens for a Clean Columbia (Wenatchee), Rosemere Neighborhood Association, Wahkiakum Friends of the River, Skippers for Clean Water, and Sierra Club.

1. Purpose & Need (Section 1.2)

The Bureau of Reclamation's limited review of alternatives to proposals involving dams & reservoirs improperly restricts consideration of other alternatives to satisfy the needs of the project, including non-structural and operational actions that could improve water supply and instream flows. However, the Joint No Action Alternative considers conservation pursuant to sections 1203 and 1204 of Title XII. Moreover, under the SEPA/state alternatives, the term "storage" and the objectives of the study are interpreted in a manner that encompasses a variety of non-structural activities relating to water supply.

It is inappropriate for the Bureau to separate analysis in this study conservation alternatives and other, ongoing studies. Given the critically low water supplies described in the DEIS and quoted above, it is a rather large oversight that conservation is not examined in more detail in the Joint Alternatives. The fact that declared droughts are occurring roughly every five years emphasizes the need for effective conservation measures. Likewise, the "Cle Elum and Bumping Lake Dams Fish Passage Facilities Planning Report," (discussed at Section 1.8.3), scheduled for completion later this year, should be incorporated into this effort. More extensive passage in the Yakima basin will considerably change the nature of water management potential.

2. Storage Study Goals

With respect to the Storage Study Goals (p. 1-3), the DEIS fails to provide information explaining the goal of achieving a 70% proratable supply (896,000 acre feet) for the basin. The goal to make this enormous quantity of water available creates an critical, perhaps unachievable benchmark, and should be thoroughly explained and vetted to determine whether alternative goals are more appropriate. Section 2.2.1.2 is inadequate to explain, other than that irrigation districts assert this is necessary to "avert major economic losses." However there is no discussion of how the term is defined or whether objective evidence indicates this is an appropriate figure. Do Yakima basin pro-ratable irrigators really require 896,000 additional acre-feet of water, and if so, why? The DEIS indicates that Sunnyside and Tieton divisions are not interested in receiving drought water. (Executive Summary, p. xxi). How do these statements affect the goal of 70%?

Likewise, the goal of 82,000 acre-feet for municipal supply admittedly does not include consideration of the potential for water conservation and pricing as a mechanism to control demand. Section 2.2.1.3. Further, there is no discussion of how the acre-feet requirements fit with recent municipal water conservation planning requirements and reasonable efficiency requirements for water rights.

3. Monthly Flow Objectives

In contrast to the out-of-stream water supply goals, the monthly instream flow objectives goal is based on a systematic, technical analysis of instream flow needs and how those needs relate to habitat requirements. We support the development and use of these

objectives. However, we note that objectives for the Naches Arm, an important tributary of the Yakima basin, are missing. The technical process used to establish flow objectives for the DEIS should be utilized to analyze and project similar needs for the Naches subbasin.

4. No Action Alternative

The Bureau should select the No-Action Alternative (as described in Section 2.3) as its preferred alternative for the EIS. However, we note that the use of this alternative as “no-action” is problematic because it may lead readers to the incorrect assumption that the various activities (conservation plan implementation, land and water acquisitions, system improvements) are in fact funded and will in fact occur. (Indeed, the alternative contains a confusing mix of actions that have and have not occurred.) Setting these actions as the “baseline” then undercuts understanding of the substantial improvements in instream flow and water supply that could result if this alternative is actually and fully implemented. Further, failure to conduct a benefit-cost analysis for the “no-action” alternative also limits full understanding by readers and decision makers of the comparative costs of the dam-reservoir alternatives to a conservation-oriented approach.

The No Action alternative is also deficient in its failure to discuss the merits of adjusting basin water demand to actual supply. Water rights in the Yakima were issued according to the exact tenets of the prior appropriation doctrine, that is, over-appropriation to ensure that all water is used during good years, with the assumption that junior water users will plant crops accordingly (ie, not plant perennial crops on lands that may not receive a full supply of water). A large, new storage reservoir would provide an “over-supply” of water to the basin, not needed in many (most) years, and therefore constitute substantial economic waste. Leaving the system as is, i.e., continuing to allow weather and markets to adjust demand, is not adequately explored in the DEIS.

5. Black Rock Alternative

The DEIS discussion of the Black Rock dam-reservoir alternative is inadequate for a number of reasons.

a) Hanford contamination

First, the DEIS fails to provide information about and analyze seepage of groundwater beneath the reservoir and the potential for harm to the cleanup of radioactive and toxic contaminants beneath the Hanford Nuclear Reservation. The DEIS instead defers to a future Department of Energy EIS and states that more information will be provided in the final Yakima Storage study EIS (p. 4-37, 4-71). This is a fatal flaw. The Bureau has the two studies necessary to model and determine impacts (the seepage report and the Hanford groundwater modeling report). The bureau also has the obligation, under NEPA, to address all significant adverse environmental impacts associated with a proposal. Leaving out this discussion frustrates the purposes of NEPA and renders this DEIS inadequate.

Second, even though the DEIS fails to discuss potential adverse impacts to Hanford, it includes discussion of mitigation concepts, presumably to assure readers that we are not to worry about the possibility of harming cleanup at one of (if not THE) most polluted sites in the United States (p. 4-39). This is an improper “cart before horse” approach to discussing impacts.

Third, the costs associated with the Bureau's alleged mitigation schemes for addressing seepage impacts on Hanford are not incorporated into the benefit-cost analysis for the Black Rock alternative (p. 4-39). Again, the DEIS is deficient for its lack of thorough discussion of impacts and costs associated with this critical environmental impact.

b) Geology

The Bureau's discussion of seismic and other geologic issues at the Black Rock site is both inaccurate and inadequate. The DEIS takes the view that any earthquake related hazard, or any other geologic hazard, will be dealt with during dam design and construction. This is not reasonable – it is impossible to engineer the proposed dams to withstand a hazard when the nature and degree of the hazard are unknown. Characterization of the geologic hazards must occur during the Storage Study process. Indeed, the preliminary geologic studies upon which the DEIS is based called for acknowledges that data is sparse and recommends that further studies be conducted. That recommendation has been ignored. The draft EIS is inadequate because it does not address the seismic hazards and other geologic hazards in enough detail to judge the seismic safety of the proposed dams, or to make rational planning decisions.

Attachment 1 to these comments and incorporated by reference are the comments of seismic geologist Harold Magistrale, Ph.D., regarding the seismic and other geologic hazards associated with the Black Rock damsite.

6. Wymer Dam and Wymer Plus Alternative

The Bureau's discussion of seismic and other geologic issues at the Wymer Dam site is both inaccurate and inadequate. The DEIS takes the view that any earthquake related hazard, or any other geologic hazard, will be dealt with during dam design and construction. This is not reasonable – it is impossible to engineer the proposed dams to withstand a hazard when the nature and degree of the hazard are unknown. Characterization of the geologic hazards must occur during the Storage Study process. Indeed, the preliminary geologic studies upon which the DEIS is based called for acknowledges that data is sparse and recommends that further studies be conducted. That recommendation has been ignored. The draft EIS is inadequate because it does not address the seismic and landslide hazards in enough detail to judge the seismic safety of the proposed dams, or to make rational planning decisions.

Attachment 1 to these comments and incorporated by reference are the comments of seismic geologist Harold Magistrale, Ph.D., regarding the seismic and other geologic hazards associated with the Wymer damsite.

7. Cumulative Impacts

In Section 4.2.2.6, the difference between the discussion of the cumulative effects associated with the Columbia River Water Management Program (CRWMP) (one paragraph) and climate change scenarios (13 pages) is striking. Yet we can say CRWMP is likely to affect surface flows in the Columbia River with much greater certainty than we can predict regional future climate (temperature and precipitation changes). The DEIS is deficient for its failure to discuss cumulative impacts associated with various CRWMP projects as they will affect Columbia River flows, including the Lake Roosevelt drawdown, the Potholes Supplemental Feedroute, and the Columbia Mainstem Offchannel dam-reservoir projects (Lower Crab, Sand Hollow and Hawk Creeks). Detailed information is available regarding

each of these projects, including draft and/or final environmental impact statements (SEPA and NEPA driven), appraisal studies, etc. This problem is again repeated in Section 4.4.2.7, which discusses cumulative impacts on hydropower, but fails to discuss the multiple proposed projects that would both require substantial energy resources for pumping, and would remove water from the Columbia River, resulting in net reduction of hydropower production.

The DEIS cumulative impacts analysis fails to identify or address the effects of the proliferation of exempt wells in the already over-appropriated Yakima River Basin. A legislative exemption currently allows unmetered groundwater withdrawals without a permit. Due to the absence of unallocated water in the basin, and the unavailability of water rights for purchase, the legislative exemption has become the rule, rather than the exception, for new residential developments. During 2007 land owners dramatically increased the use of the exemption to support new construction in developments without a water right. Based on 2008 projections, the use of the exemption continues increase at an alarming rate. Unless Ecology quantifies the withdrawals associated with the exemption, and develops mitigation measures to offset future uses, exempt well users may withdraw water in quantities that have a significant impact on surface water flows.

Furthermore, the Growth Management Act mandates that certain counties establish a comprehensive plan and development regulations that protect both the quantity and quality of water resources within the county. The Yakima basin counties affected by this DEIS have failed to comply with this mandate. Continued development without controls and mitigation measures on the use of exempt wells threaten water quality and quantity. Until the Counties have developed comprehensive plans that comply with the GMA, neither Reclamation nor Ecology can project future water demand requirements and impacts.

8. Hydraulic Modeling Omission

The DEIS is inadequate fails to incorporate information and results from the hydraulic modeling (Yakima River Water Management Study, created by Ken Bovee of the U.S. Geological Survey) examining the relationship between flow and habitat parameters that was done as a component of this very study. As noted on the USGS website: "This study will develop an integrated water management/habitat response tool that will allow land managers to quantify the feasibility, effectiveness, and risks associated with various water management alternatives." How the Bureau could issue a DEIS without including the modeling results is entirely unclear.

We would note that CELP asked for but was denied request to extend the deadline for comments and is unable to provide more information about the Water Management Study, which was released less than one week before the DEIS comment deadline.

9. Benefit-Costs

We support the Bureau's NED benefit-costs analysis associated with the joint alternatives (Section 2.7) but wonder to what extent the expenses associated with complicated institutional arrangements (such as described in Section 2.2.5.3, "Effects of Exchange on Yakima River Basin Water Rights") are incorporated into the estimates of costs provided to date. Also, the failure to assess the costs associated with the substantial mitigation scenarios (i.e., to prevent seepage of groundwater to Hanford or replacement of 3,900 acres of shrub-steppe habitat) leaves the reader unable to assess the actual costs

associated with the Black Rock and Wymer alternatives. In this respect the DEIS is inadequate.

