RECLAMATION

Managing Water in the West

Final Planning Report/Environmental Impact Statement

Volume 2 – Comments and Responses

Yakima River Basin
Water Storage Feasibility Study

Yakima Project
Washington

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Upper Columbia Area Office
Yakima, Washington

December 2008

Mission Statements

The Mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Final Planning Report/Environmental Impact Statement
Volume 2 – Comments and Responses

Yakima River Basin
Water Storage Feasibility Study

Yakima Project
Washington

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Upper Columbia Area Office
Yakima, Washington

December 2008

Acronyms and Abbreviations

2-D	two-dimensional
Acquavella	*State of Washington Department of Ecology v. James J. Acquavella et al.*
AHA	All H: Habitat, Hatcheries, Harvest, and the Hydroelectric Analyzer
ALE Reserve	Arid Lands Ecology Reserve
BCA	benefit-cost analysis
BIOP	Biological Opinion
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
CAR	Fish and Wildlife Coordination Act Report
cfs	cubic feet per second
CRBWMP	Columbia River Basin Water Management Program
CRP	Conservation Reserve Program
DOE	U.S. Department of Energy
DPS	distinct population segment
Draft PR/EIS	Draft Planning Report/Environmental Impact Statement, Yakima River Basin Water Storage Feasibility Study
DSS	decision support system
Ecology	Washington State Department of Ecology
El.	Elevation
EDT	Ecosystem Diagnostics and Treatment
EIS	environmental impact statement
EO	Executive Order
EQ	Environmental Quality
ES	Executive Summary
ESA	Endangered Species Act of 1973, as amended
ET	Pan Evaporation
FAR	Fourth Assessment Report
FCRPS	Federal Columbia River Power System
FERC	Federal Energy Regulatory Commission
Final PR/EIS	Final Planning Report/Environmental Impact Statement, Yakima River Basin Water Storage Feasibility Study
FLIR	forward-looking infrared
g	acceleration of gravity
GHG	green house gases
Hanford Site	Hanford Nuclear Reservation
HEP	Habitat Evaluation Procedures
ITA	Indian trust asset
Kh	hydraulic conductivity

KID	Kennewick Irrigation District
KRD	Kittitas Reclamation District
kV	kilovolt
kWh	kilowatthours
LiDAR	Light Detection And Ranging
M&I	Municipal and Industrial
maf	million acre-feet
MOA	Memorandum of Agreement
MP	mile post
MPI	Max Planck Institute
NED	National Economic Development
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act, as amended
NMFS	National Marine Fisheries Service
NRC	National Research Council
NSF	National Science Foundation
OHV	off-highway vehicle
OMR&E	operations, maintenance, replacement, and energy
OSE	Other Social Effects
P&Gs	*Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*
PHA	Peak Horizontal Acceleration
PMOA	Programmatic Memorandum of Agreement
PSHA	Probabilistic Seismic Hazard Assessment
QAPP	Quality Assurance Project Plan
Reclamation	Bureau of Reclamation
RED	Regional Economic Development
Richter	Richter scale
RID	Roza Irrigation District
RIS	reservoir-induced seismiscity
RiverWare	Yakima Project RiverWare
RM	river mile
ROD	Record of Decision
SEPA	State Environmental Policy Act
Service	U.S. Fish and Wildlife Service
SNTEMP	Stream Network TEMPerature
SOAC	System Operation Advisory Committee
SONAR	Sound Navigation Ranging
Storage Study	Yakima River Basin Water Storage Feasibility Study
SVID	Sunnyside Valley Irrigation District
T&E	Threatened and Endangered
TWG	Technical Work Group

TWSA	total water supply available
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
W2	CE-QUAL-W2, water quality and hydraulic model
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation
WIP	Wapato Irrigation Project
WROS	Water Recreation Opportunity Spectrum
YRBWEP	Yakima River Basin Water Enhancement Program
YRCAA	Yakima Regional Clean Air Authority
YSFWRB	Yakima Subbasin Fish and Wildlife Recovery Board
YTC	U.S. Department of the Army, Yakima Training Center

Comments and Responses

The Draft Planning Report/Environmental Impact Statement (Draft PR/EIS) for the Yakima River Basin Water Storage Feasibility Study (Storage Study) was filed with the Environmental Protection Agency (EPA) and the *Washington State Environmental Policy Act Register* on January 29, 2008. A Notice of Availability and Public Hearings appeared in the *Federal Register* February 1, 2008. The Bureau of Reclamation sent a news release announcing availability of the Draft PR/EIS and dates, times, and locations of the public hearings to area media, and the Washington State Department of Ecology published a Notice of Availability in area newspapers. The comment period extended until March 31, 2008.

