From: "James Briggs" <jbriggs@elltel.net>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Apr 1, 2008 6:42 PM
Subject: Black Rock

Dear Mr. Kaumhelmer:

The Kittitas Audubon society concurs with the concerns raised by the Lower Columbia Audubon Society over the potential of disastrous radiation leakage associated with the implementation of the Black Rock Reservoir. The Columbia River is too great a resource for Washington, Oregon and the United States to risk contamination from a project whose cost-benefit-ratio is extremely low to begin with.

James N. Briggs
Kittitas Audubon Society
jbriggs@elltel.net

CC: jbriggs@elltel.net

14078 King Dr.
West Richland, WA 99353
March 30, 1908

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

Dear Mr. Kaumkeimer:

I have several serious concerns about the EIS issued for the proposed Black Rock Reservoir. The first is the failure to include the yet-to-be-completed Department of Energy report on the potential impact of seepage from the reservoir on the contaminated plumes under the Hanford Reservation. The second is the lack of a sufficiently complete evaluation of the probability of the dam's failure due to seepage and landslides induced by the seepage. The third is the need for a more complete evaluation of the effects of earthquakes of magnitude 7 and greater.

I believe these points need to be included in the final EIS.

Thank you.

Sincerely,
Nathan E. Ballou

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.

Black Rock is a bad idea for the following reasons.

1. Potential seepage into Hanford groundwater, forcing toxins into Columbia. DISASTER downstream. This cannot be mitigated.

2. WATER is NOT AVAILABLE. The Columbia is already spoken for. Black Rock would cause deficiencies in-stream on the Columbia. CANNOT be MITIGATED.

3. There is No Real estate boom on a bath tub style Lake. The resort vision is flawed and would destroy Shrub steppe ecological connectivity between YTC and The Saddle Mt. Refuge CANNOT be MITIGATED

4. Outrageously bad economics. IT makes no "cents."

→ We should conserve water in The Yakima. IT is a BAD IDEA at multiple scales.

I STRONGLY OPPOSE BLACK ROCK.

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: Kenneth R. Bevis Date: 3/30/08

Address: 3204 Sharon WAY YAKIMA WA 98902

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

Mar 31 2008

Programs Manager

I would like to comment in favor of the Black Rock reservoir. This seems to be the best solution to water shortage problems for irrigation and salmon recovery.

The negative environmental problems are minimal and the benefits great.

Thankyou

Kip Dieringer
514 South First St
Dayton WA
99328

JAMES R. DILLMAN, ARCHITECT

660 SYMONS STREET RICHLAND, WASHINGTON 99654 TELEPHONE 509-946-4189

2008 March 06

U.S. Bureau of Reclamation
Upper Columbia Area Office
1917 Marsh Road
Yakima, Washington 98901

Re: Black Rock Dam and Reservoir Project.

Ladies and Gentlemen,

Because of my business as an architect in Richland Washington, and the hot potato issue this dam proposal has become, I've been reluctant to speak out publicly about some of my concerns regarding it. Now, while still afraid to speak publicly, I feel I must tell you of my concerns and suggest alternate solutions, because I know that irrigation water shortage is and will, after this year's abundance, continue to be a major problem for the farmers in the lower Yakima Valley.

When the dam was first proposed and because, for several years, I'd been doing Lepidoptera (butterfly) studies on the Hanford Reservation and the Hanford Reach National Monument and Arid Lands Ecology Reserve, and as a longtime resident of this region, I immediately understood the effect the dam would have on the shrub-step environment of the Monument.

The dam is proposed to sit on the southeast end of the Moxee/Black Rock Valley, with its 300 foot face toward the Monument, and its pool stretching northwest about 8 miles to the valley divide (high point), as you are I know aware.

This proposed earthen dam will leak, like all of these structures, witness O'Sullivan Dam at Othello, Washington and turn the Cold Creek drainage on the Monument into a swamp all the way from the dam face to the Yakima River, destroying the desert ecosystem in which the butterflies I've been studying, in particular Euchloe hyantis lotta, Euchloe ausonides ausonides and Pontia beckerii, live. These native butterflies are already becoming rare in the Mid-Columbia of Oregon and Washington because of the intense farming in this region.

I also could see that the dam leakage will be a real threat for pushing the nuclear contamination that lies under the Hanford Reservation, quickly into the Columbia River.

Then there is the possibility of a failure, like the American Falls Dam in eastern Idaho. Such a failure would certainly destroy all the low areas of the cities of West Richland, Richland, Kennewick and Pasco.

Another concern is that the leakage could lubricate the face of the Rattlesnake Mountain fault, causing it to slip, resulting in an earthquake, which could affect the dam. Page two

Lubricating the fault might also allow any aquifers connected to the fault to be contaminated.

I have discussed privately, these concerns and alternate solutions with two of the Benton County Commissioners, and other persons who I thought would investigate the issue, over the past couple of years, but apparently to no avail.

My alternate solutions are four. First, we could build three small dams in the draws above Sunnyside, pumping them full each May and June, when there is more than ample water in the Columbia River, and by using the same pipe, though probably smaller, that would fill the Black Rock Dam. It would require extending the pipe over, what I always label as Sunnyside Pass, (State Route 241). In August and September, the water would be release down the Rosa and Sunnyside canals to serve the lower valley and Badger Canyon, which as I remember, where the first request came from, due to those farmers being so far down on water-rights list, that their water was cut short in the dry years.

Second, I suggest the excavation of Lake Easton. This lake sits mostly empty for a good part of the year and could store at least some water. Digging it out would also eliminate all those stumps that keep snagging fishing lures when one is trolling for trout there.

Third, and better than Easton, is to dig out Lake Keechelus. The capacity of that lake could be doubled, and the soil excavated be used in the rebuilding of I-90, helping both projects. Excess soils, if any, could also be used to thicken the dam on its downstream face.

Fourth, may I suggest putting the dam on the Moxee end of the valley. Since the flow out of the lake is probably intended to pass down the Moxee Valley, it will probably require a long siphon pipe from the deep east end of the proposed reservoir, northwestward over the divide and a considerable distance down the valley in order for the siphon to work. Thus, there would be no added cost for pipe to put the dam on the Moxee end.. Further, Yakima County is really interested in two things. They are, irrigating the dry Moxee Valley and having a fine recreational lake, with fishing resorts, condominiums, and maybe beach front casinos. (Better never let the lake drop more than two feet). With those uses, there will most likely not be any water left for the lower valley irrigation. Both of these items will benefit and fatten the coffers of Yakima County alone, so I suggest we who will not benefit, let those who will, take the chance of the dam's failure. Meanwhile when the dam leaks it will only irrigate the dry Moxee Valley, and not destroy the Hanford Reach National Monument.

Sincerely for a better Washington State,

James R. Dillman

From: "Rick Glenn" <RGlenn@awbank.net>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Apr 1, 2008 12:17 PM
Subject: 1 last input

Does BOR really believe that $18 per acre is the net increase in gross revenue that would be realized by junior water rights holders? If you spoke to any who hold junior water rights, the value of having 100% of your water every year would be worth much more than that.

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

RECLAMATION
Managing Water in the West

Yakima, Washington

COMMENT FORM

Yakima River Basin Water Storage Feasibility Study Draft PR/EIS

Name (please print legibly): Fredric L. Plachta	
Organization: Individual	
Mailing Address: PO Box 358	
City, State, and Zip Code: Cowiche WA 98923	
Telephone: 509-965-5649	**E-mail:** none

Request to be placed on the mailing list:

___ I want my name put on the mailing list to receive information on the Yakima River Basin Storage Study.

___ I want my name removed from this mailing list.

Please note: Our practice is to make comments, including names, home addresses, home phone numbers and email addresses of respondents, available for public review. Individual respondents may request that we withhold their names and/or home addresses, etc., but if you wish us to consider withholding this information you must state this prominently at the beginning of your comments. In addition, you must present a rationale for withholding this information. This rationale must demonstrate that disclosure would constitute a clearly unwarranted invasion of privacy. Unsupported assertions will not meet this burden. In the absence of exceptional, documentable circumstances, this information will be released. We will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public disclosure in their entirety.

My comments on the Yakima River Basin Draft Planning Report/Environmental Impact Statement are:

The Yakima River Basin needs additional retention/storage; however the Black Rock project is not a part that needs any further study or consideration. Black Rock needs the trash can, so resources and cash can be used on viable projects. The expense and risks are to much

(Use back of sheet or additional sheets as necessary)

You may leave your comments in the box provided or mail, fax, email, or call in your comments before March 31, 2008, to: David Kaumheimer, Environmental Programs Manager, Bureau of Reclamation, 1917 Marsh Road, Yakima, WA 98901-2058; fax (509) 454-5650; email storagestudy@pn.usbr.gov; phone 509-575-5848, ext. 612.

U.S. Department of the Interior
Bureau of Reclamation

Washington State
Department of Ecology

Comments (continued)

to Keep Black Rock on the table. I had hopes for Black Rock, however it is time to pursue other, though smaller, retention/storage projects. Wymer, Roza, ~~and/or~~ Satus and/or Selah Creeks are better options using FLOOD waters from the Yakima River itself, which would also help reduce flood damage from Yakima to Richland. Lower Crab Creek or Lower Grand Coulee could be used for additional Columbia River storage, and filled during high flow times, as would Black Rock. Of the "benefits" of Black Rock, the one that stands out as absurd is a recreational one. How would an artificial lake, that is drawn down to a mud puddle on a regular basis, going to provide a recreational opportunity? If it is built, it will be a closed system and all motorized craft should be banned or polluted water (more concentrated as it is drawn down) will be going to irrigation or municipalities. We have seen the current storage reservoirs drawn down to puddle size, at least they are not a closed system. Additional power generation should be concentrated in nuclear and wind facilities, or other storage projects. To see how much we know about how water would migrate out of Black Rock, look to the North at the Pothole Lakes.

You may leave your comments in the box provided or mail, fax, email, or call in your comments before March 31, 2008, to: David Kaumheimer, Environmental Programs Manager, Bureau of Reclamation, 1917 Marsh Road, Yakima, WA 98901-2058; fax (509) 454-5650; email storagestudy@pn.usbr.gov; phone 509-575-5848, ext. 612.

March 31, 2008

David Kaumheimer
Bureau of Reclamation
Upper Columbia Area Office
1917 Marsh Road
Yakima, Washington 98901-2058

Dear Mr. Kaumheimer:

Thank you for this opportunity to comment on the Draft Planning Report / Environmental Impact Statement for the Yakima River Basin Water Storage Feasibility Study issued in January 2008. I have the following concerns with the report:

1. The report as an overall instrument (a draft plan, draft environmental impact statement and a feasibility study) is inconclusive and lacking information critical to fully understanding what the impacts would be to the environment of the Black Rock Reservoir site and the region as a whole. The following areas are poorly researched and/or presented:

    a. Groundwater

        - Concern that the filling of the reservoir would create a hydraulic head that would negatively impact the Hanford Site pushing contaminants into the Columbia River.