We concur in the statements in the DEIS that the Black Rock, Wymer Dam, and Wymer Plus alternatives are “not economically justified.” (Section 2.7.1)

Regarding cost of municipal water supply, it is clear that it would be much cheaper to simply purchase water rights for transfer to the cities requiring additional supply to meet future demand. This appears to be the contemplated solution under the “no action alternative,” however the DEIS does not make this clear.

Regarding the recreation benefit analysis, the DEIS is deficient for failure to quantify site substitution for use at recreational sites outside the Yakima basin, and instead simply note that the recreation benefits may be overstated (p. 2-85).

We support the Bureau’s decision to not include non-use fishery values in the BCA (p. 2-100), given the controversy and difficulty in measuring such values for fisheries in the Yakima basin.

10. Hydrology & Biology

Discussion of hydrology and streamflow issues (from a biological standpoint), occur throughout the document. The DEIS Purpose and Need section states in part:

“The need for the study is based on the finite existing water supply and limited storage capability of the Yakima River basin. This finite supply and limited storage capability does not meet the water supply demands in all years and results in significant adverse impacts to the Yakima River basin’s economy, which is agriculture-based, and to the basin’s aquatic resources—specifically those resources supporting anadromous fish. Reclamation and Ecology seek to identify means of increasing water supplies available for purposes of improving anadromous fish habitat and meeting irrigation and future municipal needs.”

While true, this statement ignores the fact that the Columbia River is limited by the same phenomena. Two alternatives propose transfer of water from the Columbia to the Yakima. Although this transfer would occur when minimum instream flow requirements for the Columbia are exceeded, this would merely exacerbate one problem to alleviate another.

The DEIS uses target flows established by NOAA Fisheries for the Federal Columbia River Power System’s 2004 biological opinion. Not mentioned, is the fact that the 2004 biological opinion was the result of a federal court requirement to revise a 2000 biological opinion that the court deemed inadequate in addressing salmonid recovery. Target flows from the 2004 biological opinion should be considered moving targets in that the 2004 biological opinion has been challenged and remains in court. The DEIS is inadequate for its failure to consider potential changes to Columbia flow targets that may alter water availability for the Black Rock and Wymer Plus alternatives.

The requirements of the Endangered Species Act and the agencies charged with administering it are not adequately addressed in the DEIS. For example, the DEIS includes an attachment, Section IV, which reports and responds to comments of the USFWS, but contains no mention of solicitation of comments on anadromous fish issues from NOAA

Fisheries. In the realm of aquatic resources, status of anadromous fish stocks must receive priority in the Yakima basin. Lack of substantive solicitation of NOAA Fisheries review is magnified by the top priority listed by USFWS, potential loss shrub-steppe habitat.

The "hydrologic indicators" outlined in Tables 2-7 and 2-8 (No Action Alternative), Table 2-26 (Black Rock Alternative), Table 2-37 (Wymer Alternative), Table 2-46 (Wymer Plus Alternative) are presented in units of millions of acre-feet. A much more appropriate indicator of changes to hydrology would be presented in terms of flow. From a biological perspective, changes in velocity throughout the system would also be informative. The volumes presented are more of a commodity than a hydrologic indicator. Likewise, presenting "hydrographs" in terms of volume, rather than flow, makes biological analysis more difficult than necessary. These units for hydrologic indicators are repeated in the State Alternatives analysis (Chapter 5). These indicators might be more accurately termed "Irrigation Adequacy Indicators."

Furthermore, the salmonid species included in the DEIS require certain velocities, in addition to flow, more than simply a volume of water. Ultimately, though, flow objectives for fish should be determined in the absence of irrigation needs and then a compromise sought. Even some of the methods described for flow modeling (Section 4.8.2.1) rely on volumes, rather than flow or velocity.

The hydrograph that is presented (Figures 2.2 – 2.7) definitively shows that none of the alternatives remotely approximates unregulated flow. Comparison of alternatives with mandated target volumes in no way indicates the benefits or detriments of the alternatives to biological communities. However, it is later stated (Section 4.10.2.3) that the Black Rock alternative results in the most "normative/unregulated" flow regime.

Given the severely altered hydrographs in the Yakima, additional withdrawal and storage, as presented in the Wymer alternative, appears to be a poor method by which to increase the health of fish populations. The reasons for the "flip-flop" are described but its effectiveness is not. Alternative flow management regimes should be examined to encourage spawning. The Joint Alternatives sections make several mentions of improvements to water delivery infrastructure including reregulating dams. These are not described but reregulating dams may have substantial positive effects on efforts to re-establish normative flows. Reregulating dams may also reduce impacts to a variety of systems currently experienced under the flip-flop regime.

The report describes, in some detail, the necessity of unregulated flows for anadromous fish habitat (Section 4.8.1.3) but ignores the responsibility of agencies, and the public in general, to restore these flows and dependent resources. The No Action Alternative results in a number of Title VII target flows being met (Tables 5.6-7). This speaks to the questionable necessity of drastic infrastructure construction. It does not, however, speak to the necessity, to native salmonid recovery, of restoration of normative flows.

The statement that "fisheries habitat conditions have significantly changed through decades of development, both within the Yakima basin and downstream, that preclude achieving near historic anadromous fish populations through actions provided by the Joint Alternatives or any other suite of realistic actions (page 4-118)" is short-sighted and ignores current efforts to accomplish exactly the recovery that Reclamation claims unrealistic. And, indeed, when referencing the Yakima Subbasin Plan, the DEIS describes substantial potential increases in anadromous fish populations.

Ultimately, there is more treatment of fish habitat in the presentation of dismissed alternatives. This, however, amounts to mere mention of impacts to fish habitat. The assumption, in the analysis of Fisheries Benefits, that a fish closed to harvest has "little to no fishery use value" is wholly flawed and inappropriate to an analysis of fisheries impacts. The DEIS mentions that the Yakima is considered a "blue ribbon" trout stream. The fishermen that recognize this often practice catch-and-release fishing, whether harvest is allowed or not.

The Bureau's report on fish habitat (Aquatic Ecosystem Evaluation for the Yakima Basin, USBR, 2008) starkly reports the declines in available anadromous salmonid habitat under the DEIS Alternatives. Loss in available habitat ranges from about 20% decrease to negligible increase, depending on species, life history species, reach and alternative. The unregulated condition routinely results in substantial increases in available habitat, quite often a 20%-40% increase in habitat, depending on species, life history stage, reach and alternative. In the case of subyearling bull trout (a federally listed threatened species) and coho the amount of available habitat nearly doubles in the unregulated condition.

Incidentally, this same report claims substantial increases in "performance" under all alternatives relative to the no action alternative. Performance is "expressed in terms of equilibrium abundance, productivity (maximum adult returns/spawner), carrying capacity and life history diversity (proportion of self-sustaining life history patterns)." These claims contradict other, more conventional metrics, of fish biology which are described in the DEIS.

On page 4-152, the DEIS notes that bull trout typically spawn between September and November. However, the DEIS also makes reference to a study reporting that bull trout spawn between July 15 and September 15. This is a much earlier spawning period than typically applied to bull trout spawning. In the treatment of bull trout in the Affected Environment chapter, this referenced study is not mentioned. Reclamation should be clear about the local biology of this highly sensitive, ESA listed species and the effects of proposed actions on its life history. The Chelan PUD reports bull trout spawning in the Entiat to occur in mid- to late-September (Movement of Bull Trout Within the Mid-Columbia River and Tributaries, 2001-2004, BioAnalysts, Inc., 2004).

The increased flows provided by the Increased Conservation Alternative (Section 5.8) suggest serious examination of this alternative during development of the Final EIS. This alternative has the advantage of a minimal construction footprint compared to the Joint Alternatives. As mentioned above, it is not clear in the DEIS if, and how, Title XII or the 1945 Consent Decree limit the Bureau's ability to pursue the Increased Conservation Alternative jointly.

Washington's newly approved water quality standards apply a period of September 1 to May 15 for Char Spawning and Rearing in the Lower Yakima (WRIA 37), and Naches (WRIA 38) basins (Waters Requiring Supplemental Spawning and Incubation Protection For Salmonid Species, Publication Number 06-10-038, 2006). Char Spawning and Rearing is also a protected designated use in the Upper Yakima (WRIA 39) (Chapter 173-201A-602 (Table 602)). Over the course of several years, considerable professional and public comment went into development of the new water quality standards.

Section 4.6.1.2 states that Washington has no water quality criteria for phosphorus. WAC 173-201A-230 establishes phosphorus criteria for lakes. Some of this language may be applicable to reservoirs in the Yakima basin.

11. Wildlife Impacts

The DEIS does not provide adequate discussion of the value of Black Rock Valley as a wildlife corridor.

12. Anadromous Fish Impacts

The DEIS discussion of impacts on flow and salmon survival should incorporate information from several other studies, including Forward Looking Infrared (FLIR) surveys of surface water temperature, showing hyporheic influence, that have been conducted for the Yakima basin and the Yakima Watershed Salmonid Recovery Strategy, which identifies many of the parameters defined in the DEIS as limiting factors to salmonid recovery (flow, flashiness, sediment, temperature, hyporheic discontinuity). The DEIS includes details about the U.S. Fish and Wildlife Service (FWS) recommendations and the Bureau of Reclamations (BOR) responses. There is no such coverage of any concerns of NOAA Fisheries. An additional such an attachment seems necessary to fully document effects of alternatives on anadromous fish.

13. Recreation Impacts

The recreation impact analysis lacks adequate discussion of the impacts related to Black Rock and Wymer reservoir drawdown. The limited discussion of this important issue and is deficient for failure to include maps (which are available) that indicate exposed lands within the reservoirs that will deter recreational use. The suggestion that drawdown would provide a benefit to ATV and OHV use is absurd (p. 4-178).

There is also tremendous inconsistency in the treatment of this impact and impacts to wildlife and endangered species at the Black Rock site, where mitigation would involve creating corridors to protect what little habitat would be left. (See Section 4.11.2.6).

The DEIS comparison of Black Rock to other, nearby water bodies where there is minimal recreational use, indicates that the projected recreational benefit (based on 250,000 to 700,000 annual visits) is substantially over-stated (annual visits to other reservoirs and rivers in the Yakima basin not equate, in total, to 250,000 annual visits, see Table 4.36, p. 4-175).