Approximately 750 copies of the Draft PR/EIS were distributed to Federal, State, and local agencies; Native American Tribes; irrigation districts; interested members of organizations and entities; and the general public. The Draft PR/EIS and supporting technical reports were also available online at Federal and State Web sites.

A total of 163 unique letters and 183 form letters were received during the public comment period. From these letters, a total of 792 individual comments were identified and addressed.

On Wednesday, February 27, 2008, an open house and formal public hearing were held in the afternoon and a second open house and public hearing were held in the evening in Yakima, Washington. On Thursday, February 28, 2008, an open house and formal public hearing were held in the afternoon and a second open house and formal hearing were held in the evening in Kennewick, Washington. In Yakima, 31 speakers gave formal oral testimony at the afternoon hearing, and 15 gave testimony at the evening hearing. In Kennewick, 17 speakers gave formal oral testimony at the afternoon hearing, and 17 speakers gave testimony at the evening hearing. A total of 17 entities provided written public hearing comments. The public hearing record is available for review at Reclamation's Upper Columbia Area Office in Yakima, Washington, and in the Pacific Northwest Regional Office in Boise, Idaho. The public hearing record is also posted on the Storage Study Web site, http://www.usbr.gov/pn/programs/storage_study/index.html.

The comment letters and a summary of the public hearing testimony are reproduced in this volume. Responses to the individual comments follow the comment documents. There are many citations of documents and publications within the responses; those references are included in Volume 1 of the Final PR/EIS.

Ecology and Reclamation served as joint lead agencies for the Draft PR/EIS. On the basis of comments received on the Draft PR/EIS, the State of Washington decided not to proceed further with a joint Final PR/EIS. Rather, Ecology is

serving as a cooperating agency for the Final PR/EIS. In addition, Ecology is continuing its State Environmental Policy Act (SEPA) process independent of the National Environmental Policy Act (NEPA) process to evaluate a broad range of solutions to water resource problems in the Yakima River basin. Ecology will respond in its Final EIS to the comments it received on the State Alternatives evaluated in the Draft PR/EIS.

A number of identical or similar comments appeared in many of the comment documents. Where the substance of a comment has already received a response, the reader is referred to a previous response.

The following table provides a list of those who commented on the Draft PR/EIS, the alphanumeric designation of the comment document, and the page number where the comment document and the response to the comment document appear.

Table 1—List of commenters and page numbers in this document where each comment document and response to that document begins. Designation code letters identify a category of commenters, while the code number identifies a particular group or individual within that category.

Commenter	Designation	Page No.	
		Comment	Response
Indian Tribes			
Confederated Tribes and Bands of the Yakama Nation: comments on Cultural Resources; comments on Black Rock Alternative Hydrogeologic Technical Documents; General comments	TRB-0001	15	397
Confederated Tribes and Bands of the Yakama Nation: Joint Yakama Nation/Roza Irrigation District comments	TRB-0002	31	03
Confederated Tribes and Bands of the Yakama Nation: Yakama Nation Cultural Resources Program comments	TRB-0003	5	404
Federal Agencies			
Department of Energy, Hanford Site	FED-0001	41	405
Environmental Protection Agency, Region 10	FED-0002	44	405
Department of the Army, Installation Management Command, U.S. Army Garrison, Yakima Training Center	FED-0003	2	407
Department of the Army, Seattle District, Corps of Engineers	FED-0004	6	409
Pacific Northwest National Laboratory	FED-0005	58	411
Department of the Interior, Bureau of Land Management	FED-0006	60	411
Department of the Interior, U.S. Fish and Wildlife Service	FED-0007	66	414
State of Washington			
Department of Fish and Wildlife	WAS-0001	69	414

Table 1—List of commenters and page numbers in this document where each comment document and response to that document begins. Designation code letters identify a category of commenters, while the code number identifies a particular group or individual within that category.