        - Increasing the vertical extent of the groundwater (raising the water table) down gradient of the reservoir which in turn would create springs and streams in areas that have been traditionally dry. This could impact the shrub-steppe community by changing the character of the land from arid to semiarid. This could impact the Hanford Reach National Monument – Arid Lands Ecology Reserve which has Cold Creek flowing through it from the "recharge" area of the proposed Black Rock Reservoir. This could change the existing biodiversity of the monument from shrub-steppe to a wetter steppe environment, which would degrade the purpose why the Hanford Reach National Monument was set aside for.

    b. Hanford Reach National Monument Impacts

        - I am particularly concerned about maintaining appropriate flows in the Columbia River as stated in the Presidential Proclamation of June 9, 2000 where the Proclamation states, "... a quantity of water in the Columbia River sufficient to fulfill the purpose for which the monument is established." If vast amounts of Columbia River water are removed to the Yakima River this could impact water flow in the Hanford Reach National Monument. For example, during Spring Chinook salmon and native steelhead migration. Critical water levels could fall below those necessary to maintain spawning and migration. Please note that these are endangered species.

c. Impacts to Native American Sites

- There did not appear to be a full cultural review conducted in the site and area of the reservoir. With two significant Paleo Indian sites located relatively nearby in Wenatchee (Richie-Roberts Site) and Kennewick (Kennewick Man Site) there is always a chance a significant site could be located in the area of the proposed reservoir. Particularly if the landscape was wetter 10,000 years ago in the reservoir area.

d. Biological Impacts

- The EIS seems to be a little shallow regarding the impacts to biota particularly in the Columbia River for potential anadromus fish and other aquatic biota which need stable river water quantities to meet their life cycles.

- Removing water from one river (Columbia) with its constituent chemicals could impact water quality/constituents of another drainage system (Yakima), and therefore, impact the biota of that river system.

e. Chemical Contamination

- Chemicals within the Columbia River water may exceed state and federal standards or could exceed those standards in the future. Pumping water which is contaminated from heavy metals from the Kellogg Superfund Site upstream of the Columbia in Idaho and the Canadian Smelter (across the U.S. border) into the Yakama River system is generally not a good idea. What concentrations could build up in the Black Rock Reservoir? How could this impact the human and biological food webs?

2. Economic impacts do not seem to be fully defined. It would be most helpful if the document explained in a clear and concise way what the costs of running the giant pumps taking water out of the Columbia River and transporting it to the reservoir would be. Also, where will the electricity come from to do this if Hanford starts operating their vitrification facility? Will there be enough electricity for both?

3. The report attempts to do too much at one time. I believe a more focused report on Black Rock is justified.

Thank you for this opportunity to comment on the reports. I appreciate the effort you have made to produce the report.

Sincerely,

Dana Carl Ward

Washington State Department of Transportation
Paula J. Hammond
Secretary of Transportation

South Central Region
2809 Rudkin Road, Union Gap
P.O. Box 12560
Yakima, WA 98909-2560
(509) 577-1600
TTY: 1-800-833-6388
www.wsdot.wa.gov

March 31, 2008

U.S. Bureau of Reclamation
Upper Columbia Area Office
1917 Marsh Road
Yakima, WA 98901-2058

Attention: David Kaumheimer, Environmental Programs Manager

Subject: Yakima River Basin Water Storage Feasibility Study - Draft
U.S. Department of Interior, Bureau of Reclamation &
Washington State Department of Ecology

We have reviewed the Yakima River Basin Water Storage Feasibility Study. WSDOT recognizes the importance of agriculture to the central Washington region. Our naturally arid region would benefit from additional water storage for irrigation, fish, recreation, and tourism. We have the following comments.

1. The study proposes several alternatives. Depending on which alternative is selected, a number of state highways could be impacted. These include State Highway 24, State Highway 821, Interstate 82, Interstate 182, State Highway 224, State Highway 225, State Highway 240, and State Highway 241. The proponents are encouraged to utilize local roads for access to any construction and maintenance sites whenever possible.

   I-82 and I-182 are fully-controlled limited access facilities for their entire length, and access is restricted to interchanges. Portions of SR 24, SR 224, SR 240 and SR 241 are partially-controlled limited access. Access along these segments is restricted to public roads and deeded approaches. The remaining portions of SR 24, SR 224, SR 225, and SR 241 are access managed. Access is available within the access managed segments in accordance with state law and as agreed to by the Department.

2. As stated in our comments dated January 31, 2007 regarding the EIS scope, the greatest potential impact to the state highway system would be to SR 24 if Black Rock Reservoir is constructed. The new reservoir would completely inundate a portion of SR 24. The proponent would need to construct a replacement facility on new alignment for the flooded segment of SR 24. The new segment will need to be constructed to current design standards. As stated in the EIS, we would like to continue discussions with the proponent whether a northern or southern alignment is the best location. WSDOT will need to be included in all discussions and analysis regarding the new alignment for SR 24 and approve the alignment location. Access rights will also need to be acquired to retain the limited access nature of the highway. WSDOT is the approving authority for any proposed access location on the new or existing alignment.

3. A franchise agreement is required for any installation and maintenance of longitudinal utility lines within WSDOT rights-of-way. Utility crossing permits are required for all locations where utilities cross the highway, including any tunnels. If a utility line is to be placed on any bridge, it will be subject to approval by our Headquarters' Bridge and Structures Office. All work must be coordinated with the South Central Region's (SCR) Utilities Engineer, Jamil Anabtawi, prior to beginning any work. He can be reached at (509) 577-1785. No open cutting of the highway will be allowed to cross the highway. Any utility line crossing the highway will need to be done by jacking and/or boring underneath it.

4. For traffic control needed on any state highway, the proponent must submit a traffic control plan to the WSDOT South Central Region Traffic Office for review and approval. Please contact Rick Gifford at (509) 577-1985 for specifics.

   Once approved, traffic control implementation on the highway(s) should be coordinated with our Area Maintenance Superintendent. Please contact this office to determine which superintendent should be contacted.

5. As stated in section 4.16.2.4, if Wymer Reservoir is created, the proponent will need to ensure that the I-82 Lmuma Creek bridge piers (milepost 14.96 to 15.11) are protected and reinforced as necessary.

6. The draft EIS contained general information that certain state highways would be used during construction. The haul routes, the amount and type of materials, the location of source materials, and the estimated number of truck trips need to be specified. All loads transported on WSDOT rights-of-way must be within the legal size and load limits, or have a valid oversize and/or overweight permit.

7. Stormwater and surface runoff generated by this project must be retained and treated on site in accordance with regulating agencies' standards, and not be allowed to flow onto WSDOT rights-of-way.

8. Any outdoor advertising or motorist signing considered for this project will need to comply with state criteria. Please contact Rick Gifford of the WSDOT South Central Regional Office at (509) 577-1985 for specifics.

Thank you for the opportunity to review and comment on this study. If you have any questions regarding our comments, please contact me at (509) 577-1630.

Sincerely,

Bill Preston, P.E.
Regional Planning Engineer

BP: rh/jjg
cc: File #1, State_USA (2007)
Jamil Anabtawi, Utilities Engineer
Rick Gifford, Traffic Engineer
George Hilsinger, Assistant Regional Administrator for Project Development
Terry Kukes, Area 1 Maintenance Superintendent
Tom Lenberg, Area 3 Maintenance Superintendent
Les Turnley, Area 2 Maintenance Superintendent

p:\planning\devrev\state_usa\wsdoe_yak river water storage study.doc

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.

I continue to be amazed and dismayed at the Yakima Storage Study with its proposal to build a new dam and reservoir in the Black Rock Valley. I rarely make my voice heard, but this proposal demands comment — loud & clear! Why not a dam & reservoir? ① The geologic area is unstable and puts the dam/reservoir at risk of failure due to earth shifts (earthquake, landslides, etc.), ② ground water seepage will move to the Hanford Nuclear Reservation undoing what trillions of dollars of effort have tried to stem — nuclear contaminants going into the Columbia River — undeliverable!, ③ the energy needed to fill the reservoir is not a productive use and the benefits do not begin to outweigh the costs — energy or dollars or resources, ④ water is not available from the Columbia River — it is already spoken for, ⑤ private concerns & real estate think that they would benefit — not the public, and even their reasoning is questionable. WHAT WE NEED: ① ENERGY CONSERVATION — water, power, land, ② protection of our natural resources and ecological systems ③ riparian habitat and water quality improvement. ④ Management of state & federal forests to maximize their water storage capacity & reconnection of the Yakima River to its floodplain to increase natural water storage.

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: Joyce C. Gruenewald, MSN, ARNP Date: 3-30-08

Address: 1031 W. 13th Ave., Spokane, WA. 99208

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

U.S. Department of Energy
Hanford Site

MAR 3 1 2008

08-ESQ-062

Mr. Kim McCartney
Storage Study Manager
Upper Columbia River Area Office
Bureau of Reclamation
1917 Marsh Road
Yakima, Washington 98901-2058

Dear Mr. McCartney:

U.S. DEPARTMENT OF ENERGY (DOE) COMMENTS ON THE BUREAU OF RECLAMATION (BOR) DRAFT PLANNING REPORT/ENVIRONMENTAL IMPACT STATEMENT (EIS) (PR/EIS) YAKIMA RIVER BASIN WATER STORAGE FEASIBILITY STUDY

The DOE, as a cooperating agency, appreciates the opportunity to provide the following comments on the subject draft EIS.

1. On Page xxi of the Summary, please briefly characterize the existing conditions and activities at the Hanford Site to explain the importance of potential impacts of the Black Rock Reservoir that may be associated with Hanford. Suggested wording is as follows:

   The 560-square-mile Hanford Site, situated on the Columbia River approximately five miles from the proposed location of the Black Rock Reservoir, is a former nuclear weapons production, research, and development reservation owned and managed by the DOE. The site is undergoing extensive remediation and cleanup of multiple plumes of radioactive and chemical contamination in soil and groundwater. DOE's plans include the treatment of approximately 53 million gallons of radioactive waste stored in 177 underground tanks for disposal of the high-level radioactive waste in a Federal repository.

2. While the description of the Hanford Reach National Monument (Arid Lands Ecology Reserve, Saddle Mountain and the Wahluke Unit) on Page 1-12 is factual, the discussion in this section should also state that the Hanford Site's mission included nuclear defense research and development in addition to nuclear weapons production. The discussion should include a statement similar to the suggested text in Comment 1 above indicating that portions of the site are contaminated with radionuclides and hazardous constituents from past operations and that the site is undergoing extensive cleanup. The description should acknowledge that DOE is currently managing approximately 53 million gallons of radioactive

Office of River Protection
P.O. Box 450
Richland, Washington 99352

Richland Operations Office
P.O. Box 550
Richland, Washington 99352

waste stored in 177 underground tanks and is constructing a vitrification plant to prepare this waste for disposal in a Federal high-level radioactive waste repository. The cleanup at Hanford is being conducted under Federal and State requirements in addition to Superfund, and the State of Washington participates with the U.S. Environmental Protection Agency and DOE in a tri-party cleanup agreement.