14. State Alternatives Generally

SEPA regulations require the Alternatives section of an EIS to "devote sufficiently detailed analysis to each reasonable alternative to permit a comparative evaluation of the alternatives including the proposed action." WAC 197-11-400(5)(c)(v). Chapter 2, the State Alternatives section, fails to provide sufficiently detailed analysis. It is unclear how water savings were determined, how they will be paid for, and how they will be implemented.

CELP generally agrees that water conservation and market alternatives are preferable to expensive (unaffordable) storage proposals. However, the information regarding these alternatives does not meet SEPA requirements and provides an insufficient level of data or analysis to be properly analyzed.

The State Alternatives are also deficient for failure to analyze how water pricing could reduce demand and induce water conservation sufficient to solve water supply and instream flow problems in the Yakima basin. The DEIS should inform readers about the level of subsidy involved in delivery of Yakima basin water to irrigators, and the extent to which a change in pricing structures, imposition of water fees (particularly during drought years) or other similar market-based mechanisms would meet the goals of the study.

15. Enhanced Water Conservation (Section 3.2)

(1) General Comments

The State Alternative, Enhanced Water Conservation (EWC), is vague, unsubstantiated, and/or based on too many assumptions. Alternatives in a SEPA analysis must be sufficiently defined so that the public and agency can base decisions upon informed deliberation. The EWC alternative does not provide the level of detail necessary for the reader to fully appreciate how the alternative offers solutions different than those of the storage alternatives. This lack of sufficient information violates SEPA regulations. WAC 197-11-400(3).

Further, the EWC alternative fails to consider tools already in Ecology's portfolio that could have a dramatic impact on water conservation. These tools are enforcement of illegal water use and metering. The state should analyze the amount of water conservation to be realized through enforcement of existing laws. Moreover, lacking adequate metering data, the amount of conserved water as a result of the enhanced conservation measures will not be accurate. Accuracy of water resource data is important in any basin, but it is vital in the Yakima basin due to over appropriation and the adjudication of the basin. The fact that metering is not included in the study of alternatives speaks to the inadequacy of the overall analysis.

(2) Specific Comments

Section 3.1.2 Summary of Alternative Results

- The summary claims the Enhanced Conservation Alternative will increase instream flows in the Yakima River by 40,000 acre-feet on average and would provide 20,000 acre-feet for proratable water right holders.
 - However, the analysis fails to explain how it determined these figures.
 - The sections that follow discuss the types of conservation projects and compares them to the No Action Alternative, but nowhere in the report is the analysis showing how implementing the Enhanced Conservation Alternative will increase instream flows by 40,000 acre-feet.
- This cursory and insufficient analysis plagues this chapter from start to finish and points out the inefficacy of this document to meet SEPA requirements.

Section 3.2.1 Description

- The Plan states most of the water saved as a result of enhanced water conservation will involve nonconsumptive uses including seepage and return flows. Since only the consumptive portion of a water right can be transferred or reallocated within the Yakima Basin this alternative may actually increase stream depletion in certain reaches. The section notes, "the Yakima Project has some flexibility in its operation and can allow some redistribution of water

within the basin." However, this statement is not further explained and as such it is unclear as to how valuable EWC will be to the overall basin.

Section 3.2.2 Enhanced Water Conservation Projects

- The estimated amount of "conserved" water as a result of the various enhanced conservation projects is presented without any discussion of how these totals were specifically determined.
- The accompanying technical document, *Technical Report on the Enhanced Water Conservation Alternative for the Yakima River Basin Water Storage Feasibility Study*, also does not provide any information on how these savings were calculated.
 - The Technical Report claims the water savings "were determined using information available from water conservation plans and experience of representatives from the local conservation districts."
 - However, no actual data is presented for the public to determine or analyze the assumptions and "experience" of the conservation districts.
 - Therefore, the results of the Enhanced Water Conservation Measures are too vague and unsubstantiated to have any value in a SEPA determination.
- Conserved water can best, and really only, be measured via technically sound metering devices. Source and service meters must be installed in order to correctly determine any water savings as a result of the water conservation projects.

Section 3.2.3 Comparison to the No Action Alternative

- The introduction to the State Alternatives notes, "This chapter describes the alternatives that Ecology is considering under its authority to evaluate both storage and nonstorage alternatives to *improve flows* in the Yakima River basin."
 - However, one option under Section 3.2.3 is to allow all the conserved water to be retained by the implementing entity for use as irrigation or municipal and industrial use.
 - Ecology must explain how this alternative would meet the goal of improving flows in the Yakima River basin.
- If Ecology is going to have an alternative that allows full retention of conserved water by the implementing entity it should also have an alternative that returns all of the saved water to the river for instream flow.
- Ecology assumes at least 67% of the funding for these projects will come from the State, yet the other option still allows for the implementing entity to retain 67% of the conserved water.
 - Since public money is being spent, Ecology should focus on achieving a greater public benefit
 - Another alternative should be included that keeps 67% of the conserved water for instream flow needs and the other third for implementing entity.
- The Enhanced Water Conservation Alternative assumes 67% of its funding will come from the State.
 - This assumption is unsupported by any budgetary analysis. As such it cannot be considered a valid assumption particularly when the State is perhaps facing a future of budget deficits.
 - Ecology offers no alternative to funding these conservation measures.

16. Market Mechanisms (Section 3.3)

As noted above, this proposal should be expanded to include information relating to the of subsidy that is afforded to water recipients in the Yakima basin and consider the efficacy of

regulatory pricing requirements, such as drought-related fees or other mechanisms to reduce water demand and induce water conservation.

As presently written, the information contained in this section is so vague that it is not useful for determining the impacts associated with the proposed actions.

17. Groundwater Storage (Section 3.4)

Although the description of the injection recharge alternative does address the need to insure the quality of the water injected into the aquifers, it fails to discuss the impacts of additional water treatment facilities on the basin as a whole. Active water treatment methods will increase the financial and energy related costs associated with this alternative. Without a quantification of these increased costs, Reclamation and Ecology cannot accurately weigh this alternative against the others.

Both the Surface Recharge with Passive Recovery and the Injection Recharge with Passive and Active Recovery methods discuss Potential Locations. However, the DEIS fails to identify specific locations for municipal aquifer storage and recovery or Surface Recharge with Passive Recovery. Instead the DEIS puts off the determination of locations until the alternative is selected. Without more specific information on the possible storage sites, the effects of this alternative are unquantifiable.

18. Mitigation

The discussion of mitigation requirements contained in Chapters 4 and 5 are vague and too generalized to meet the requirements of SEPA. See, e.g., Sections 4.3.2.6 (groundwater impacts), 4.6.2.6 (water quality); 4.7.2.6 (vegetation and wildlife); 4.8.2.7 (anadromous fish); 4.9.2.7 (resident fish); 4.11.2.6 (threatened and endangered species).

The statement that mitigation is not required for surface water or hydropower impacts does not comport with SEPA, which requires mitigation for all significant adverse environmental impacts. See e.g., 4.2.2.5 (surface water); 4.4.2.6 (hydropower).

Review of the Black Rock and Wymer Dam Sites Geology as Presented in the
Draft Planning Report/Environmental Impact Statement
Yakima River Basin Water Storage Feasibility Study

Harold Magistrale, Ph.D., J.D.

1. Scope of the review.

This review discusses geologic aspects of the Black Rock and Wymer dam sites as presented in the Draft Planning Report/Environmental Impact Statement Yakima River Basin Water Storage Feasibility Study ('draft EIS') and in the following documents:

- Technical Memorandum No. D-8330-2004-14, *Probabilistic Seismic Hazard Assessment for Appraisal Studies of the Proposed Black Rock Dam* (Reclamation, 2004) ('PSHA study')
- Technical Series No. TS-YSS-5, *Appraisal Assessment of the Geology at a Potential Black Rock Damsite* (Reclamation, 2004) ('Black Rock report').
- Technical Series No. TS-YSS-16, *Yakima River Basin Storage Study Wymer Dam and Reservoir Appraisal Report* (Reclamation, 2007) ('Wymer report').

This review was prepared at the request of the Center for Environmental Law and Policy, an environmental advocacy organization dedicated to the protection of water resources in the Columbia River Basin, and throughout Washington. It was prepared by Harold Magistrale, a California attorney with a Ph.D. in geophysics from the California Institute of Technology, and twenty years of earthquake research experience.

2. Executive Summary

The proposed Black Rock and Wymer dam sites are in the Yakima Fold Belt of east central Washington, a region characterized by folds in the Columbia River basalts. The folds form topographically high ridges that define the impoundment catchments desired for the proposed reservoirs. The folds are formed by earthquake slip on thrust faults (a dipping fault where older rock layers are displaced over younger rocks) within each fold. The Black Rock and Wymer dams, along with appurtenant structures, are to be built on and near these faults. The south abutment of the Black Rock dam is atop a fault. Another fault lies one kilometer west of the Wymer fault. Water conveyance facilities will also cross these faults.

Potential earthquakes on the faults will have effects on the proposed dams:

- Ground shaking. A preliminary study estimates the strength of the shaking at 1 g horizontal acceleration (1 g is the acceleration equal to the Earth's gravitation force). The duration of the potential shaking is unknown.
- Liquefaction. Ground shaking can trigger liquefaction, a type of soil failure that reduces soil strength to zero; this will undermine engineered structures.
- Surface rupture. The displacement of the fault at the ground surface will offset the dam and water conveyance structures.
- Fold growth. The dam abutments are on the folds, and earthquakes are the mechanism by which the folds are formed and grow. During an earthquake, the

entire dam abutment will be deformed and the dam compressed. This effect is not considered in the draft EIS.

- Reservoir induced seismicity ('RIS'). It is commonly observed that the filling of a reservoir can cause earthquakes. The mechanism is thought to be the reservoir head elevating pore pressure and/or lubricating the fault, or the stress perturbation due to the weight of the reservoir. These earthquakes will cause the same effects as natural earthquakes. The draft EIS completely neglects RIS.
- Landslides. The dam sites are prone to landslides because of the steep topography and the presence of weak layers in the bedrock. Earthquake ground shaking can reactivate old landslides, or trigger new ones in currently stable slopes. Also, the impounded water will saturate the slopes surrounding the reservoirs. The saturation can remobilize old landslides and cause new landslides in currently stable slopes.
- A landslide has been tentatively identified at the south abutment of the Wymer dam site, but the draft EIS dismisses its significance on the basis of a cursory inspection. Other existing landslides have been identified upslope from the proposed Black Rock reservoir. A landslide runout into a filled reservoir would displace the impounded water with severe consequences.