Commenter	Designation	Page No.	
		Comment	Response
Department of Archaeology and Historic Preservation	WAS-0002	87	424
Department of Natural Resources	WAS-0003	88	425
Department of Transportation	WAS-0004	90	425
Local Agencies			
Yakima County Auditor	LOC-0001	92	425
Yakima County Commissioners	LOC-0002	93	425
Yakima Regional Clean Air Authority	LOC-0003	101	427
Board of County Commissioners, Benton County	LOC-0004	102	427
Organizations			
Yakima Basin Fish and Wildlife Recovery Board	ORG-0001	107	429
Hop Growers of Washington Washington State Dairy Federation	ORG-0002	110	430
Admiralty Audubon Society	ORG-0003	113	430
Riparian Owners of Ferry County	ORG-0004	114	431
Western Watersheds Project	ORG-0005	115	431
American Rivers, Northwest Regional Office	ORG-0006	116	431
The Center for Environmental Law and Policy	ORG-0007	124	433
Yakima Basin Storage Alliance	ORG-0008	145	444
Lower Columbia Basin Audubon Society	ORG-0009	157	449
Vancouver Audubon Society	ORG-0010	168	454
Columbia Riverkeeper	ORG-0011	170	454
Washington State Council of the Federation of Fly Fishers	ORG-0012	171	54
Yakima Basin Water Resources Agency	ORG-0013	172	454
Kittitas Audubon Society	ORG-0014	173	454
Individuals			
Forbes Mercy	IND-0001	174	455
Carol Coker	IND-0002	176	455
John A. Estep	IND-0003	177	455
Lois Stansel	IND-0004	178	455
Gary Travis	IND-0005	179	455

Table 1—List of commenters and page numbers in this document where each comment document and response to that document begins. Designation code letters identify a category of commenters, while the code number identifies a particular group or individual within that category.

Commenter	Designation	Page No.	
		Comment	Response
Mike Harves	IND-0006	180	455
Ron Moore	IND-0007	181	455
Darlene Dahlin	IND-0008	184	455
Bob Whitney	IND-0009	186	455
Scott P. Holman	IND-0010	188	455
Joseph Lowatchie	IND-0011	189	455
Jim Dwinell	IND-0012	190	455
Diane Smestad	IND-0013	191	455
Tom Utterback	IND-0014	192	455
Oly Olsen	IND-0015	193	456
Stephen Bohnemeyer	IND-0016	194	456
Don and Carolyn Clark	IND-0017	195	456
Jena F. Gilman	IND-0018	197	456
Deidre Link	IND-0019	198	456
Pat Reynolds	IND-0020	199	456
Wayne Ude	IND-0021	200	456
Richard Artley	IND-0022	201	456
Lorna Emerich	IND-0023	202	456
Alexandra Amonette	IND-0024	203	456
Michael J. Luzzo	IND-0025	204	456
Kenneth A. Hammond	IND-0026	206	456
Jack A. Stanford	IND-0027	214	457
Kenneth E. Lewis	IND-0028	217	458
Kurt Sharar	IND-0029	220	458
Julie Alaimo (one of 183 identical or nearly identical e-mails)*	IND-0030	227	9
Llyn Doremus	IND-0031	228	459
Bonnie Dunham	IND-0032	229	459

* See list at the end of this table for names of people who submitted identical or nearly identical letters.

Table 1—List of commenters and page numbers in this document where each comment document and response to that document begins. Designation code letters identify a category of commenters, while the code number identifies a particular group or individual within that category.

Commenter	Designation	Page No.	
		Comment	Response
Duane Faletti	IND-0033	231	460
Lila Shaw Girvin	IND-0034	233	460
George W. Girvin	IND-0035	234	460
Marilyn Hayes	IND-0036	235	460
Cecelia Hickel	IND-0037	236	460
Fred G. Higginbotham	IND-0038	239	460
Liz and Bob Lathrop	IND-0039	241	460
Anne and Jack Middleton	IND-0040	242	460
Arthur Miller	IND-0041	243	460
Elaine Packard	IND-0042	245	460
Peter Rimbos	IND-0043	246	460
Richard J. Rivers	IND-0044	247	461
Mike Sebring	IND-0045	248	461
Fred Simonen	IND-0046	249	461
Christine Simonen	IND-0047	250	461
Cheryl Smith	IND-0048	251	461
Brian Stadelman	IND-0049	252	461
Ted Strong	IND-0050	253	461
F. Struck	IND-0051	258	461
Mr. and Mrs. Lynn A.Taylor	IND-0052	259	461
Ken Weeks	IND-0053	261	461
Dana Carl Ward	IND-0054	262	461
Joyce C. Gruenewald	IND-0055	264	462
Fredric L. Plachta	IND-0056	265	462
Nathan E. Ballou	IND-0057	267	463
Kenneth R. Bevis	IND-0058	268	463
Kip Dieringer	IND-0059	269	463
Robert Birney	IND-0060	270	463
Julie Titone	IND-0061	271	463
Alton Haymaker	IND-0062	272	463

Table 1—List of commenters and page numbers in this document where each comment document and response to that document begins. Designation code letters identify a category of commenters, while the code number identifies a particular group or individual within that category.