3. The fourth sentence in the paragraph regarding Hanford on Page 1-12 should be corrected as follows: "The Arid Lands Ecology Reserve was established in 1967 and renamed the Fitzner/Eberhardt Arid Lands Ecology Reserve in 1994."

4. If the BOR considers economic indicators outside those described in the National Economic Development and Regional Economic Development processes, it should include the potential economic impact to the government from additional remediation or expedited remediation resulting from seepage from the Black Rock Reservoir.

5. The PR/EIS should address the potential for dam failure due, e.g., to seismic events.

6. The PR/EIS does not describe nor analyze the potential cost impacts to the regional rate payers for electrical power needed to pump water from the Columbia River to Black Rock Reservoir.

7. In Table ES.6, Page xxxvii and Page 2-69, Page 2-116 under Black Rock for Groundwater, please add "through Hanford" in the cell after "toward the Columbia River."

8. Section 4.2.2.6 briefly mentions the difficulty of developing both Black Rock and another large mainstream off-stream storage option. The discussion should clarify what this may mean for the rest of the region, including downstream uses of Columbia River water.

9. As emphasized in previous discussions with BOR, DOE continues to be concerned about the potential impacts to the groundwater beneath the Hanford Site as a result of seepage from the Black Rock Reservoir. DOE will provide additional information to BOR as analyses being conducted for the Tank Closure and Waste Management (TC & WM) EIS become available.

10. The PR/EIS should include enhanced, specific analysis of mitigation measures BOR could take to reduce groundwater seepage toward the Columbia River through the Hanford Site to acceptable levels. This may include, for example, an assessment of the technical and economic feasibility of pumping groundwater away from the Hanford Site. The analysis should also include a description of uncertainties associated with potential mitigation measures, and the long-term reliability of such measures.

We look forward to continued collaboration with BOR on the PR/EIS. Please contact me on (509) 373-5227, if you have questions regarding DOE's comments on the draft PR/EIS. For questions related to the TC & WM EIS, please contact Mary Beth Burandt, EIS Document Manager, on (509) 372-7772.

Sincerely,

Woody Russell
NEPA Compliance Officer
Office of River Protection

ESQ:RWR

cc: I. R. Triay, EM-2
K. C. Guevara, EM-11
L. O'Conor, EM-11
C. M. Borgstrom, GC-20
J. E. Loving, GC-20
L. Abshire, BOR
G. Kelso, BOR
J. A. Hedges, Ecology
D. Sandison, Ecology
D. A. Brockman, RL
M. S. McCormick, RL
D. J. Wilcox, RL

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Environmental Resources Section

MAR 3 1 2008

Bureau of Reclamation
Upper Columbia Area Office
ATTN: Mr. David Kaumheimer
1917 March Road
Yakima, Washington 98901-2058

Reference: Comments on Yakima River Basin Water Storage Feasibility Study, Draft Planning Report and Environmental Impact Statement

Dear Mr. Kaumheimer:

My staff has reviewed the referenced document which examines alternatives to create additional water for the Yakima River basin for benefit of threatened and endangered fish, irrigated agriculture, and municipal water supply. In general, the document provides comprehensive analysis of the project alternatives. Specific comments follow:

1. National Economic Development (NED) analysis indicates that none of the alternatives are economically justified. This key item should be highlighted in the text portion of executive summary.

2. Chapter 2 is intended to describe the joint alternatives. In the review document, it also included a great deal of technical analysis and comparison of the different alternatives, particularly with regard to geology, alternative accomplishments, and economics. To ensure that the public and decision-makers weigh all the consequences of the different alternatives, my staff suggests consolidating the information on the consequences of the joint alternatives entirely within Chapter 4. This would allow Chapter 2 to more closely fit the format of Chapter 3 (State Alternatives), which provides a more concise and understandable discussion of alternatives.

3. Also in Chapter 2, my staff suggests providing a summary of evaluation criteria for the different joint alternatives. This would ensure clear understanding of the rationale for determining which alternatives would be carried forward for detailed analysis.

4. Throughout the document, availability of water from Columbia River is based on "seasonal flow targets" as defined by Endangered Species Act (ESA) considerations. My staff suggests that the discussion be revised to recognize that the mainstem Columbia

River operations consider these as seasonal flow objectives. Water in excess of the flow objectives may not be mandated by ESA requirements, but should be evaluated in terms of potential incremental additional benefits to listed fish and their habitat (i.e., in some years, flows that might be diverted to Black Rock Reservoir may have benefits for the mainstem even if the remaining Columbia River flow is higher than the flow objective).

5. My staff suggests that Section 4.2.2.6 should address the impacts of the cumulative water withdrawals within the Yakima and Columbia river basins.

6. My staff suggests that the socioeconomics section of Chapter 4 include the analysis of the NED which is currently located in Chapter 2.

7. My staff suggests that the air quality section of Chapter 4 include an analysis of the emissions of carbon dioxide and other greenhouse gases for each alternative.

8. My staff suggests that the public health section in Chapter 4 include discussion of the potential public health impacts of groundwater contamination related to the Hanford Site (which is discussed in Section 4.3.2.3).

9. My staff suggests that the environmental commitments for anadromous and resident fish (Section 4.28.5) should include screening of all intakes and outfalls per state and federal criteria.

Thank you for the opportunity to comment. Please contact Mr. Evan Lewis, at 206-764-6922 or evan.r.lewis@usace.army.mil, regarding these comments or for other matters relating to this project.

Sincerely,

Ron Kent

Ron Kent, Acting Chief
Environmental Resources Section

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
US ARMY GARRISON, YAKIMA TRAINING CENTER
970 FIRING CENTER ROAD, MAIL STOP 75
YAKIMA, WASHINGTON 98901-9399

March 31, 2008

Public Works

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

Dear Mr. Kaumheimer,

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

Comments on the Draft PR/EIS from the Yakima Training Center's staff are attached.

If you have any questions concerning these comments, please contact Scott McDonald by telephone at 509-577-3789 or e-mail at john.mcdonald22@us.army.mil.

Sincerely,

Steven Kruger
Director, YTC Public Works

Enclosure

Consolidated Review Comments on Yakima River Basin Water Storage Feasibility Study For Yakima Training Center, WA								
Comment Number	Page Number	Section/Figure/ Table/Appendix	Line Number	Commentor	Org	Comment	Response By	Response
1	4-92	4.7.2.7		McDonald	YTC-ENRD	Consideration needs to be given to potential cummulative impacts associated with the Florida Power and Light Wind Farm proposal on the east border of YTC. This development plus Black Rock Reservoir would effectively close the wildlife corridor between ALE and YTC for some species. There are also studies being done for potential windfarms along what would become the south shore of the reservoir.		
2	4-231	4.16.2.3		McDonald	YTC-ENRD	Paragraph notes that WSDOT and Black Rock residents have expressed a preference that SR-24 be re-routed to the north rim of the reservoir. There is no mention that at least part of that route would be across Yakima Training Center property. The document appears to eliminate the option of moving SR-24 to the north. Is that accurate?		
3	4-231	4.16.2.3		McDonald	YTC-ENRD	If SR-24 is routed to the north, how much of that route would be on what is currently YTC? The impacts to the military mission of YTC have not been addressed if the route is moved to the north.		
4	General			McDonald	YTC-ENRD	Effects to potential private, recreational, and commercial land use needs to be analyzed in relation to the military training mission at YTC.		
5	General			McDonald	YTC-ENRD	What steps will Reclamation take to prevent trespass on surrounding private and public property?		
6	General			McDonald	YTC-ENRD	Details of how land ownership surrounding each of the reservoir alternatives would be impacted are not detailed in the document. This will impact land use and land use management opportunities.		

Consolidated Review Comments on Yakima River Basin Water Storage Feasibility Study For Yakima Training Center, WA								
Comment Number	Page Number	Section/Figure/ Table/Appendix	Line Number	Commentor	Org	Comment	Response By	Response
7	General			Leingang	YTC-ENRD	Suggest using another species other than elk for the wildlife corridor movement analysis. It may be more appropriate to use a shrub-steppe dependent species like sage-grouse or more corridor dependent/sensitive species. If big game is to be used, it may be more appropriate to use a resident species like mule deer which are experiencing problems versus elk, which are not experienceing a problem at this time.		
8	4-78	4.7.1.2		Leingang	YTC-ENRD	A personal communication from Jim Stephenson indicates no use by elk in the Wymer footprint on YTC. However, in recent years, there has been consistent use of Lmuma Creek on and off YTC by elk.		
9	General			Leingang	YTC-ENRD	Further analysis should be pursued related to the potential recreational development and use that will result from implementing any of the alternatives. Given the amount of recreational use in the Roza pool and the Yakima River Canyon, it would seem that this has been underestimated in the analysis and may pose an issue for those portions proposed on or adjacent to YTC.		
10	General			Leingang	YTC-ENRD	The potential for fire from recreational use needs to be disclosed and analyzed further.		
11	General			Leingang	YTC-ENRD	In terms of riparian area and salmonid fish habitat on YTC, there would be a loss/change associated with turning Lmuma Creek into a reservoir.		

Consolidated Review Comments on Yakima River Basin Water Storage Feasibility Study For Yakima Training Center, WA								
Comment Number	Page Number	Section/Figure/ Table/Appendix	Line Number	Commentor	Org	Comment	Response By	Response
12	General			Leingang	YTC-ENRD	Proposed pipelines crossing YTC need to be more adequately addressed. In the Black Rock Water Storage Project-Power Benefits Review (March 2007), two options were outlined to increase the Pumped/Generation Capacity. Option B proposed 2 reservoirs on YTC. Has this configuration been eliminated and is the only surface feature on YTC the 80ft x 80ft fenced enclosure for the surge shaft?		
13	4-86, 87	4.7.2.2		Leingang	YTC-ENRD	Shrub-steppe Collaborative land acquistions reference is not entirely accurate. Although conservation easements are being sought, none are final to date.		
14	General			Kruger	YTC-ENRD	The document does not address how the project would ensure compliance with Washington law (SB6401-2004) to prevent incompatible land uses surrounding military installations.		

Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855
Yakima, Washington

March 31, 2008

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Re: Yakama Nation comments on Yakima Basin Storage Study EIS

Dear Sirs,

We are submitting the following comments on the EIS for the Yakima Basin Storage Study prepared by Yakama Nation staff. These predominantly technical comments are submitted in addition to the joint comment letter submitted with the Roza Irrigation District. While these comments are required by March 31st we will continue to produce and submit technical reports and reviews under the terms of our agreement with Reclamation. We plan to take particular interest in some alternatives that received unduly little attention in the Storage Study EIS. We will continue to be active in seeking solutions to the basin's problems in keeping with our instream and out of stream Treaty water rights.

The technical comments contain several references to further technical work that would need to be done in order to determine the safety and suitability of the Black Reservoir site. Please note that we are not recommending that those additional studies be undertaken at this time. We

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recommend instead the problem solving approach for proceeding outlined in the joint comment letter.

This document does not constitute a legal position or admission by the Yakama Nation or waive, limit, or concede any argument otherwise available to us. The Yakama Nation reserves all rights and remedies available to it to protect its Treaty Rights and resources.