Unfortunately, the faults near the dam sites are poorly characterized. The fault slip rates, time between earthquakes, magnitude of potential earthquakes, and the strength and duration of shaking from potential earthquakes are not known. Landslide potential of the slopes around the reservoir sites is scarcely known. The extent and distribution of liquefiable soils is not known.

The preliminary studies (the PSHA study, the Black Rock report, and the Wymer report) recognized the lack of knowledge of the geologic hazards, and all called for further studies to better characterize the hazards. None of those studies has been conducted.

The draft EIS has the view that any earthquake related hazard, or any other geologic hazard, will be dealt with during dam design and construction. This is not reasonable – it is impossible to engineer the proposed dams to withstand a hazard when the nature and degree of the hazard are unknown. Characterization of the geologic hazards must occur during the Storage Study process. The draft EIS is inadequate because it does not address the seismic hazards and other geologic hazards in enough detail to judge the seismic safety of the proposed dams, or to make rational planning decisions.

3. Specific Comments

Section 2.2.2.1 “Black Rock Damsite Seismicity”, Paragraphs 1 and 3

The seismic hazard analysis in the draft EIS comes from the PSHA study. The draft EIS claims the PSHA study “documents the preliminary characterization of the earthquake potential at Black Rock dam site.” To characterize the “earthquake potential” would be to characterize the likelihood of timing and magnitude of future earthquakes based on detailed studies of the timing and magnitude of past earthquakes on nearby

faults. Instead, the PSHA study uses sparse existing data to assume a time and space distribution of earthquakes on local and some distant faults, and calculates the likelihood over a period of time of a particular level of ground motion, the peak horizontal acceleration ('PHA') at the dam site. The PSHA study correctly points out that there are only "little or sparse data" to characterize recent earthquake activity (p. 5).

The PSHA results are assumption driven. For example, it is well known that the maximum earthquake a fault is capable of is a function of fault length (Wells and Coppersmith, 1994). The Black Rock Valley fault is under the right (south) abutment of the Black Rock dam. The PSHA study assigns a rupture length of 38 km to the Black Rock Valley fault, with a maximum magnitude of 6.7 (Table 2.2). However, the "Black Rock Valley fault" is actually part of the Rattlesnake Hills structure shown on a recent USGS fault map (see Figure 1), a fault and fold structure with a cumulative length of over 150 km (Lidke *et al.*, 2003). The PSHA study treats the Rattlesnake Hills structure as three separate fault segments, each with a certain maximum magnitude controlled by the segment length. However, there is little evidence to characterize the segmentation of the Rattlesnake Hills fault structure (PSHA study, p. 5). If the entire fault structure ruptured, a much larger earthquake would result, with a larger PHA.

The PSHA study emphasizes that it is "an initial Probabilistic Seismic Hazard Assessment ... conducted for use in *appraisal-level* studies of the proposed Black Rock Dam." (p. 1) (emphasis added). The PSHA study correctly calls for further study on the age and characteristics of the Black Rock Valley fault under the right abutment of the dam (p. 18). These studies have not been performed. The generalized nature of the PSHA, based on incomplete characterization of the faults at issue, is not adequate. An adequate EIS must include up to date study results of the fault slip rate, average offset, and recurrence interval.

The PSHA study correctly calls for "more complete descriptions of ground motions parameters, including time histories" (p. 18-19). This is in recognition that simple peak amplitudes of ground motion are an inadequate basis for rational engineering and hazard evaluation decisions, and that the duration of the ground motions must be characterized. Such studies are not addressed in the draft EIS. Further, the PSHA study correctly points out that ground motions will be "greatly influenced" by rupture directivity and hanging wall effects (p. 19). Characterization of these factors has not been performed in the draft EIS.

The PSHA study correctly calls for studies of site response (the influence of near surface materials) on earthquake ground motions (p. 19). Site response has long been recognized as having a critical influence on earthquake ground motions (*e.g.*, Milne, 1898). Such studies have not been performed, and are not addressed in the draft EIS.

The PSHA study correctly calls for baseline studies of RIS (p. 19). Such studies have not been performed, and are not addressed in the draft EIS. We address RIS in our comments below.

The calls for more study of the fault are echoed in the 2004 Black Rock report. That report states “The location and geometry of the thrust fault in the right abutment are not well known. Additional investigations are needed to define geometry, slip rates, movement history, and earthquake potential. The investigations will likely require both drilling and trenching” (p. 24). Now, at the time of the draft EIS three and half years later, these necessary studies have not been performed. (Note that in the Black Rock report the fault under the right abutment is called the Horsethief Mountain thrust fault, while in the draft EIS it is called the Black Rock Valley fault.)

The PSHA study properly attempts to include the influence of very large earthquakes in the Cascadia subduction zone on the PHA at the Black Rock dam site. It should be acknowledged, however, that the attenuation functions used in the study (which are based on previously observed ground motions, mostly in California) are likely to be inadequate at the magnitude 8 to 9 range because of the lack of observations of earthquakes of those magnitudes (Youngs *et al.*, 1997).

Section 2.2.2.1 “Black Rock Damsite Seismicity”, Paragraph 2

Liquefaction due to earthquake shaking is identified as a concern in the dam materials and foundation area. However, liquefaction is also a concern away from the dam; it has potential effects on ancillary structures such as pipelines, canals, and roadways. Unfortunately, the draft EIS does not identify the extent of potentially liquefiable soils. The EIS should include a detailed soil map with liquefaction potential estimates. This is particularly important because of the anticipated seepage from the reservoir – the seepage may saturate otherwise competent soils downgradient of the reservoir, increasing the liquefaction potential.

Section 2.2.2.1 “Black Rock Damsite Seismicity”, Paragraphs 3 and 4

The fold on Horsethief Mountain is associated with the Black Rock Valley thrust fault that surfaces under the south abutment. During an earthquake on the Black Rock Valley fault, the fold grows via northward movement of the rock above the fault (*e.g.*, Suppe, 1985). Thus, during an earthquake, the entire south abutment of the dam will move an unknown amount to the north. (The amount of movement is unknown because the draft EIS has failed to characterize the history of slip per earthquake on the Black Rock Valley fault.) This will cause deformation of the dam with potentially serious consequences. A rational assessment of the dam’s response to an earthquake on the Black Rock Valley fault requires an adequate characterization of the past earthquakes on the fault. Such a characterization is absent from the draft EIS.

Section 2.2.2.1 “Black Rock Damsite Seismicity”, Paragraph 5

In summary, the draft EIS ignores all the caveats of the preliminary nature of the PSHA study, and the proponents have failed to perform any of the PSHA study’s recommendations for additional work to more accurately characterize anticipated strong ground motions from potential future earthquakes. Merely asserting the dams will be designed to handle earthquake ground motions, without sufficient characterization of the causative faults, consideration of the abutment deformation, or extent of potential liquefaction, is inadequate. It is impossible to design and engineer the dams to withstand

earthquakes without an adequate understanding of the nature and degree of the earthquake hazards.

Note that earthquake shaking will affect all appurtenant structures in addition to the dam structures, including water conveyance systems, seepage control systems, service roads, and slope stability (landslides).

Section 2.2.2.2 “Wymer Damsite Seismicity”

No site-specific seismic hazard evaluation was performed for the Wymer dam site. The ground motion considerations are taken from the PSHA study performed for the Black Rock dam site, and much of the discussion in Section 2.2.2 was taken from Section 2.2.2.1. We express all the same concerns about the Wymer site as we do for the Black Rock site.

In regards to concerns of fault rupture within the project area, the draft EIS states “Based on the limited preliminary geologic characterization of the site, there is no evidence to indicate that a potentially active fault exists within the dam, dike, or reservoir area.” However, “relatively little exploration has been conducted to date, and further investigations could conceivably find evidence of foundation faulting.” A rational assessment of the merits of the dam requires more detailed knowledge on the presence of faults in and near the dam site. The draft EIS is inadequate in this respect.

A cursory examination of the USGS fault map (Figure 1) shows that the Umtanum Ridge – Gable Mountain Structure, a 200 km long fault and fold system, runs only a kilometer to the west of the dam site, just across Highway 821 (Lidke *et al.*, 2003). The PSHA study included this fault system in its assessment of the Black Rock Valley site PHA. The failure of the draft EIS here to note the proximity of this major fault to the Wymer dam site renders the draft EIS inadequate, and does not build confidence in the seismic hazard evaluation process.

The most common orientation of the faults and folds in the Yakima Fold Belt is east–west, but the Umtanum Ridge – Gable Mountain Structure strikes northwest–southeast near the Wymer dam site (Figure 1; Reidel *et al.*, 2003). This part of the fault structure may be associated with the Olympic-Wallowa lineament, an alignment of faults and folds that may represent a fundamental, crustal scale discontinuity (*e.g.*, Reidel *et al.*, 1994). The different orientation of the Umtanum Ridge – Gable Mountain Structure near the dam site, and its possible association with the Olympic-Wallowa lineament, suggests the fault near the dam site may respond to the regional stress differently than the faults near the Black Rock Valley site (*e.g.*, with different recurrence times or different size earthquakes). This suggests that an independent seismotectonic analysis of the Wymer dam site must be performed before the EIS can be considered adequate.

Section 2.2.2.3 “Wymer Dam Potential South Abutment Landslide”

The Wymer report describes the previous identification from air photos of a potential landslide covering the area of the south (left) abutment (p. 7). On the basis of a few hours-long visit to the site (Wymer report, Appendix A), a reconnaissance team decided that the “landslide does not appear to be a deep landslide” (Wymer report, Attachment

2). The rationale for this assessment is not given in either the draft EIS or in the Wymer report. The draft EIS concludes that a “limited amount of geologic investigations at the appraisal stage found no evidence of a large landslide” at the south abutment of the Wymer dam site, but that if one existed then the unstable material would be excavated away.

An air photo of the south abutment (Figure 8 of the Wymer report) exhibits features indicative of a landslide (*e.g.*, Ritter *et al.*, 2002). At the top of the apparent landslide there are arcuate features that appear to be headscarps, and on the slope downhill from those arcuate features the hillside lacks the bedrock outcrops that are common on the slopes just to the east and west. The potential landslide has not been investigated by drilling; only a five feet deep, hand dug pit was excavated (TP-85-1 in the Wymer report).

It would be sensible, from both a cost analysis and geologic hazard determination point of view, to determine during the EIS process whether a landslide exists, and if so, the volume of the material involved. If the feature is a landslide, the excavation costs would be substantial, and the length of the dam would be significantly lengthened to fill in the excavated volume.

Note that landslides that are inactive under current conditions may become mobilized as the material becomes saturated by the impounded water, or may be mobilized by earthquake shaking. These considerations should be analyzed in this section of the draft EIS.

Section 4.3.2.3 “Black Rock Alternative – Long Term Impacts”

The draft EIS correctly points out that landslides are common in the Yakima fold belt (p. 4-37), and that old slides may become reactivated, and new slides form, as seepage from the reservoir infiltrates the surrounding hillsides and increases pore pressure. However, the draft EIS fails to point out that, additionally, old slides may become reactivated, and new slides form, under the influence of earthquake ground shaking.

The Black Rock report identified three large landslides on Horsethief Mountain (p. 21). Two of these landslides have runout zones extending into the proposed reservoir area. If a landslide occurred while the reservoir was full, it would displace water that would overtop the dam and possibly cause structural failure of the dam. For example, in 1963 a large landslide fell into the reservoir behind the Vaiont dam in the Italian Alps, causing a 100 m high wave that overtopped the dam, swept downstream, and killed 2600 people (the dam remained standing). The draft EIS fails to address this issue and so is inadequate.

Because of the concerns of landslides occurring due to seepage and earthquake shaking, and the potential catastrophic effects of a large landslide running into the reservoir, the EIS should contain detailed mapping of landslide potential of the surrounding hills, and a contingency plan to respond to a landslide into the reservoir.

Section 4.3.2.4 “Wymer Alternative – Long Term Impacts”

The draft EIS correctly points out that landslides are common in the Yakima fold belt (p. 4-37), and that old slides may become reactivated, and new slides form, as seepage

from the reservoir infiltrates the surrounding hillsides and increases pore pressure. However, the draft EIS fails to point out that, additionally, old slides may become reactivated, and new slides form, under the influence of earthquake ground shaking.

A potential landslide has been identified under the south abutment, and no convincing evidence has been presented in the draft EIS to contradict that identification. (See discussion of section 2.2.2.3 above.) If a landslide occurred while the reservoir was full, it would displace water that would overtop the dam and possibly cause structural failure of the dam. The draft EIS fails to address this issue and so is inadequate.

Because of the concerns of landslides occurring due to seepage and earthquake shaking, and the potential catastrophic effects of a large landslide running into the reservoir, the EIS should contain detailed mapping of landslide potential of the surrounding hills, and a contingency plan to respond to a landslide into the reservoir.

Section 4.3.2.5 “Wymer Dam Plus Yakima River Pump Exchange Alternative – Long Term Impacts”

We express the same concerns about landslides into the Wymer reservoir. These are not considered in the inadequate draft EIS.

Reservoir Induced Seismicity

Reservoir induced seismicity (‘RIS’) is the triggering of earthquakes by the physical processes that accompany the filling of reservoirs. As of the mid-nineties there were over sixty well documented cases of RIS from around the world (USGS, 1996), including many earthquakes large enough to cause damage to nearby structures, and in at least two cases – Koyana, India, and Hsinfengkiang, China – the dams came close to failure (Allen, 1982).

RIS earthquakes can occur days to years after reservoir is filled. RIS earthquakes occurring immediately upon filling may be caused by elastic stress changes due to the weight of the impounded reservoir. Seismologists have developed a body of evidence during the last decade that shows earthquakes can be triggered by very small stress changes, on the order of one bar (one bar is about one atmosphere pressure). RIS occurrence after a time delay are likely due to pore water diffusion into the fault zone, driven by the reservoir head. RIS after several years may occur when the reservoir water level is changed; this is thought due to water diffusion plus the elastic stress changes (USGS 1996). Note that seasonally fluctuating water levels are planned for Black Rack and Wymer reservoirs (draft EIS p. 2-40 to 2-41). Deep reservoirs, such as those proposed at the Black Rock and Wymer sites, may be more prone to RIS than shallow reservoirs (USGS 1996).

RIS earthquakes have all the same effects as natural earthquakes discussed above: ground shaking, surface rupture, liquefaction, and landslides. Worldwide observations show that RIS earthquakes occur with a few tens of kilometers of the causative reservoir.

The draft EIS entirely neglects the issue of RIS at all and is therefore inadequate. The draft EIS ignored the recommendation of the PSHA study (p. 19) calling for baseline studies of RIS.

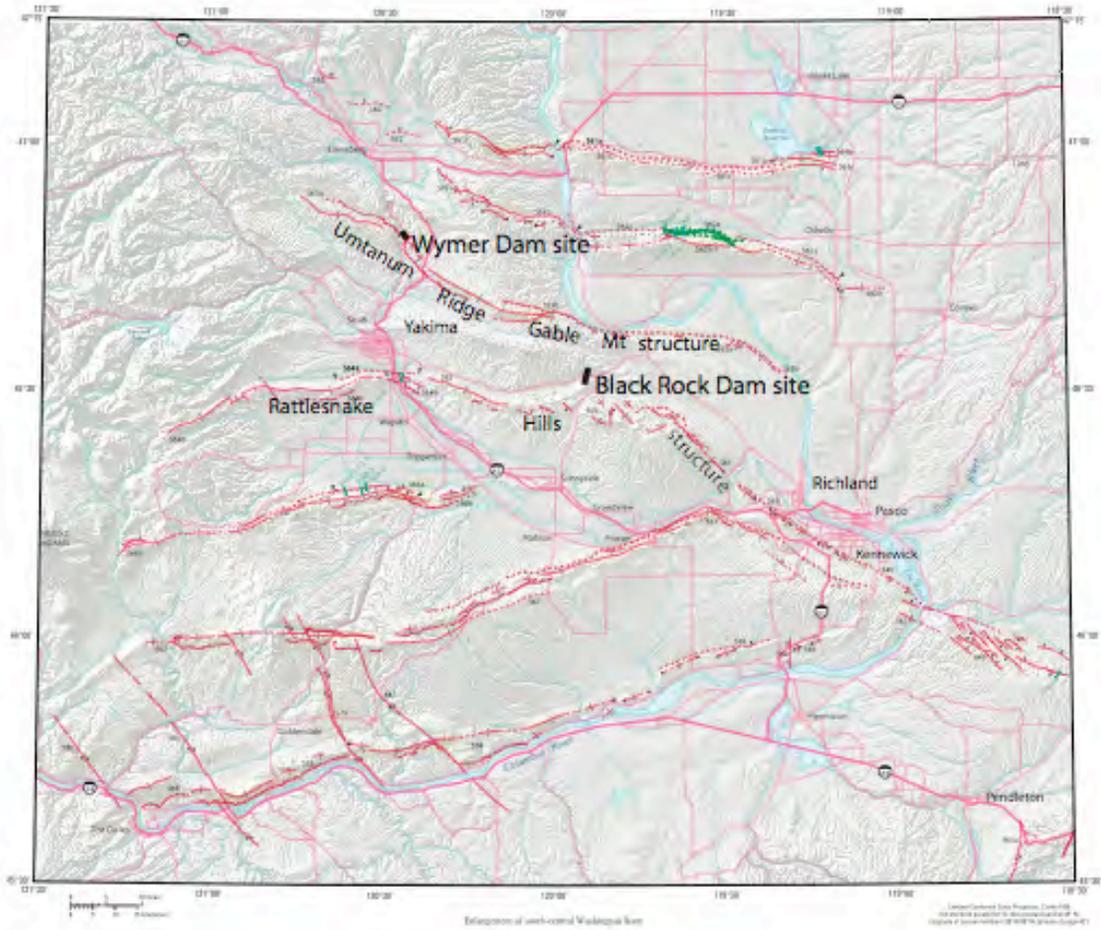


Figure 1. Faults and folds (red lines) in south-central Washington State. Note the proximity of major fault and fold structures to the proposed Black Rock and Wymer dam sites (indicated by black bars). Map is taken from Lidke, *et al.* (2003).

4. References

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From: "Chinn, C. Bradley" <CChinn@spokanecounty.org>
To: "'storagestudy@pn.usbr.gov'" <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 9:51 AM
Subject: Black Rock Dam

Dear Bureau of Reclamation; The Black Rock project is a total loser both ecologically and financially. The best estimate for energy costs would dump over 80% of the costs on the citizen taxpayers. This is a welfare project which needs to be eliminated. Also, the geologic foundation for this dam is faulty, and would be a major disaster with even a slight earthquake. There is no reclamation issue here, this is total pork barrel and it needs to expire accordingly. Thanks you. Brad Chinn, 1319 West Dean Ave., Spokane, WA 99201-2014.

From: BRC <garden.gnome@gmail.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 12:13 PM
Subject: Black Rock Dam is a terrible idea

Dear USBR staff,

I strongly oppose Back Rock Dam. Below are some very good reasons for its rejections and some suggestions for improvements elsewhere.

Thank you,
Barbara Christensen
3105 Plymouth Dr
Bellingham WA 98225

PROBLEMS WITH BLACK ROCK DAM

o *Unstable Geology*

The Black Rock dam would be built on a thrust fault in an earthquake zone, in an area prone to landslides. There is risk for failure of the dam due to seismic activity. The Bureau says these problems can be engineered away, but we disagree. Even if we had the money to pay for safeguards, there would still be substantial risk.

o *Hanford Contamination*

Groundwater seepage from the bottom of the Black Rock reservoir will head straight to the Hanford Nuclear Reservation, saturating and re-suspending contaminants that the public has paid billions of dollars to isolate. These toxic and radioactive materials would then seep into the Columbia River, including the Hanford Reach. This is an unacceptable impact!

o *Regional Energy Drain*

Black Rock would require pumping of water uphill (1400 feet) from the Columbia River. This would be a substantial energy user in the Pacific Northwest, both in terms of power for pumping and foregone energy production at five downstream dams. We need that energy for other, more productive uses. Note: although some energy could be re-captured as the water is pumped down into the Yakima Valley, it is vastly less than what would be required to pump the water uphill in the first place. Some supporters claim Black Rock could be used as a pump-storage facility, but the economics don't work B water cannot simultaneously be pumped back and forth from the Columbia River, sent down into the Yakima Valley for irrigation.

o *Water Not Available from the Columbia River*

Black Rock reservoir would be huge. Water in the Columbia River is already spoken for by hydropower, irrigation, and to maintain instream flows for fisheries. Ironically, it is the U.S. Bureau of Reclamation's own Columbia

Basin Project that has the biggest set of water rights B only half used at this point. Water is not available from the Columbia River to fill the Black Rock reservoir.

o *Outrageously Bad Economics !*

Sixteen cents on the dollar B need we say more? Under federal law, the economic analysis indicates that the Black Rock project cannot be built.

o Regional Benefits Are Private, Not Public

Black Rock supporters say that a master planned development could be built on the shores of the reservoir, creating regional benefits. Not true. First, Black Rock would be an operating reservoir with frequent bathtub rings. Folks with property at Banks Lake and Dworshak Reservoir can tell you this is not an attractive option. Second, is the Black Rock Valley really an ideal place to put a resort? If the real estate developers believe that it is, they should pay to build and operate the reservoir. It is not the obligation of federal taxpayers to create profits for the real estate industry.