We look forward to working with Ecology, Reclamation, and other parties in developing a package of solutions to the problems facing the Yakama basin and its resources.

Sincerely,

Ralph Sampson Jr

Ralph Sampson, Jr., Chairman
Yakama Tribal Council

Comments on Cultural Resources

General Concerns

The areas of potential effect lie within the ceded area of the Confederated Tribes and Bands of the Yakama Nation as set forth in the Treaty of 1855 (12 stat., 951) between the Yakama Nation and the United States government. With this document, the Yakama Nation asserts sole tribal authority in matters pertaining to the management of their cultural resources within this area. Management includes determination of significance of impacts to traditional cultural properties, archaeological, sacred religious, hunting, gathering, ancestral, legendary, historical sites etc. Only the Yakama Nation can determine what is significant to Yakama culture.

However, the overall cultural resource sections are missing a key tribal perspective on present traditional cultural properties, archaeological, sacred sites, food gathering and hunting areas, critical to traditional cultural practices of present day Yakamas. The only resource inventoried in the Cultural Resources report, provided by Archaeological Investigations Northwest (AINW), is historical resources and is mirrored in the language of the Draft/EIS. The

end result is an inaccurate, incomplete portrayal reliant solely on previous archaeological investigations, and does not encompass the full spectrum of cultural resource types. Having not provided this complete portrait, levels of cultural significance are undeterminable at this time. Until a formal Class III cultural resource survey is conducted, tribal consultation pursuant to the National Historic Preservation Act of 1966, presence of cultural resources and their significance cannot be ascertained.

Furthermore, the enhancement, destruction, removal, replacement of *all* cultural resources, not just archaeological or historical, significant to the Yakama Nation is an issue unaddressed in this Draft/EIS. Mitigation is of the utmost importance to the Yakama Nation, as it is the Nation that has lived upon this land since time of beginning. The Draft EIS does recognize there are previously recorded archaeological resources within the APE's, which are protected by federal cultural resource mandates. Because the APE's lie within the ceded area of the Yakama Nation, the Yakama Nation has sole tribal authority over cultural resources significant to it. Therefore, without a memorandum of agreement between the Yakama Nation and the federal agency, the proposed project will be in violation of the National Environmental Policy Act, National Historic Properties Act, Executive Order 13007, American Indian Religious Freedom Act, Archaeological Resources Protection Act, and Archaeological and Historic Preservation Act. Costs for this mitigation would be considerable but have yet to be included in the overall economic impacts of the proposed project.

Specific concerns

Page 4-254

Section 4.20.1.1

Paragraph 3

The author misinterprets Ray (1939) by overstating the likenesses between Plains and Plateau after the introduction of the horse. This stance has since been displaced by Anastasio (1955,1972) and states Ray as doing the exact opposite of what the author suggests in this paragraph. He explains that Ray had refuted the Plateau as a "cultural void filled with miscellaneous items borrowed from the Northwest and Plains cultures. In fact, Ray displays the

"cultural unity of the area in contrast [not in likeness] with surrounding culture areas and describes some of its major characteristics, such as the emphasis on village and band political autonomy, the stress on peaceful means for determining intergroup relations, and a number of other features." Furthermore, Anastasio continues to explain that the horse did much to intensify and change the appearance of trade between Plateau and other culture areas. If anything, the horse created a much more complex portrait of intertribal relations then is summarized by the authors' findings. The authors' summary is superficial and has managed to boil down the intertribal trading economies of Plains and the Plateau to create a mono-Plains horse culture.

The authors do not provide a clear theoretical approach towards defining their use of tribal groups at any point in time. The current logic jumps from tribal confederation (Yakama) to culture area (Plateau) to mish-mash of tribal confederation and an undefined group of native people (Yakama and related groups) to the village level (*tsikik*). The authors offer no temporal reference as to the political existence of these groupings or the area of which these tribal groups inhabited. Certainly the author recognizes the Treaty of 1855 and that the APE for each alternative lie within the ceded area of the Yakama Nation. But just as soon as the authors introduce this jurisdictional issue, they complicate the situation by widening the scope to include the other Columbia Plateau tribes (Umatilla Colville, Wanapum). Without an introduction to these groups and an explanation as to their relevance to the APE, the message for their inclusion is unclear and confusing.

The authors discount the complex trading networks that have been maintained for millennia between Plateau and not only Plains tribes but California, Great Basin and Northwest Coast tribes as well. Walker's (1997) work, along with that of Anastasio (1955, 1972), has clearly refuted the conflated concept that Plains culture has had such an overwhelming impact on the Plateau, that it caused Plateau tribes to instantaneously abandon their cultural identity and social order for that of another. Setting aside that the author imagines this diffusion could have taken place 200, epidemics were also sweeping through the Plateau as was the first migration of European settlers. The epidemics, along with the posed threat of land loss, encroachment of settlers, and the religious and cultural assimilation settlers brought with them, could have just as easily caused this tighter political alliance between bands and tribes of the Yakama and "related tribes".

Moreover, the author exaggerates the influence of an east to west trend in intertribal trade after the appearance of the horse. Plateau groups were part of a very complex and diverse trade web stretching into other culture areas besides those to the east. Just as the authors emphasize this east to west trend, items of great value moved from the Plateau to the east, as well. The Dentalium, for example, originates from the Northwest Coast. For some Plateau tribes, this shell was used as money and traded with Plains tribes who valued it as much as their western neighbors. Tribes, such as the Lakota, adorned themselves with the valuable shell on clothing and accessories (Would this not be an adoption of Plateau clothing styles?). The horse did much to change the lifestyles of the Yakama and related groups. Combined with aforementioned political and environmental factors, the changes that took place, on the Columbia Plateau before, during, and after their appearance, are complex far beyond the nine lines provided by the authors.

Plateau social organization has been widely studied in anthropology. Of those studies, Ackerman points out that Plateau social organization, in terms of gender roles, is defined as the equal or balanced access of men and women to power, authority, and autonomy in four social spheres" — economic, domestic, political, and religious" (Ackerman 2003: 24). Meanwhile, in terms of political organization, Walker describes that the role of "head men", which were typically chosen based on "qualities of wisdom, personal character, and leadership", existed on a village level. Chiefs, on the other hand, were associated with larger bands or tribal organizations (1998:336). Traditionally, chiefs do and did exist, especially in terms of regulating such activities as fishing and hunting.

4.20.2.4 Mitigation

How would adverse impacts to cultural sites eligible for the NRHP under criteria other than D be mitigated for? If a site is eligible in terms of an association with an important event in tribal history (Criterion A) or a figure/individual significant to the tribe (flesh and blood or otherwise), what action(s) would mitigate the destruction of that site or place? As it is unlikely that mitigation could be pursued via archaeological data recovery for a site that is not deemed as National Register eligible in terms of its archaeological data potential, but rather for its cultural association or meaning, mitigation to the effected tribe would likely be in monetary terms.

Consultation with effected tribes in terms of NRHP eligibility would not be an option, but rather mandatory due to the potential for sites to be eligible to the National Register under

Criteria other than D. This is not referring to TCPs, but rather eligibility outside the viewpoint of archaeology and archaeological data potential (Criterion D).

Consultation with effected tribes during the development of an MOA for mitigation measures would also not be optional. Reclamation, SHPO, or the ACHP would be poorly equipped to define either the damages or appropriate mitigation for sites eligible to the NRHP in terms of tribal cultural values and viewpoints. Further, development of an mitigation MOA is likely to be viewed as the creation of Reclamation policy, which would therefore be subject to Executive Order 13175 which requires regular and meaningful consultation and collaboration with Native American governments.

4.20.2.5 Cumulative Impacts

This section makes reference to "historic resources", the non-renewable nature of these resources, the goal of archeological investigations being able to re-create a site or historic property in the laboratory, and the desirability of preserving a portion of a site for future analytical methods which might be able to extract additional archaeological data from a site. Although it does not state it specifically, the title of this section would imply that this would be the way to address the cumulative impacts of the chosen alternative. This further implies "historic resources" and the cumulative impacts upon them will only be addressed in terms of archaeology and archaeological data recovery. This extremely limited view of historic resources is a complete failure as far as meeting the intent of the NHPA, which does not define history or what is thought to be an historic resource solely in terms of archaeology or archaeological data. In terms of the NHPA, what is considered an historic resource, its importance or National Register eligibility, and whether it maintains its integrity, is defined by the people who consider it important. Therefore, how cumulative impacts are addressed cannot be done only through archaeological means and still maintain compliance with NHPA Section 106.

4.22 Indian Trust Assets

Under both the Wymer and Black Rock Alternatives, the flooding of the respective reservoirs would at minimum lead to significant loss of terrestrial resources. Although the Yakama Nation rights to these resources defined by the Treaty of 1855 would not be altered, if

the resources themselves were eliminated, then the right to utilize them becomes irrelevant. Therefore, the destruction of resources would ultimately and equally diminish the rights of the Yakama Nation to those resources.

Comments on Black Rock Alternative Hydrogeologic Technical Documents

There was too little time to review the complete set of technical documents provided by the Bureau of Reclamation regarding the proposed Black Rock dam and reservoir, therefore, some of the following statements and questions may have been addressed in some of the documents not reviewed or only briefly evaluated. The following discussions are based upon information presented in the following documents;

–Draft environmental planning report/impact statement, January 2008;
–TS-YSS-5, Dec 2004;
–TS-YSS-19, Sept 2007;
–Spane, 2004;
–Spane, 2007; and
–Columbia Geotechnical Associates, Feb 2004.

The evaluation of the available technical presented in four Sections, 1. Summary, 2. General Comments, 3. Specific Comments and 4. Future Studies.

1. Summary

1.1 Insufficient technical data is provided by the Bureau of Reclamation regarding the hydrogeology of the Black Rock dam and reservoir sites to allow a conclusive evaluation of the suitability of the sites for dam and reservoir construction at this time. Additional hydrologic tests would be required if the Black Rock alternative were to receive further consideration including "long term," on the order of weeks, controlled pumping tests designed to evaluate the areal hydrogeologic properties of the sedimentary valley fill and basalt aquifer systems, including transmissivity, storativity and vertical leakage.

1.2 A rigorous hydrogeologic testing program would need to be undertaken if the hydrologic suitability of the Black Rock dam and reservoir is to be proven. Hydrogeologic studies reported upon in the referenced technical documents were preliminary in nature, conducting reconnaissance geologic investigation, and short duration low stress hydrologic tests. The referenced studies did not provide the information required to design and/or evaluate the potential effects of a $4.5 billion dam construction and operation project. There is insufficient data currently available to evaluate the potential effects of reservoir leakage upon underlying groundwater flow systems, dam safety and issues regarding contamination present at the Hanford

site. There would be a need for additional information before Yakama Nation staff could make a recommendation regarding the hydrogeologic suitability of the proposed Black Rock dam and reservoir. Some potential studies directed toward providing the additional information that would be required are discussed in Section 4.