YAKIMA VALLEY WATER SUPPLY SOLUTIONS

o *Conservation & Pricing*

Aggressive, mandatory water conservation that applies to all water rights and water users is the first step toward sensible water management. Second, water should be priced according to its real value. Stop subsidizing water supply and farmers will grow crops that reflect the true value of the water.

o *Fish Passage at Existing Dams*

The first step for improving fisheries in the Yakima basin is to open up habitat in the mountains. This means installing passage at the Bureau's storage dams (Keechelus, Kachess, Cle Elum). Riparian habitat and water quality improvements are needed too. Yes, the Yakima River does need more water in certain reaches at certain times of year. However, the public does not need to build a multi-billion dollar dam to provide that water.

o *Watershed Restoration*

Healthy forests and floodplains provide natural water storage. The state and National forests of the Yakima basin must be managed to maximize their water storage capacity.

Similarly, the Yakima River must be re-connected to its floodplain. These actions will capture and hold water runoff, help fill reservoirs and maintain instream flows for fisheries.

BRC

"A LITTLE PATIENCE, AND WE SHALL SEE THE REIGN OF WITCHES PASS OVER, THEIR SPELLS DISSOLVE, AND THE PEOPLE, RECOVERING THEIR TRUE SIGHT, RESTORE THE GOVERNMENT TO ITS TRUE PRINCIPLES" - Thomas Jefferson

From: "Tom Clarke" <thomasc@bentonrea.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 10:29 PM
Subject: Blackrock

I find many statements in different sections conflict such as dam height and underground seepage (dam is 700 to 800ft?; seepage to Hanford site drainage is 31 cu. ft. or 51 cu. ft.).

Your estimate of ground water seepage to the Hanford Site is unacceptable due to possible movement of contamination and water table affect.

Two reports are due out soon one from DOE and another on earth quake evaluation on the Upper Columbia River Dams, neither of these are referenced or acknowledged.

This is not an EIS without supportable data. On the Hanford Site the EIS must include worth case scenario of catastrophic occurrences (floods, ground water contamination).

The recreational value is not as I see it, when the waterline vary 60 to 100 feet seasonally at peak recreation time value is lost.

Frankly this looks like a real-estate scheme the public is to pay for.

Please add me to the list to receive USBR's final EIS and decision in this matter.

Thomas L Clarke
27704 E Ambassador PR NE
Benton City, WA 99320

From: llyn doremus <llynadele@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 10:53 PM
Subject: black rock dam comments

This email is being submitted to express my opposition to the construction of the Black Rock dam on the Columbia River, and the continued expenditure of public funds to support studies that justify the dam's construction. For many reasons, the construction of yet another dam on the Columbia River does not make sense. It is amazing that the eleven existing dams on the Columbia (not including the multitude located on its tributaries) have not been engineered adequately to meet the current needs of the water and power users of Washington. What assurance is there that this dam (after investment of \$18 million in feasibility studies) will meet the projected future environmental and human needs for the Columbia River? The economic analyses of the Black Rock dam alone reveal that the project is not economically feasible, with an estimated return on each dollar invested of 16 cents.

There are many large-scale projects for repair and upgrade of public utilities and infrastructure that are needed at this time. A comparison between a cost/benefit analyses for road and bridge repair, water treatment facilities, or electrical transmission lines upgrades and the Black Rock dam would provide more quantitative justification for redirection of public funds away from investment into the Black Rock dam.

The problems with the economics of the dam construction are magnified by the reality of the project logistics. The dam would back up water in the subsurface of the Hanford Reservation, arguably one of the most contaminated places on earth. Increased subsurface water movement will mobilize the contaminants isolated in the dry sediments underlying Hanford, and potentially transport them to locations of greater human exposure. The costs to mitigate and treat the potential health impacts to humans and the environment should be considered in the cost/benefit analyses of the dam.

We've reached a point in our technological evolution where the necessity of producing large scale human constructions (and small ones, for that matter) that are synchronized with natural processes is well understood. We cannot continue expending our collective energies on efforts that function in opposition to the natural processes in the world that sustains us and assume that infinite resources will always be available to sustain such foolish endeavors. The skewed economics of the Black Rock dam is just one expression of the reality that it is dangerous and wasteful to invest in major public works projects that provide such a tiny benefit, and such huge damages to the world that we live in.

Thank you for accepting public comment on the proposed Black Rock Dam.

Sincerely,
Llyn Doremus
4017 Willowbrook Lane
Bellingham, WA 98229

David Kaumheimer
Environmental Programs Manager
U.S. Bureau of Reclamation
1917 Marsh Road
Yakima, WA 98901-2058

Fax: (509) 454-5650
Email: storagestudy@pn.usbr.gov

Re: Yakima Storage Study, Draft Environmental Impact Statement

Dear Mr. Kaumheimer:

I have the following comments concerning the Draft EIS for the Yakima Storage Study.

The U.S. Bureau of Reclamation and Washington Department of Ecology Yakima Storage Study Draft Feasibility Study and Environmental Impact Statement is factually flawed and leaves many questions unanswered. This does not meet the high standards of an EIS and should have waited until the DOE Study is completed.

1. I am concerned about the Black Rock dam being built on a fault in an earthquake zone with a history of seismic activity and landslides, indicating that this dam certainly could fail!

2. I am concerned that water seepage from the enormous Black Rock reservoir could increase ground-water flow under Hanford and could flush highly contaminated plumes of groundwater into the Columbia ^{over} →

Thank you for considering my comments. Please add me to the list to receive USBR's final EIS and decision in this matter.

Sincerely,

Name: Bonnie Dunham

Date: 3/28/08

Address: 45420 S. 2066 PR SE, Kennewick, WA 99337

NOTE: These comments must be postmarked, faxed or e-mailed by March 31, 2008.

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Yakima, Washington

River — not to mention the catastrophic disaster to Hanford, the Columbia River and the communities if the dam itself were to fail!

3. I am concerned about taking a huge amount of water out of the Columbia River (esp. ⁱⁿ Sept. & Oct.) and the impact of that on fish and wildlife, especially in the sensitive Hanford Reach area.
4. I am concerned about Columbia River water making its way into the Yakima River and confusing its (Yakima) identity to fish.
5. I am concerned the Black Rock project blocks the natural wildlife migration corridor between the Hanford Reach National Monument and the Yakima Firing Center with links to the Cascades.
6. I am concerned that the recreational benefits of Black Rock (700,000 visits annually) are grossly exaggerated. We already have numerous recreation sites in this region.
7. I am concerned about the cost: \$4.5 billion!! Add to that \$50 million annually in electricity! Where will all the power come from?? We know who will pay the bill — federal taxpayers.

This Black Rock project is a huge waste of taxpayer money!!! Water conservation should be enforced. Our rich & beautiful shrub-steppe should be preserved and not turned under the plow. Watersheds should be protected and restored. It's all about living in balance with nature and not continually finding ways to subtract from it!

David Kaumheimer
Environmental Programs Manager
U.S. Bureau of Reclamation
1917 Marsh Road
Yakima, WA 98901-2058
March 26, 2008

COMMENTS ON THE YAKIMA STORAGE STUDY
DRAFT ENVIRONMENTAL IMPACT STATEMENT

The Black Rock Reservoir on the surface seems like a winning idea. However, the details show that it would be an enormous waste of tax payer's money that would almost certainly pose unacceptable radiological risks to the Columbia River and to those living along it.

The pathetic benefit to cost ratio (about 16%) should, by itself, be enough to kill the project. However the radiological risks are an even greater reason to stop the project. The report predicts that a flow of 30 CFS will enter the Hanford reservation ground water system. This may not seem like much – but multiply it by the 31,536000 seconds in a year and you get 646,080,000 cubic feet/year which is several times the amount of water infiltrating the Hanford reservation ground water system each year from rain fall. This infiltrating water is, at present, the predominant cause of movement of radionuclides towards the Columbia River.

A great deal of radionuclides were released into the Hanford ground not only from leaking tanks (several million gallons) but unbelievably from direct dumping of the waste streams from the separation plants. In other words, the incredibly radioactive material separated from the uranium rods containing the plutonium were just dumped into long ditches. Fortunately the soil in Hanford captures some of this material which is slowly moving towards the water table over hundred feet or so below the surface.

Water from Black Rock will raise the water table and the hydraulic gradient. This will speed up the flow of ground water to the Columbia River and will materially increase the total radionuclides entering the Columbia River. If the amount of radionuclides entering the river becomes high enough, their concentration could exceed the allowable drinking water levels. Thus the source of drinking water for many cities, including to some extent Portland, Oregon could be threatened.

Since the public tends to get hysterical about radiation the tourist industry would also suffer. The public may even refuse to buy foodstuffs produced with irrigated water from the Columbia River below Hanford.

DOE is currently doing a ground water study to determine the effect of ground water from Black Rock on the radioactivity at Hanford. Publication of the Draft EIS prior to the DOE results was premature since the ground water threat to Hanford is one of the

most critical issues extant. Furthermore, the ground water model DOE is currently using is inferior to one under development by DOE. Therefore, DOE should redo their study using the latest model due out in the next year or so.

Finally, a separate study, such as might be done by a blue ribbon panel sponsored by a professional ground water organization, should review both the DOE and the State results. Study of the latter group's results is critical since an accurate estimate of the flow into the Hanford reservation is needed.

Until this work is done, no irreversible steps to move forward on this project should be made. The potential disaster from building Black Rock, and it would be a disaster, would not show until several decades after Black Rock is filled. Once that happens and radiation levels increase, there is nothing, short of heroic, but more likely futile, efforts to stop or clean up the ground water flow to the river. In short, nothing could be done about it.

A handwritten signature in cursive script that reads "Duane W. Faletti".

Duane W. Faletti
2147 Cascade Ave
Richland, WA 99354
March 26, 2008

From: "brentfoster" <brentfoster@gorge.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 9:49 AM
Subject: black rock dam

To whom it may concern: I am writing on behalf of Columbia Riverkeeper to oppose the proposed Black Rock Dam because of its enormous environmental and economic impacts. We do not believe the DEIS adequately evaluated the impacts of the proposed project and our concerns are reflected in the comments submitted by the Center for Environmental Law and Policy which are incorporated here by reference. The Columbia River and the area that would be impacted by the proposed reservoir simply cannot withstand the additional impacts that would be created by this misguided project.

Sincerely,

Brent Foster

Executive Director

Columbia Riverkeeper

724 Oak Street

Hood River, OR 97031

(541) 380-1334

Cc: Gov. Gregoire, Sen. Patty Murray, Sen. Maria Cantwell

From: "lilagirvin@juno.com" <lilagirvin@juno.com>
To: <storagestudy@pn.usbr.gov>, <girvingw@comcast.net>
Date: Mon, Mar 31, 2008 3:05 PM
Subject: Black Rock Dam

This looks like a no brainer, the Black Rock dam is a loser.
There was a time we thought dams could anything but this has gotten totally
off the track.

Let's put the public money somewhere else.

Sincerely,
Lila Shaw Girvin

From: "George and Lila Girvin" <girvingw@comcast.net>
To: <lilagirvin@juno.com>, <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 9:54 PM
Subject: Re: Black Rock Dam

I agree that the Black Rock dam would create damages that far exceed the benefits. This is not a good idea nor a good investment.
Sincerely
George W. Girvin MD

From: "Rick Glenn" <RGlenn@awbank.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 3:42 PM
Subject: No Value for stream flow.

I contacted Jay Manning, state director of Ecology, by email, asking if there was any value to a natural hydrograph in the Yakima River Basin. He did not respond to my inquiry. I contacted Derek Sandison and asked the same question. He informed me that the only reason that in-stream storage options were not considered to meet storage need in the Yakima Basin was because the Basin's water supply is already totally allocated. There is no extra water to store. The Benefit / Cost Analysis assigns no value to a natural hydrograph.

The only conclusion that I can logically reach from these 3 sources is that there is no reason to allocate any water to normative stream flow in the Yakima River. The entire flow should be utilized as needed for irrigation or municipal purposes as they do with the Salt River in Arizona. There is no reason to maintain the 2 acre foot per day minimum flow at Parker Dam.

The first objective listed in the Study, namely

"Improve anadromous fish habitat by restoring the flow regimes of the Yakima and Naches Rivers to more closely resemble the natural (unregulated) hydrograph. Through a collaborative process with the Storage Study Technical Work Group (SSTWG), Reclamation developed nonbinding flow objectives to assist in measuring goal achievement."

should be moved to third priority on the list or removed altogether. If there is no value to that objective, then it should not be considered in the report.

Rick Glenn
Commercial Loan Officer
AmericanWest Bank
127 W. Yakima Avenue
Yakima, Washington 98902
Fax: (509)-457-0756
Phone: (509)-494-1766

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From: "Rick Glenn" <RGlenn@awbank.net>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Mar 12, 2008 5:02 PM
Subject: Storage Study Comments

Hi,

Is there any reference to the difference in land values between junior and senior water rights? The current ag market for dry land is about \$500 per acre. The value for irrigated land is \$5,000 per acre. It seems logical that there should be a discounted value for junior water rights. If so, then new storage should increase that value due to the decreased probability of water shortage. That should also increase the Tax-assessed value of the property which would be an added benefit.

Rick Glenn
Commercial Loan Officer
AmericanWest Bank
127 W. Yakima Avenue
Yakima, Washington 98902
Fax: (509)-457-0756
Phone: (509)-494-1766

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Yakima, Washington

March 26, 2008

To: Bureau of Reclamation – Upper Columbia Area Office
Mr. David Kaumheimer, Environmental Program Manager
1917 Marsh Road
Yakima, Washington 98901-2058

Cc: Mr. Derek I Sandison
Central Regional Director
15 W. Yakima Ave. Ste. 200
Yakima, Washington 98902-3401

Fr: Kenneth A. Hammond
7321 Cove Road
Ellensburg, Washington 98926

Re: Comments and questions on:
Draft Planning Report/Environmental Impact Statement
Yakima River Basin Water Storage Feasibility Study
Yakima Project, Washington – Dated January 2008

GENERAL STATEMENTS

Starting in the 1970s, I have followed events and proposals for use of land and water in the Black Rock Valley. Not one of the proposals to change the area from its existing low intensity uses meets rational economic feasibility criteria. At varying levels all have potentially negative environmental impacts. The Black Rock Reservoir proposal is the most offensive of the lot and should be dropped forthwith. Save some time and money to move on to more realistic options.

The Black Rock Reservoir proposal has no obvious merit other than that it is big and a lot of people like big projects. I oppose the project on both economic and ecological grounds. No benefits could be manufactured that would both survive objective analysis and make the project economically feasible. If the benefits could be tripled and the costs cut by half the benefit/cost ratio still would not achieve unity. Neither of those are likely and, more realistically, quite impossible. Under no stretch of the imagination is Black Rock, on either economic or ecological grounds, the least cost strategy or project to obtain water for any of the listed needs in the Yakima River Basin.

Under any reasonable configuration, Wymer ranges from only marginally better to even less desirable than Black Rock. Both place a new, large and unnecessary burden on existing or new sources of electricity. This merits a specific comment below.

Unfortunately, this search for solutions to water problems in the Yakima River Basin was constrained by an irrational and misguided federal directive to confine the study to a storage strategy and to focus on the Black Rock project. It would have been rational to study a broad array of options and try to identify from among them the most promising for water problem resolution. That approach remains to be done.

Potentially more effective and certainly less extravagant means do exist in the Yakima River Basin to obtain needed water for any legitimate purpose that might warrant expenditure of federal or state funds. Meaningful comparisons can be made only after, yet to be undertaken, serious study is given to numerous alternatives.

Water for domestic, urban and industrial uses, dependable stream flows for endangered species, a more secure supply to protect highly valuable crops in proratable irrigation districts or for most any other use I can identify could be obtained without huge storage projects and probably without any surface storage at all. To accomplish these objectives will require management changes to facilitate conservation and reallocation of existing water. With appropriate changes it would even be possible to irrigate some land currently without water when other land is retired from agricultural production. The process of removing land from irrigation agriculture has gone on for years and, currently, the pace is accelerating. Advantage could be taken of this fact to better manage water. It would be extremely unwise to allow expansion of total irrigated acreage in the basin. Expansion might be achieved with much greater efficiencies in use but probably would make current problems even more difficult to solve and require additional storage as well.

ITEMIZED COMMENTS AND QUESTIONS

1. The writers of the report have it right in not assigning much value to transfers such as job creation, recreation, the multiplier effect of local expenditures or increases in local land value when calculating the stream of future project benefits. These economic events would happen wherever money is spent. Local proponents of the project who stand to gain economic or political advantage if Black Rock is constructed and money is spent locally, find the concept of "transfers" difficult to accept. Nevertheless, it is sensible and in accord with accepted national benefit/cost calculation practice.
2. It is not rational to even attempt to satisfy "water supply demands in all years" (p.XV and elsewhere) when water prices range from zero to nominal. For irrigators on federal projects, the largest extractive users in the basin, prices do not approach a level that could repay the total public investment, much less compensate the losers when most or all of the water is extracted

from a stream during the irrigation season. Somewhere near the first day of an elementary economics class it is noted and taken as a given that under-priced commodities will be excessively demanded.

3. The two most important properly discounted numbers in a benefit/cost analysis for a water project should be highlighted and put right up front with the benefit/cost ratio. Those two numbers are first, the actual total cost of each acre-foot of water delivered when it is needed. That number can then be compared with the second number, the benefits derived from use of that acre-foot of water however it is used. There are no benefits when water is delivered at a time when it is unneeded. Benefits are not appropriate for water delivered in excess of what is needed. On that basis, any benefits from new storage to serve the Yakima River Basin are sporadic and variable. Importantly, many capital and operational costs of a water project such as Black Rock continue during years when there are no benefits and as is shown, this operates to drive down the benefits in a benefit/cost ratio.

If economic analysis is to play a meaningful role in selecting the most favorable projects (even if all of them are below unity) this cost per acre foot calculation is easily understood and allows ready comparisons among an array of alternatives. What we most need now are these numbers and benefit/cost ratios for numerous alternatives.

4. Considerations other than costs and benefits may come into play. Strategies or projects with the qualities noted here are surely more desirable than those that lack the qualities. Black Rock totally fails all the desirable qualities listed below and on other criteria as well. More desirable projects:
 - a) are flexible to match climatic variability and reduce costs;
 - b) work with, rather than against natural forces to reduce environmental impacts and operation costs;
 - c) can be available to make an impact in the near term;
 - d) impose the lowest up-front and on-going costs both locally and out of the area; and
 - e) maintain future options to allow change in light of altered priorities, new information and changed conditions.
5. The "No Action Alternative" section in this study seems to be so named more for psychological impact than for accuracy. It would be more accurately labeled a "No Major Surface Storage Alternative". Conservation, pipelines and, reregulation reservoirs certainly are actions and they surely would have a favorable impact on any attempt to actually resolve the periodic demand/supply water imbalance in the basin. These very non-storage strategies and projects deserve much more attention.

The table on pages xlvii and xlix appears to assume little or no favorable economic impacts from following the "No Action Alternative". In fact, it would seem, there is potential for a wide range of economic impacts from various combinations of the non-storage measures included within "No Action". Moreover, a great range of potential projects not included in the listing could fall into that "No Action" category.

Reasonably, almost any one or combination of them could produce economic benefits. It would be unreasonable to imagine the benefits from storage projects would simply increase enough to compensate for those benefits and remain at their stated higher or lower benefit level. Perhaps I am totally misreading what is presented. If I am at all correct, the validity of the numbers showing comparative benefits from the storage alternatives is seriously in doubt. Bluntly, with every benefit obtained through implementation of non-storage options, the comparative benefits from storage would be smaller and, unless storage costs declined in tandem, the already unfavorable benefit/cost ratio for each storage project would be even more unfavorable.

6. At Study page 2-39 we find comment on the mitigation of reservoir seepage. In the first place, it may not even be possible to stem the seepage toward the Hanford waste storage area. Clearly, any actions taken to attempt to do so will incur costs. There is no obvious gain in benefits so stemming the underground flow can only make worse an already hopeless benefit/cost ratio. The potential increase in groundwater flow in the nuclear waste area is not a chance worth taking.