1.3 There should be no destruction of aquatic habitat allowed associated with constructing a dam, a partial purpose of which is to, improve aquatic habitat. In particular, the mining of aggregate from the floodplains of the Yakima and Columbia Rivers should not be further considered to provide source material for a dam or associated facilities

1.5 There are questions, posed in Section 3.1 of this email, regarding the realism of the groundwater computer model presented in document TS-YSS-19. These questions would need to be answered prior to using the outputs of the groundwater model in a technical evaluation of the possible impacts of constructing the proposed Black Rock dam and reservoir. Additionally TS-YSS-19 states "the model results contain a significant amount of uncertainty due to the limited availability of site hydrogeologic data (p. 1)," "the scope of the Black Rock computer model development and application is limited (p. 3)," "gathering new hydrologic data in the Dry Creek drainage could change the seepage rates that are presented (p. 79)," and "limited hydrologic data" is available for characterizing the Black Rock site (p. 75). How much faith can be placed in design criteria possibly based upon modeling results which might change at a future date as more information becomes available?

1.6 The groundwater computer model presented in document TS-YSS-19 does not address the possible effects of reservoir seepage upon contaminants present in the subsurface at the Hanford site. How might the predicted increased flux at the western boundary of the Hanford site relate to potential contaminate mobilization? Nor was the computer model used to evaluate potential reservoir seepage should a cutoff wall keyed into basalt be placed through the sedimentary deposits at the proposed damsite.

1.7 The radius of influence of the hydrologic tests conducted is of little extent. The hydrogeologic testing program has yet to evaluate a "significant" portion of the proposed dam and reservoir sites. The 2005/2006 hydrologic testing program reportedly had a maximum radius of influence of 50 feet, basically a pinpoint on the proposed reservoir footprint.

2. General Comments

2.1 Hydrogeologic Testing Program
There would be a need to conduct a hydrogeologic investigation of the proposed Black Rock dam and reservoir sites for further consideration of the proposal. The hydraulic properties of the site sedimentary sequence, and the Saddle Mountains and Wanapum Basalts would require definition so the potential effects of reservoir seepage could be evaluated. The hydrogeologic characteristics of the proposed south and north dam abutments would need to be evaluated to study possible seepage and dam safety issues, A conceptual hydrologic testing program is discussed in Sections 3.1.12 and 4.

2.2 Hanford Contamination

The issues regarding the potential mobilization of contamination present within the subsurface at the Hanford site were apparently not addressed by the Bureau of Reclamation groundwater modeling study presented in document No. TS-YSS-19 or other Black Rock technical documents which were reviewed. The questions regarding the effects of potential reservoir seepage on the Hanford site were stated to be better addressed by the site specific Hanford groundwater model then the regional USGS groundwater model used to evaluate potential reservoir seepage. Groundwater modeling results were presented as a series of figures showing increases in hydraulic head radial to the proposed reservoir and within the boundaries of the Hanford site. No discussion was presented regarding the potential effects of the head increases upon the hydrogeology of the Hanford site. Is the water table within the unconfined aquifer present in the Hanford site sedimentary deposits, for example, predicted to reach ground surface at some point during the modeled time frame.

3. Specific Comments

3.1 Black Rock computer groundwater model, TS-YSS-19, Sept. 2007

3.1.1 It is stated several times in document TS-YSS-19 that limited aquifer testing has been accomplished at the Black Rock site. Increasing the amount of available hydrogeologic data might increase the presumed reliability of computer model outputs, and resulting estimates of reservoir seepage and other potential effects of Black Rock construction and operation.

3.1.2 It does not appear realistic to use a single hydraulic conductivity value for a computer model layer which hydrogeologic knowledge and testing show to be inhomogeneous and anisotropic. There appears to be something mathematically incorrect about taking an average value, transmissivity, for a stratigraphic interval where a hydrologic test was performed, and averaging this average value over the tested interval, to derive a value for hydraulic conductivity, which then becomes the specific value for the tested interval, then following completion of a sequence of hydrologic tests within the same stratigraphic unit have been completed the results are again averaged and a specific hydraulic conductivity value determined for inclusion in the computer model.

Additionally "long term" pumping tests show that aquifer transmissivity and storativity will change as pumping time increases as the pumping well's cone of influence enlarges to encompass a larger mass of aquifer material. Pumping tests have shown this to be a fact in both sedimentary valley fill and layered basalt aquifer systems. Transmissivity generally will decrease with increased pumping time as regions of lower hydraulic conductivity are encountered, while storativity will increase with increased pumping time as the rate of vertical groundwater leakage increases as groundwater level drawdowns within the pumped aquifer increase. Can the USGS regional groundwater model for the Columbia Plateau simulate these conditions?

Additionally, it is stated several times in document TS-YSS-19 that limited aquifer testing has been accomplished at the Black Rock site. This results in limited site-specific data to specify model conditions.

3.1.3 It appears that a steady state groundwater model was calibrated with transient data (p. 29). Irrigation season in the Yakima River Basin generally occurs from March through October, after which the wells are shut-in and groundwater level recovery begins. Additionally, the economics of pumping groundwater from the Columbia River Basalt aquifer system often forces the termination of pumping from wells that formerly had been used to provide irrigation water for crops of marginal value. Data from the Toppenish Basin show that groundwater level recovery occurs for decades following shut-in of wells completed in the Columbia River Basalt that are no longer used to supply irrigation water.

It is also a common practice regionally to complete irrigation wells in more then one unit within the Columbia River Basalt aquifer system. The Bureau of Reclamation should provide tables presenting the information provided on driller's well logs for the observation wells used in model calibration, including the depth of a well's annulus grout seal.

Additionally, the calibration procedure appears to have been accomplished by the random changing of vertical hydraulic conductivities between the Saddle Mountains and Wanapum Basalts (pp. 31-32). This suggests that the groundwater model is not based upon site specific hydrologic conditions, which casts doubt upon the reliability of the models predictive capabilities,.

3.1.4 What is the basis for the Bureau of Reclamation's assumption that modeled heads within 30 feet of measured groundwater levels is "in reasonably good agreement with observations (p. 32)"?

3.1.5 The open intervals, those depths not sealed with grout, should be noted for the observation wells used to calibrate the steady state base case model (Table 5-1, p. 33). Are the observation wells completed in both the Saddle Mountains and Wanapum Basalts or only completed in a single hydrogeologic unit?

3.1.6 Where does the Bureau of Reclamation presume the sediment will come from which will seal the reservoir bottom (p. 38)? What is the basis for using a vertical hydraulic conductivity of 3 x 10-6 cm/sec for the sediments at the reservoir site (p. 38)?

3.1.7 The computer groundwater model does not consider actual reservoir operating conditions if it does not account for the State of Washington not allowing diversions from the Columbia River to the Black Rock reservoir in July and August (p. 38).

3.1.8 What is the percent of water diverted from the Columbia River which discharge back to the river as a result of reservoir seepage?

3.1.9 What is the presumed physical reason responsible of the "peaks and valleys" on the hydrographs depicting increased aquifer storage (Figure 7-6, p.42) and total reservoir seepage (Figure 7-7, p. 43)?

3.1.10 It states at the beginning of Section 8.1.3 "total reservoir seepage is the sum of the increase in discharge to creeks, drains and springs, and the increase in aquifer storage (p. 52)". This implies that there is no flow of reservoir seepage through the Columbia River Basalt aquifer system which discharges into the Yakima and Columbia Rivers. This concept of no flow in the basalt aquifer system is difficult to comprehend. The Black Rock reservoir will create a recharge area upon the Saddle Mountains and Priest Rapids Basalts (see Bureau of Reclamation drawing 33-100-3473). Presumably some of this groundwater recharge will also move vertically via leakage into deeper parts of the Wanapum Basalt. Groundwater movement within the Columbia River Basalt aquifer system should be downward and radially from the Black Rock reservoir area, eventually reaching groundwater discharge areas located proximate to the Columbia and/or Yakima Rivers.

It is stated on page 77 that "the GHP model predicts little increase in groundwater flow beneath Cold Creek in the Saddle Mountains and Wanapum Basalts." This also appears unrealistic. Create a new recharge area for the Columbia River Basalt and the interflow zones have sufficient transmissivity to transmit large quantities of groundwater. The USGS, for example, conducted a water resources investigation of the Toppenish Basin in the early 1970s (1975, Water resources of the Toppenish Creek Basin, Water Resources Investigations 42-74). The USGS estimated that upland recharge to the Columbia River Basalt underlying the Toppenish Basin might be as much as 118,000 AF per year, with an estimated 94,000 AF per year discharging from the basalt to the overlying Ellensburg Formation as upward leakage proximate to the Yakima River in the southeastern part of the Toppenish Basin.

3.1.11 Who is the "Committee on Fracture Characterization and Fluid Flow?"

3.1.12 The additional hydrologic testing program that would be required for any further consideration of the Black Rock should be conducted in a conventional matter with one pumping well per individual test, and with observation wells constructed to monitor the groundwater level response in the pumped aquifer, and over and underlying stratigraphic units of interest. The pumping and observation wells should each be completed in only one stratigraphic unit. The pumping test locations should be located "distant" from irrigation and domestic wells which might be open to more then one stratigraphic unit. The pumping test should be conducted for a sufficient length of time to evaluate boundary conditions and groundwater leakage, which could require a week or longer of continous pumping. Packer tests can fail to provide accurate hydrologic data if groundwater leakage occurs around the packer due to poor seal and/or fracture patterns. A possible pumping test design is discussed in Section 4.1 below.

3.1,13 specific storage
We could not locate the storage values used in the Black Rock computer model.
Will groundwater within the Pomona Basalt continue to be under confined conditions once the Black Rock reservoir is filled or will the Pomona Basalt become a part of the overlying unconfined aquifer system?

3.1.14 There was no computer modeling conducted to evaluate potential reservoir seepage should a cutoff wall keyed into the Columbia River Basalt be placed through the sedimentary valley fill. at the proposed dam site.

3.1.15 Interbedded sediments can be in contact with and recharge basalt interflow zones at the distral ends of flows or where erosion has interrupted the continuity of flows. The statement implies a need for geologic mapping of the area to be covered by the reservoir.

3.1.16 Which faults in the model domain are proven hydraulic barriers, and which faults might be transmissive, and may commingle shallow and deep groundwater, and springs?

3.1.17 Is the Vantage Sandstone hydrologically part of the Frenchman Springs aquifer system or the Grande Ronde aquifer system.

3.2 Dr. Frank Spane, 2007, Results of the borehole hydrologic testing program, southern abutment

3.2.1 We do not consider the 2007 hydrologic testing program to be a "detailed hydrogeologic characterization (p. 3)." The 2006/2006 hydrologic tests reportedly had a maximum radius of influence of 50 feet (p.7).

3.2.2 The unsaturated zone test of Horsethief Mountain thrust fault breccia "is similar to that expected for basalt flowtops/interflow zones and only slightly higher then the geometric mean (p.6)" for other unsaturated zone tests conducted at wells DH-05-01 and DH-06-01. The unsaturated zone test of the fault zone breccia is 70% greater then the mean value reported for the Saddle Mountains Basalt at the Hanford site and 60% greater then that calculated from unsaturated zone tests of basalt at wells DH-05-01 and DH-06-01.

Hanford site data to being used to evaluate the hydrogeology characteristics of the Black Rock region should be presented in tabular form so it can be reviewed by interested persons.

3.2.3 Is it physically realistic to compare hydraulic conductivities calculated from data collected during unsaturated zone tests, where water is added to the tested interval creating an unnatural condition, to hydraulic conductivities calculated from data collected from tests conducted in the naturally saturated portion of a borehole? How much of the unsaturated zone becomes saturated when hydrologic tests are conducted in the unsaturated zone.

3.2.4 The hydraulic conductivity for the fault zone breccia within well DH-06-01 is 40% lower then that calculated for the fault zone breccia within well DH-05-01, suggesting that using foam as a drilling fluid additive might have created a well skin effecting the hydraulic communication between well DH-06-01 and the fault zone breccia.

We suggest that if the Bureau of Reclamation is going to construct wells within the Columbia River Basalt the Bureau buy or contract for equipment capable of drilling basalt without the need to use drilling water additives.

3.2.5 Figures 2.2, 2.3 and 2.4
Dr. John W. Harshbarger, Professor Emeritus University of Arizona Department of Geology (personal communication) has recommended againstusing sand/gravel pack wells completed in basaltic aquifers for testing purposes because the sand/gravel might decrease the transmissivity of the fracture zones transmitting groundwater to a well.

3.2.6 It might be useful to also refer to the transmissivity of a tested interval. Geologic units of low hydraulic conductivity can potentially transmit large quantities of groundwater if sufficiently thick. The need for dewatering activities, for instance, at open pit copper mines.

3.2.7 p.7 "Because of the relative short duration of the tests and unconfined aquifer characteristics the radius of investigation for boundary detection was less then or equal to 50 ft."

3.2.8 p.6 The saturated zone tests at wells DH-05-01 and DH-06-01 was hampered by completion of well DH-05-01 in both the unconfined fault zone breccia and the confined Pomona Basalt, incomplete isolation of test intervals, and the short duration of testing.

3.2.9 p.6 The hydraulic conductivity of the Horsethief Mountain thrust fault zone breccia, 1 x 10-4 to 4 x 10-4 cm/sec, may decrease with increasing depth within the fault breccia.

The hydraulic conductivity of the Pomona Basalt at wells DH-05-01 and DH-06-01, 1 x 10-4 to 0.019 cm/sec, is perhaps greater then the fault zone breccia due to ancillary fracturing due to the overlying Horsethief Mountain thrust fault.

3.2.10 p. 7 Testing of confined groundwater within the Pomona Basalt at wells DH-05-01 and DH-06-01 indicated leakage, which was likely not natural but related to the completion of well DH-05-01.

3.3 Appraisal assessment of geology at damsite, TS-YSS-5, Dec 2004
3.3.1 There was little return of drilling fluid during 2004 drilling activities.

3.3.2 The document mentions the alternative Black Rock damsite would require 10,000,000 cubic yards more embankment material then at the original damsite. We could find no information regarding how much embankment material will be required at the original damsite.

3.3.3 Three landslides are present on Horsethief Mountain ridge.

3.3.4 The basalt foundation at the alternate damsite is fractured, broken and of low rock quality.

3.4 Draft planning report/environmental impact statement, January 2008

3.4.4 Computer groundwater modeling indicates reservoir seepage will increase groundwater flow into the Hanford Reservation.

3.4.5 The National Economic Development Alternative which evaluates economic benefits indicates none of the alternatives studied meet the economic requirements for development.

3.5 Dr. Frank Spane, 2004, Results of FY2004 borehole testing
3.5.1 p. 6 Groundwater within the Selah and Mabton interbeds at wells DH-04-01 and DH-094-02 should be considered to comprise a single groundwater flow system.

3.5.2 p. 68 The flow interior of the Pomona Basalt may or may not form a barrier to vertical groundwater movement in the vicinity of wells DH-04-01 and DH-04-02.

3.5.3. p. 68 Groundwater samples collected from the Selah and Mabton interbed at well DH-04-02 indicate similar chemistry.

3.6 The Washington Atlas and Gazetteer (DeLorme, 2001) depicts "flowing wells" near the junction of State Highways 24/240. We have found no discussion in the technical documents reviewed regarding the stratigraphic unit these wells are completed in or their yield.

3.7 Does the Bureau of Reclamation intend to leave the Ringold Formation and associated sediments intact at the proposed Black Rock damsite if the dam is constructed?

4. Future Studies

4.1 Pumping Tests

4.1.1 There would be a need to conduct "long term" pumping tests to determine hydrogeologic characteristics of the Ringold Formation and associated sediments, the Saddle Mountains and Wanapum Basalts, and the Horsethief trust fault and underlying "confined" aquifer in the Pomona Basalt. The pumping test should emphasize the evaluation of aquifer transmissivity, storativity, vertical leakage and boundary conditions. Pumping tests of at least 7 days, 10,000 minutes, in length should initially be planned. The pumping tests should be designed, conducted and evaluated in a manner consistent with methods discussed in Walton (1962, Selected Analytical Methods for Well and Aquifer Evaluation), Lohman (1972, Groundwater Hydraulics, USGS Professional Paper 708), and Kruseman and deRidder (1990, Analysis and Evaluation of Pumping Test Data).

4.1.2 Dr. Frank Spane, 2007, p. 83, #6

"Subsequent test site characterizations should include efforts to characterize the hydraulic conductivity and sealing characteristics of any low permeability unit that may significantly impact vertical groundwater flow."

4.1.3 Dr. Frank Spane, 2004, p.2
"To assess the hydrologic impact of the potential Black Rock Reservoir on local and surrounding areas, detailed hydrogeologic characterization of geologic units underlying the proposed site is required."
"Of particular importance is the potential leakage of surface water stored within the reservoir, which may alter existing groundwater systems and adversely impact adjacent surface and groundwater basin hydrologic conditions, the Hanford Site."

4.2 Hanford Studies
A rigorous evaluation of the possible consequences of reservoir seepage upon contaminants present within the subsurface at the Hanford site would be required for any further consideration of the Black Rock alternative.

4.3 Bureau of Reclamation
It is stated in document TS-YSS-19 that "additional geologic drilling and aquifer testing in the area of the right dam abutment and the Dry Creek drainage are considered essential for building confidence in a single conceptual model, and a prerequisite for more rigorous quantification in the Black Rock model results (p. 55)."

4.4 Columbia Geotechnical Associates, 2004, pp. 40-41
4.4.1 Additional geologic mapping should be undertaken to increase the understanding of the stratigraphy and structural geology of the area near the proposed damsite as part of any further consideration of the site.

4.4.2 The geometry of the north slope of the Horsethief Mountain anticline and the Horsethief Mountain thrust fault would need to be defined because of their landslide potential. Dams have been overtopped by stored water displaced by landslides.

4.4.3 Geologic mapping of the proposed damsite north abutment would be required.

4.4.4 The stratigraphic relationship of the Pomona Basalt flow on the floor of Black Rock Valley requires definition.

4.4.4 The extent of the Elephant Mountain Basalt is not known.

4.4.5 The distribution, thickness and character of the valley floor gravels requires definition.

4.4.6 The stratigraphy of the Columbia River Basalt aquifer system in the vicinity of the Black Rock dam and reservoir sites is not entirely clear.

4.4.7 Additional study would be needed to locate and define area geologic structures.

General Comments on EIS

Xv The 82 kaf M&I goal seems high. It may neglect the fact that most urban development is occurring in currently irrigated areas, which greatly reduces or reverses net water needs.

Xvi remove "natural", replace with unregulated

Xvii Change wording: ~~Demand for water~~ Existing water rights from the Yakima River cannot always be met in years with below-average runoff.

Xxiii ***Municipal Supply Provided:*** It is not clear how the calculation is done to show that Muni supply would get 68,000 acre feet of new water from Wymer in a 1994 type year while proratable irrigation would only receive an additional 2% under their 1905 rights.

Xxv Unclear what is meant by "change the allocation of conserved water"

Xxv It may not be true that Market Based Reallocation between districts "would not require
any construction". It is likely that structural modifications would be required to facilitate out of district transfers while continuing to meet in-district need for those not transferring water (given that older delivery systems tend not to operate well at reduced flow levels).

Xxv Edit Groundwater Storage Alternative. Delete "large" before infiltration basins unless they have been sized. Last Sentence should say "this alternative would require construction of some combination of facilities, possibly including (your list) depending on design."

Xxxi Wymer: Is this saying that doubling winter flows causes less than 10% habitat increase in the Cle Elum River?

Xxxii The lack of effectiveness stated for some alternatives suggests the need for an integraged package. For example, where increasing flows would fail to improve access to side channels, an accompanying program of habitat improvement should be planned and evaluated.

We believe the Groundwater Storage Alternative has underestimated the volumes of water that could be stored for beneficial instream and out of stream uses. We will continue to evaluate that alternative further in the context of the Storage Study beyond the EIS process.

Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855

March 31, 2008

Derek I. Sandison, Regional Director
SEPA Responsible Official
Washington State Department of Ecology
Central Regional Office
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Email: DSAN461@ECY.WA.GOV

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Upper Columbia Area Office
1917 Marsh Road
Yakima, Washington 98901-2058
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Re: Joint Yakama Nation, Roza Irrigation District comments on Yakima Basin Storage Study

Dear Sirs,

The Yakama Nation and Roza Irrigation District appreciate the opportunity to submit this joint letter on the Yakima Basin Storage Study EIS. The Nation and Roza hold two of the largest proratable irrigation rights in the Yakima Basin. The Yakama Nation, in addition, holds Time Immemorial Treaty Rights for water to maintain the fishery that has supported the economy, diet and culture of the Yakama People for thousands of years. We both feel that the only solution to the problems in the Yakima basin is one that benefits all resources collectively, Indian, non-Indian, instream and out. Achieving these goals will require using all the available tools, including restoration of fish passage, additional storage, further conservation, water markets, habitat restoration and others. It now seems clear that an overly restrictive congressional authorization for the storage study has precluded assembling an appropriate package of measures. It is quite clear that storage alone can not solve the range of problems facing the resources. We believe the

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Storage Study, for reasons we understand, has failed develop and evaluate the kind of package necessary to solve the water resource problems in the basin. It is our hope that this letter will point the direction toward what we consider to be the elements of a consensus solution to the problems facing the fishery and agricultural resources of the Yakima River basin.

The Yakama Nation will provide detailed comments on the content of the EIS and associated technical reports in a separate letter. This letter does not constitute a legal position or admission by either the Yakama Nation or the Roza Irrigation District nor waive, limit or concede any argument otherwise available to either.