And, speaking of taking chances, let us suppose the dam actually did fail. However remote the prospect of failure, on occasion dams have failed. Sometimes dams fail for totally unexpected and uncontrollable reasons. I urge and request you add a map to the section dealing with the relationship between the Black Rock dam and the Hanford nuclear waste storage area. All it needs to show is the area with an overlay of the projected likely footprint of flood water flow if the dam failed under the most unfavorable conditions. This would not be a major GIS project. Such a map would be revealing and, I would expect, get widespread attention. Most people would not want to assume responsibility for even the slightest risk of such a catastrophe. That map would make it clear to more people just how reasonable it is to abandon the project now rather than continuing to throw good money after bad.

7. The discussion of salmon in the Yakima River Basin is inadequate. It implies Columbia River dams are responsible for the decline. Dams are not blameless but the study should be more accurate. There is pretty good evidence that

properly discounted stream of fish benefits would be. There would have to be assumptions for when the runs will become healthy and at what levels. .

The amount of money expended under threat of extinction would be vastly more than would be expended if (when) salmon are extinct. This is especially true if the extinction is caused by factors totally beyond anything that could be done in the basin. A possible, even likely cause of total extinction of salmon is much warmer oceans that totally disrupt the oceanic phase of their life cycle. It then would make no sense to spend any more money at all on salmon recovery, as there would be no hope of any benefits until the oceans cooled in, perhaps, a few decades or centuries. For practical purposes it might be never. In the event of extinction, in any benefit/cost analysis, the benefits of fish fall to zero. To the extent water is allocated for fish survival, that water need too falls to zero.

8. It is not clear to me at what point in time, official permission will be granted for, an interbasin transfer of water. Perhaps official permission can be avoided or maybe a transfer permit is subsumed under some other permit. I do not see it on the list of required permits included in the SEPA FACT SHEET. Is it included in the Hydraulic Project Approval permit to be signed by the Department of Fish and Wildlife?

This detail on interbasin transfers is important because of the potential impact it could have on salmon recovery in the greater Columbia River drainage. The Study deals with it but not adequately. This point leads directly to item 9.

9. Salmon and steelhead move upstream following the scent of their natal stream. In the EIS a single study is cited concerning false attraction for salmon (p.4-164). This seems totally inadequate. First, the cited study was done under laboratory conditions where water mixtures could be controlled. Such precise control is not reality in a river. Second it dealt only with sockeye salmon. There are no sockeye in the Yakima River at this time but they are in the Columbia River. Other salmon species also use the Columbia River and susceptibility to false attraction well may differ among the species. Finally, the wording is not crystal clear but it appears that in the study, even at a mixture including less than 10% of their home water some fish were falsely attracted.

False attraction for steelhead is summarily dealt with by noting that the "peak adult steelhead migration occurs in October and November with a second run in February" as though this should end the discussion, but it doesn't. First, steelhead possess an acute sense of smell. Second, the irrigation season does not end before October

when the run is beginning to peak and steelhead do use the river during other months. Page 4-95 shows the steelhead run in the Hanford Reach occurs September through November. In the absence of better data, it is reasonable to suspect steelhead would be impacted and possibly in a more than "minimal" way noted in the EIS.

Anyway, is any level of impact on steelhead acceptable? If so, what level has been selected? Who decided on the acceptable level?

The "precautionary principle" would require that we not take any risk with upsetting runs of endangered species. Before any move is taken to assume the risk, it would seem that extensive and detailed studies would be required to prove as best as can be done, there will be no impact from a false attraction on either Columbia River or Yakima River salmon runs.

10. The report (p. 4-48) says the Black Rock project would, by a small amount, negatively impact power production at Priest Rapids Dam. I assume Grant County PUD might have a different calculation of their losses and can make a good case for reimbursement. It is not clear how much that reimbursement would be nor how it would be calculated.
11. All the water for the Black Rock Reservoir must be pumped far uphill whether the water flows in the Yakima basin canals, is consumed in or around the reservoir, leaks out, or is evaporated. There is no escape. It will be costly. Under the best of circumstances, all alone, the costs for pumping an acre-foot of water will be greater than the current highest price paid for an acre foot of irrigation water in the entire basin. It is likely to be two or three times as high and could be much more.

Table 4.12 is titled "Black Rock Alternative monthly pumping power requirements and costs." The table actually says nothing about monthly power costs and does not provide assumed monthly power rates as is done for the Wymer alternatives. It does provide a gross range from \$33 to \$93 million for annual power costs and an average of \$50 million. On the surface, the numbers look totally bogus because they are so imprecise and the accounting is unclear. At best, these estimates were based on history. I checked on current power prices and trends. I suggest the authors take seriously the caution noted on p. 4-49 that "costs could be higher or lower if a new rates analysis is performed due to changes in market conditions."

There is nothing now nor on the horizon that even suggests costs and prices for electricity will be stable, much less lower, in the future. The trend is upward at all times of the year. If some entity (BPA is the only likely

salmon runs in the basin and in the Northwest for that matter, were highly depleted before any dams were constructed on the Columbia River mainstem. The fish runs were essentially destroyed by over harvest in the lower Columbia River, unscreened irrigation canals along the tributaries, totally depleted streams, water pollution as existed in the lower Willamette River, log drives in salmon spawning streams and deforestation. Many specific races of fish adapted for particular streams or season of the year became extinct and others have been pressed to the point of threatened extinction.

It does seem reasonable to say that salmon runs are prevented from fully recovering by dams that cover and block access to spawning areas. In addition the fish must contend with artificial control of streams to the point that recruitment of new spawning gravel is impaired. There can be few or no salmon in streams where all the water is extracted for irrigation during the irrigation season. Flood control dikes and levees combined with transportation causeways reduce connectivity of the stream with its flood plain and side channels to severely diminish habitat for young fish. Our tendency to clear woody debris from streams to facilitate flow also reduces fish habitat. When, as in the Yakima, you treat a river like a ditch, there is not much favorable habitat for anadromous fish. In brief, water is absolutely necessary but alone it is not sufficient to save species and restore salmon and steelhead runs.

Should we ever get serious about restoring salmon runs we will restore riparian habitats and make dramatic changes in our use, management and confinement of both large and small streams in ways that favor the fish.

Fish in the streams do have value and can provide a benefit from changes in water management that favor fish. Calculation of those benefits is not as easy as some would have it. First, the long-term value is substantial but not infinite. For any given amount of water needed at a particular time and place, the value of that water for fish may be greater than the value in any other use. In a true market system, water from a lower value use would rapidly transfer to the higher value use.

The amount of money that would be willingly expended in any year when species are facing extinction cannot be extrapolated off into the future to calculate the stream of future benefits. Expenditures under conditions of threatened extinction are likely to be much greater than any reasonable expenditure when runs are thriving. When (if) the runs become healthy, expenditures should decline. At that point, the value of the fish themselves, while variable, might be high. It may be less or more than what will have been expended to save them. Objectively, there is no way to know what a

suspect) should provide a lower than market rate for pumping the water it doesn't mean the costs are actually lower. It means only that real costs are disguised by bookkeeping sleight-of-hand and paid by other BPA customers.

12. Any serious consideration of means to reduce the rate of global warming will eye closely new demands on electricity. I am aware of the ingenuous argument that electricity used to pump water at the proposed Black Rock Reservoir is produced by flowing water and adds nothing to atmospheric greenhouse gases but the argument has no merit. Electricity used for any purpose can be transferred to other purposes over a broad geographic area in order to displace electricity produced at fossil fuel fired power plants. So, the new, large demand for electricity at Black Rock negatively impacts atmospheric pollution and, as such, contributes to global warming. Comments to that effect probably should appear in 4.25 (p. 4-281) "Unavoidable Adverse Impacts." In contrast, non-storage alternatives, specifically pipelines pressurizing major conveyance canals, would not only reduce existing demand for electricity but could produce additional electricity. They deserve serious consideration.

13. The potential impacts on life in the Priest Rapids Reservoir are too casually dismissed. The fact that intakes will be built to State standards does not insure there will be no impact on life. Under any circumstances there is bound to be an impact on small creatures, larvae, eggs and even larger animals. An Environmental Impact Statement is the proper place to identify the actual impact no matter that the destruction may be legally sanctioned by the State.

14. As with Black Rock, there is nothing that could honestly make either of the Wymer alternatives economically feasible. They are neither eco-friendly nor least cost projects for resolving water problems in the Yakima River Basin.

Notably, however negative the B/C ratios for all three storage projects now are, they are calculated to appear more favorable than they really are. For example, in the case of Black Rock, failure to charge interest on investments until the project is completed ignores hundreds of millions of dollars in real interest costs to the public. These three projects should be dropped.

15. If the Black Rock Reservoir ever is constructed the decision will be done strictly on pork and political muscle and not on rational thought. If this is the unfortunate case, all of the effort by the Bureau of Reclamation to produce this detailed study along with all efforts put forth by anyone hoping to promote least cost initiatives to resolve real water problems will be for naught. It has happened before and storage proponents hope it will happen one more time.

From: <mzbirds@verizon.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 10:26 AM
Subject: Yakima Storage Study Comment

David Kaumheimer
Environment Programs Manager
U.S. Bureau of Reclamation
1917 Marsh Road
Yakima, WA 98901-2058

Re: Yakima Storage Study, Draft Environmental Impact Statement

Dear Mr. Kaumheimer:

The purpose of this letter is to voice my concerns regarding the Draft EIS for the Yakima Storage Study. In my opinion this Environmental Impact Statement is fatally flawed without the DOE report. The geology of the area where this enormous damn is to be built is unstable. The dam is to be build on two different faults. In addition one side of the damn will be held by a mountain prone to landslides and at risk for seismic activity.

Another significant reason not to build this dam is the risk of contamination of the Columbia River due to groundwater seepage from the bottom of the Black Rock reservoir which will head straight to the Hanford Nuclear Reservation sending toxic and adioactive materials into the Columbia. This reason alone should stop this proposed project!

This report is filled with inaccuracies, it is not accurate enough to be considered and EIS. Those backing this project say it will help the fish in the areas watershed. This is untrue. Water would be taken from the area at exactly the time the fish need it to spawn.

The recreational benefits sited in the report are grossly exaggerated.

I urge you to send this EIS back to the drawing board and put this proposal on hold until a more credible report can be submitted.

Thank you for considering my comments. Please add me to the list to receive the USBR=s final EIS and decision in this matter.

Sincerely,
Marilyn Hayes
1311 Goethals, Apt H
Richland, WA 99354
mzbirds@verizon.net