Given that any mutually acceptable solution to the resource problems of the basin will require a package of measures, it is impractical to analyze the potential benefits of storage alone, as has been done in the Storage Study. Effective fish utilization of any improved flow regime depends on a concomitant enhancement of habitat access and quality in the mainstem and tributaries. Failure to consider all components of the package together artificially inflates the relative value of some storage alternatives while underestimating the value of flow enhancement in general. For example, flow improvements in key mainstem reaches considered in tandem with reintroduction of anadromous fish above the reservoirs and in tributaries along with restoration of mainstem floodplain side channels would likely yield much greater benefits than flow improvements alone. Further analysis should be done of the cumulative benefits of upper mainstem, Naches arm, and tributary instream flow modifications resulting from storage , conservation, and acquisition alternatives in tandem with restoration of passage at the Yakima Project reservoirs, restoration of flow and passage in the tributaries, and reconnection of the river and its floodplains.

We believe as a matter of both principal and practical considerations that the least cost long-term solutions should be identified and evaluated. In addition to considering such low-cost alternatives as water marketing, highest benefit per cost storage options need to be exhaustively identified. Whatever storage component may be eventually selected as part of a package, it is important that it be as economical to build and operate as possible, lest the storage component compete unnecessarily for funding with ongoing successful salmon recovery and enhancement projects and place an unnecessary burden on agriculture. The 70% criteria for proratable supply may be a useful planning goal, but is not appropriately used on the storage study to eliminate more modest proposals.

We believe that the storage study has inadvisably removed from consideration options for storing Yakima River flows, particularly in the Naches Arm. Gravity storage and release will always be less expensive both in capital and operating costs than pump storage. Likewise, for pump storage, lower pumping heads equate to lower initial and ongoing costs. We suggest a thorough analysis of both water budget and potential storage sites for Naches arm water.

We suggest the equivalent water budget analysis be performed for the Naches arm as has been done for the mainstem in the Wymer and Black Rock analysis. It appears that the

Bumping alternative was thrown out based on a simplistic and inappropriate consideration of "normative" flows, while other alternatives received a rigorous study relating flow with habitat, temperature and other parameters. The Bumping review seems to have assumed that any deviation from current measured flow in unregulated reaches would be non-normative. One problem is a variety of inconsistent and imprecise definitions of the term normative. The manner in which the normative flow concept was applied did not lend itself to evaluating small changes in operations, water transfers, timing of changes in flow, or smaller storage options. Normative and natural are not synonymous. Normative is a concept encompassing functions performed by the hydrograph and is determined by the sort of study being done on the other storage study alternatives. Reducing peak flows and increasing summer flows may or may not be less normative. Study is required to make that determination.

Also, it can not be assumed that the existing observed flows in the unregulated reaches of the Naches arm are either natural or normative. Land use practices such as logging and road building, which are extensive in parts of the Naches arm, tend to increase peak flows and decrease summer flows. Climate change is predicted to further shift the hydrograph toward earlier higher peaks and lower summer flows. Flows in the Naches below the confluence with the Tieton are already artificially low, except during flip flop, due to the influence of Rimrock. Summer restoration of higher flows in the lower Naches would be beneficial, which was the justification for the acquisition of Wapatox, which was a partial fix for the problem.

For the above reasons, we believe the analysis of Bumping, and by extension any other storage opportunities on the Naches arm inappropriately eliminated consideration of options for storing water generated in the only large part of the basin where additional Yakima River water may potentially be stored for the benefit of both instream and out of stream resources.

One final and fatal flaw in the Bumping analysis was the assumption that all newly stored water would be subject to the same operational constraints as the existing storage. The Yakama Nation has not agreed with these existing operational constraints and has, additionally, long made it clear that an agreed upon portion of any newly stored water would have to be managed by the Yakama Nation as part of its Treaty Right for instream flow for fish and other aquatic life. The Bumping analysis assumed all water would be managed to maximize carry over and any fish benefits would be coincidental. Given that the Yakama Nation would not support new storage under such conditions, this analysis was not fruitful. Bumping was not properly analyzed as a facility for the combined purposes of carry over storage as insurance against dry years along with instream flow and reducing the impacts of flip flop. Wymer should have been evaluated in combination with Bumping or other storage of Naches arm water to provide relief from flip flop operations.

The M&I analysis did not provide clarity. The goal is not well defined and appears to ignore the fact that most urban development is occurring in existing irrigated areas, which

should greatly lessen future water needs. An adequate analysis of M&I alternatives was not performed.

In summary, the congressional emphasis on Black Rock seems to have required the Storage Study to be conducted in reverse. An analysis of the problems, needs, and issues, utilizing local expertise, should precede evaluating specific projects. Through its scoping comments, the Yakama Nation intended to provide the basis for this discussion of problems and needs. We incorporate those scoping comments by reference. However, scoping seems to have come too late in the process to have much influence on the direction of the study.

We recommend that Ecology and Reclamation work with Roza, the Yakama Nation, and others with interest and expertise in water and fisheries management to construct a package of measures to solve problems of flow, passage, and habitat in the Yakima basin. We are available to discuss this matter further at your convenience.

Sincerely,

Ralph Sampson Jr.

Ralph Sampson, Jr., Chairman
Yakama Tribal Council

Ric Valicoff

Ric Valicoff, Chairman
Roza Irrigation District Board of Directors

From: "Bob Birney" <bob@pnwsolutions.com>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Apr 6, 2008 2:00 AM
Subject: Black Rock Storage comments

Sirs,

The Black Rock storage facility is the only viable possibility I am aware of. Those who are fighting this proposal fall into two categories IMHO, those being the anti-progress crowd (in conjunction with the NIMBY crowd) and the environmentalist extremists who want man to abandon everything so we can set back and watch it from a distance.

No one opposing this facility have proposed viable options which will fulfill the needs of the area! They are simply against this viable proposal with minimal technical justification, ignoring the options to deal with their objections which have some validity.

Nothing of adequate scale has been done for decades to address the constantly growing water needs of the area, which affect the state and the region by adversely affecting food production, quality of living, etc. This proposed facility will aid the needs of the area for many years to come.

Please base your decision on the technical facts of the proposal and the needs of the Basin for water, NOT the anti-progress pitches of those who are fighting this proposal yet offer no options.

I support the proposed facility.

Robert Birney
1858 Kapalua Avenue
Richland, WA. 99352

From: "Julie Titone" <juti.one@gmail.com>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Apr 6, 2008 12:29 PM
Subject: Black Rock would be a black mark

I'm writing to protest the Black Rock Dam or other proposal to store water that could potentially spread radioactive contamination from the Hanford nuclear site. The risks of failure are simply too great. We can't build our way out of most water supply problems. Our state and federal governments should focus instead on water conservation and forest preservation.

Sincerely,

Julie Titone
Pullman, WA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

April 14, 2008

Reply to
Attn Of: ETPA - 088

Ref.: 06-081-BOR

David Kaumheimer, Environmental Programs Manager
Upper Columbia Area Office
Bureau of Reclamation
1917 Marsh Road, Yakima, WA 98901

Dear Mr. Kaumheimer:

The U.S. Environmental Protection Agency (EPA) has reviewed the Bureau of Reclamation (Reclamation) and Washington State Department of Ecology (Ecology) draft Environmental Impact Statement (DEIS) for the proposed **Yakima River Basin Water Storage Feasibility Study** (CEQ No. 20080035) in Washington State in accordance with our authorities under Section 102(2)(C) of the National Environmental Policy Act (NEPA),42 U.S.C. Section 4332(2)(C), and Section 309 of the Clean Air Act, 42 U.S.C. Section 7609.

The draft EIS analyzes the environmental impacts of proposed methods to create additional water storage for the Yakima River Basin for the benefit of anadromous fish, irrigated agriculture, and future municipal water supply. Alternatives include a No Action Alternative that would continue implementation of the existing Yakima River Basin Water Enhancement Program, and six other alternatives grouped in two categories: three Joint Alternatives proposed by Reclamation and Ecology and three State Alternatives proposed by Ecology. The Joint Alternatives are Black Rock (including a dam and reservoir), Wymer Dam and Reservoir, and Wymer Dam Plus Yakima River Pump Exchange. The State Alternatives are Enhanced Water Conservation, Market-Based Reallocation of Water Resources, and Groundwater Storage. A preferred alternative has not been identified. EPA commends Reclamation for considering a broad range of alternatives in this feasibility study and DEIS. While we support the goals of this project, we have concerns about potential environmental impacts associated with some of the alternatives. The following discussion summarizes our concerns regarding the alternatives. A detailed discussion of these concerns is included in the enclosed detailed comments. (Enclosure 1)

Black Rock Alternative

At this time, based on potential adverse impacts to the Columbia River and cleanup operations at the Hanford Nuclear Reservation (Hanford Site), EPA objects to the proposed Black Rock Alternative. Seepage from the Black Rock Reservoir would have the potential to affect the magnitude and direction of groundwater flow, causing more rapid migration of radiological and chemical contaminants under the Hanford Site toward the Columbia River. Modeling indicates that groundwater levels could rise as much as 60 feet at the boundary of the Hanford Site and that the groundwater flow could double or triple in this area. Groundwater gradients on the Hanford Site area are very low, especially in the central plateau area, and any changes in heads (hydraulic pressure) could entirely change groundwater flow directions and

gradients. The seepage could also raise water tables beneath the Hanford site, mobilizing contaminants currently in the soil. Such conditions could seriously impede the ongoing, technically-challenging clean-up operations at the Hanford Site. One of the primary objectives of the cleanup is to remove and control pollutants in the groundwater so they do not migrate to the Columbia River. Much of the remediation technology currently implemented or under development at the Hanford Site is designed for current groundwater conditions that affect components such as containment plume shapes, travel times, and peak concentrations.

Proposed mitigation measures for seepage from Black Rock Reservoir include blanketing, cutoff walls, grout curtains, drainage tunnels and wells. The measures are intended to control the direction of groundwater flow and remove and transport groundwater away from the Hanford site. However, these measures have not been well-quantified or tested by either models or case histories. For example, cutoff walls are rarely constructed to depths of 400 feet as proposed and, without more specific information about wall materials and design; it is not possible to judge feasibility or effectiveness.

EPA is also concerned about potential adverse effects on water quality and stability of structures associated with the Black Rock Reservoir due to landslides and earthquakes in the area. The DEIS indicates that Black Rock is located in an active seismic zone with relatively high earthquake potentials. Seepage from the reservoirs may infiltrate currently stable areas and increase pore pressures such that slopes could become unstable and slide, especially during earthquakes.

Wymer Dam and Reservoir

EPA's concerns with this alternative are the potential adverse effects on wetlands, riparian areas, water quality, and habitat. Up to 83 acres of wetlands and associated riparian areas would be disturbed and inundated. Water quality may be affected by increases in summer temperature and sediment loads, potentially impacting fish in both Lmuma Creek and the Yakima River. Like Black Rock, Wymer Dam is located in an active seismic zone with relatively high earthquake potentials, so landslides would also be a concern for this alternative. In addition, more than 1,000 acres of sensitive shrub-steppe habitat would be lost.

Wymer Dam Plus Yakima River Pump Exchange

EPA's concerns about the potential impacts of Wymer Dam also apply to this alternative. In addition, there are concerns about potential impacts to water quality resulting from construction of pipes and pumps. For example, required instream work may cause local, temporary increases in turbidity during installation and removal of coffer dams.

Because a preferred alternative has not been identified, we have rated each joint alternative separately as follows: LO (Lack of Objections) for No Action; EO-2 (Environmental Objections – Insufficient Information) for Black Rock; EC-2 (Environmental Concerns – Insufficient Information) for Wymer Dam and Reservoir; and EC-2 for Wymer Dam Plus Yakima River Pump Exchange. A summary of our comments will be published in the *Federal*

Register. For your reference, a copy of our rating system used in conducting our review is enclosed. (Enclosure 2)

State Alternatives

EPA believes the State Alternatives have the potential to achieve significant increases in water availability with minimal environmental impact. We encourage Reclamation to continue fruitful partnership with Ecology and others to further develop combined approaches to achieve water supply goals. In particular, we believe that the Enhanced Water Conservation Alternative and Market-Based Reallocation of Water Resources merit support and further examination. We would also encourage further examination of the Groundwater Storage Alternative with the caution that we would be concerned about the quality of water that would be used to recharge the aquifers and potential pollution of ground and surface waters.

If you have questions or would like to discuss our comments in detail, please feel free to contact Theo Mbabaliye at (206) 553-6322, or Christine Reichgott, NEPA Review Unit Manager at (206) 553-1601, or myself at (206) 553-8574.

Sincerely,

/s/
Richard B. Parkin, Acting Director
Office of Ecosystems, Tribal and Public Affairs

Enclosure
cc: Yakama Nation
Washington State Department of Ecology
Department of Energy at Hanford

Enclosure 1

EPA Detailed Comments on Yakima River Basin
Water Storage Feasibility Study Draft EIS

Groundwater impacts

Under the Black Rock Alternative, a reservoir would be constructed which would be capable of storing 1.3 million acre-feet of water in a basin 10 miles long and 1 mile wide. Associated facilities would include a core rockfill dam (structural height, 755 ft.), over 20 miles of tunnels through ridges, steel pipelines, pumping plant, and an outlet facility/powerhouse. The alternative would also involve construction of a 10-mile access road and relocation of 12 miles of SR-24, two transmission lines, and a buried fiber optic line. Water from the Columbia River would be used to fill the reservoir.

The Black Rock site is an area of basaltic rock, which underlies most of the Yakima River basin. Basalts hold water in the cracks of underground basalt rock and in thin sedimentary layers interbedded with the basalt. The interbeds serve as aquifers and in some areas may be characterized by high hydraulic conductivity.

The draft EIS indicates that a full Black Rock Reservoir would raise the hydraulic head directly beneath the reservoir, resulting in seepage that would affect the magnitude and direction of groundwater flow and rate of contaminant movement under the Hanford Nuclear Reservation (Hanford Site). Plutonium was produced at the Hanford Site from 1943 until the late 1980's and a large amount of radioactive and chemical waste from that process has leaked from tanks and trenches into the ground. The site is a major cleanup operation under the Resource Conservation and Recovery Act and Comprehensive Environmental Response Compensation and Liability Act. Although progress has been made in removing waste from some of the tanks, groundwater contamination is a major concern and focus of cleanup efforts, as many tanks are still leaking or in danger of leaking. Contaminants in soils could be mobilized if they come into contact with water. Seepage from Black Rock Reservoir has the potential to raise water tables beneath the Hanford Site, thus mobilizing contaminants currently in the soil. EPA is concerned that seepage from the Black Rock Reservoir could accelerate the migration of chemical and radiological contaminants from the soil at the Hanford site towards the Columbia River. Modeling estimates that as a result of seepage from Black Rock, groundwater flow at the western edge of the Hanford Site could increase 15,000 - 22,000 acre-feet per year above the current condition. Such conditions could seriously impede cleanup efforts. Much of the remediation technology currently implemented or under development at the Hanford Site is designed for current groundwater conditions that affect components such as containment plume shapes, travel times, and peak concentrations. Significant changes in groundwater hydrology could render current cleanup technology ineffective and create a situation in which more rapid cleanup would be necessary.

Although the draft EIS includes proposed mitigation measures for seepage from the Black Rock Reservoir, we are concerned that the measures have not yet been well-quantified or tested through either models or case histories. For example, cutoff walls are rarely constructed to depths of 400 feet as proposed.

Recommendations:

- *EPA recommends further analysis of potential seepage from the Black Rock Reservoir and resultant impacts on groundwater hydrology and cleanup operations at the Hanford Site. We also recommend that Reclamation and Ecology coordinate with the Department of Energy as impacts and mitigation measures are more fully analyzed. We would be happy to meet with Reclamation and other appropriate parties during the period of analysis or shortly thereafter to discuss issues in more detail if desired. The final EIS should include the results of DOE's analyses. The final EIS also should include more specific information about feasibility and effectiveness of the proposed mitigation measures to reduce contaminant mobilization. If further analysis indicates that high risks remain, we recommend that this alternative not be selected.*

Surface Water Impacts and Wetlands

The draft EIS identifies impaired waters in the Project area and provides information about applicable Total Maximum Daily Loads (TMDLs). The Columbia and Yakima Rivers are both on the State of Washington's most current 303(d) list of impaired water bodies for a variety of water quality parameters, including temperature, dissolved oxygen (DO), turbidity, nutrients, total suspended solids (TSS), and toxins such as pesticides and contaminants from the Hanford Site.

As described above, Columbia River could be impacted by seepage from the Black Rock Reservoir, increasing the loading of radioactive and chemical pollutants to the river.

Under the Wymer Dam and Reservoir alternative, there is a possibility that during dry years, releases of surface waters from the reservoir could result in warmer water temperatures in Yakima River, especially in August and September, and that releases of bottom waters may adversely affect dissolved oxygen (DO) and nutrient levels. The reservoir would inundate eighty-three acres of palustrine wetlands, resulting in permanent loss of habitat.

Recommendations:

- *We recommend that the final EIS include information regarding the status of the Clean Water Act Section 401 certification process and conditions, and more specifics about the Water Quality Monitoring Plan to address water quality problems.*
- *Project impacts to wetlands and riparian areas should be described in quantitative and functional terms and proposed mitigation should be discussed in similar terms. The final EIS should also include maps identifying the proposed locations of roads and staging areas, indicating whether or not they will intersect aquatic resources.*

Seismicity

Because the Yakima River basin lies within the Yakima Fold Belt that has experienced tectonic folding and faulting in the past, the potential for landslides and slope movement at both

the Black Rock and Wymer sites exists. Slopes can be inherently unstable due to weak underlying materials, or due to oversteepening or loading of existing stable slopes. Seepage from the reservoirs may infiltrate both stable and unstable areas. The resultant increased pore pressures could reactivate landslides or initiate new ones along the reservoir rim and abutments. According to the draft EIS, the combination of steeply dipping orientation and layering of low-strength sediments and the presence of the Horsethief Mountain Thrust Fault along the southern edge of the Black Rock Reservoir valley present the potential for particularly hazardous situation. Slope stability would also be an issue for the re-alignment of SR-24 along the south rim of the reservoir. A full Wymer Reservoir would also result in groundwater seepage, which is expected to involve substantial volumes and high hydraulic conductivity, all of which could cause a rise of pore pressures and instability of low strength materials in the reservoir basin. Similar to Black Rock, seepage from Wymer has the potential to infiltrate currently stable areas and may increase pore pressures such that slopes could become unstable and slide, particularly during earthquakes.

Recommendations:

- *The final EIS should include results of a seismic analysis for the Black Rock Valley, information about how seismicity was evaluated, and how it will be monitored and managed to minimize seismic impacts. A seismic map should either be referenced or included in the final EIS along with information about appropriate seismic design and construction standards and practices that would be used to reduce seismic risks.*
- *The final EIS should identify and map areas that are susceptible to landslides and slope movement in the Black Rock and Wymer project areas along with assessment of slope stability, and determination of factors of safety and appropriate mitigation measures.*

Vegetation and Wildlife Impacts

Each of the proposed Joint Alternatives would result in adverse impacts to shrub-steppe habitat, which has low resilience to further environmental disturbance. Under the Black Rock Alternative, an area of nearly 13.5 square miles would be inundated and over 3,500 acres of the shrub-steppe habitat would be lost. These direct impacts would result from construction and use of the dam, reservoir, access roads, SR 24 realignment, and recreational developments. Under the Wymer Dam and Reservoir Alternative, over 1,000 acres of shrub-steppe habitat would be disturbed and potentially lost.

Loss of the shrub-steppe vegetation would also affect wildlife habitat, especially for Greater sage-grouse, which is a State-threatened species and candidate for listing under the Endangered Species Act (ESA). Another species that would be affected is the Ferruginous Hawk, which is listed as State-threatened and as an ESA species of concern. Wildlife would also be affected due to increased noise and traffic during construction and maintenance of the dam and the reservoir. Access roads, pipelines, and utility corridors would serve as obstacles to animals migrating through the area such as deer or elk. Cleared corridors and roads deter terrestrial animals from crossing due to lack of cover, reduced forage and browsing

opportunities, changes in wildlife migrations patterns, and occasional human activity in these areas.
Recommendation:

- *The final EIS should discuss in greater detail the effect of corridors created as a result of construction of the dams, reservoirs, and pipelines on habitat fragmentation and the creation of edge effects favoring some species, including mitigation measures.*

Tribal consultations

Information in the draft EIS indicates that resources within the Yakima River Basin are associated with the Confederated Tribes and Bands of the Yakama Nation. It is possible that the proposed action would have impacts on this Tribe's resources, especially water resources, fisheries, and agriculture.

Recommendation:

- *We recommend that the final EIS include a discussion on issues raised by the Tribe during consultations with Reclamation and Ecology and how the issues were addressed, especially impacts to water resources – quantity and quality. Please note that the Yakama Nation has plans to develop its own water quality standards that may be particularly relevant when analyzing water quality impacts within the Yakama Reservation.*

Increased Potential Development

The draft EIS appropriately discusses the amount of available water and forecasts future needs. Because of increased water availability, the proposed project may affect the rate and pattern of growth. The indirect impacts of growth should be examined with respect to protection of water resources, such as conserving water and maximizing the ability to implement effective well head protection.

Recommendation:

- *The final EIS should further analyze potential indirect impacts of growth as a result of the project. If development is likely, we encourage consideration of Low Impact Development (LID) techniques because of their potential to reduce the volume of stormwater and mimic natural conditions as closely as possible. As an example, LID techniques would lessen the impacts of stormwater runoff from impervious surfaces such as paved parking lots, roads and roofs.*

Enclosure 2

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

From: <Aljohay@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: 4/14/2008 7:54:08 PM
Subject: conservation

Mr. David Kaumheimer,
I have farmed in BK 15 for 50 years,now retired. I feel well informed in subject such as water loss . I know I have lost an argument in the Federal Court . I believe that water loss is man made. Now one knows the out come until the damage is done, often times.

I believe that Rick Leaumont ,understand the out come of the Black Rock dam. I support his position.
Alton Haymaker

aljohay@ aol.com