Commenter	Designation	Page No.	
		Comment	Response
Daniel Hawley	IND-0063	273	463
C.J. Klarich	IND-0064	274	463
Jennifer Wynkoop	IND-0065	278	465
Jack Dawson	IND-0066	279	465
Craig Miller	IND-0067	280	465
Mark Hamlin	IND-0068	281	465
Ellen M. Smith	IND-0069	282	465
Jon Soest	IND-0070	283	465
Carl M. Jensen	IND-0071	284	465
Marshall Goldberg	IND-0072	285	465
Phelps Freeborn	IND-0073	286	465
Phelps Freeborn	IND-0074	287	465
Bruce A. Johnson	IND-0075	289	465
Michael Siptrolls	IND-0076	290	465
Jeanne Poirier	IND-0077	291	465
Pat Colyer	IND-0078	292	465
Joe Ginsburg	IND-0079	293	466
Meredith Long	IND-0080	294	466
Murrel Dawson	IND-0081	295	466
Gwen Rawlings	IND-0082	296	466
Edgar A. Meyer	IND-0083	297	466
Dennis Neuzil	IND-0084	298	466
Tracy Ouellette	IND-0085	299	466
Susan Evans	IND-0086	300	466
Jean R. Strand	IND-0087	301	466
James Daniel Kinney, Jr.	IND-0088	302	466
Burl L. Booker	IND-0089	304	466
Joseph A. Caggiano	IND-0090	305	467
David E. Ortman	IND-0091	307	467
Steve and Susan McDonald	IND-0092	309	468

Table 1—List of commenters and page numbers in this document where each comment document and response to that document begins. Designation code letters identify a category of commenters, while the code number identifies a particular group or individual within that category.

Table 1—List of commenters and page numbers in this document where each comment document and response to that document begins. Designation code letters identify a category of commenters, while the code number identifies a particular group or individual within that category.

Commenter	Designation	Page No.	
		Comment	Response
James R. Dillman, Architect	BUS-0006	350	471
Carpenter Farms	BUS-0007	352	473
Bleyhl Farm Service, Inc.	BUS-0008	382	474
AmericanWest Bank	BUS-0009	384	474
AmericanWest Bank	BUS-0010	385	474
AmericanWest Bank	BUS-0011	386	474
AmericanWest Bank	BUS-0012	387	474
AmericanWest Bank	BUS-0013	388	474
TreeTop, Inc.	BUS-0014	389	474
Chinook Business Park	BUS-0015	390	475
Public Hearings Comments Summary			
Public Hearings Comments Summary	PUB-0001	391	475

Table 2 – List of commenters who submitted identical or nearly identical letters

Commenter
Richard Albrecht
Susan Alter
Alexandra Amonette
Greg Arnold
Bradford Axel
Joan Bailey
Eldon Ball
Wendy Barner
Chase Barton
Leslie Beck
Peter and Mary Alice Belov
Seana Blake
Joseph Bogaard
Brian Bouvia
David Bowman
Ann Boyce

Table 2 – List of commenters who submitted identical or nearly identical letters

Commenter
Elisabeth Brackney
James Bradford
Judy Brandon
Joe Brazie
Lynn Brevig
Alexa Brown
Jack Brown
John Burgess, Jr.
Robert and Elizabeth Burns
Rosemary Busterna
Sarah Campbell
Sara Cendejas-Zarelli
Benjamin Cody
Patricia Coffey
Demelza Costa
Kristin Costello
Russell Daggat
Shelley Dahlgren
Tony DeFalco
Eric DeJong
Red Diamond
Sarah Doherty
Chuck Dolan
Jesse Donohue
George Everett
Richard Fernald
Loreli Fister
Katy Flanagan
Bert Fox
Bob and Ginny Freeman
Catherine Frischmann
Donn Fry
Ray Gardner
R. Garfield
Marc George
Mike Gibson

Table 2 – List of commenters who submitted identical or nearly identical letters

Commenter
Raymond Gill
David Gillies
Ken Goldberg
David Grant
John Grant
Harrison Grathwohl
Steve Green
Solo Greene
Orion Gudgell
Kyle Haines
Jim Hajek
Carla Hammar
Jens Hansen
Emilia Hernando
Judy Heumann
Harrison Hilbert
Lisa Hogan
Holy Holily Holian
Laura Huddlestone
Ray Hutchinson
Lura Irish
Robert Kaplan
Cameron Karsten
Neal Keefer
Wayne Kelly
Ryan Kennedy
Dina Kovarik
Barb Kruse
Katie Kubiak
Susan Kuhn
Theresa Kunch
Rose Lagerberg
Dan Larson
Jane Larson
Rhett Lawrence
Michael Levereault

Table 2 – List of commenters who submitted identical or nearly identical letters

Commenter
Debra Linder
Sandra Lord
Kathleen Lunghofer
David Luxem
June MacArthur
Diann Macrae
Craig Markham
Ronald Marquart
Robert Masonis
Stephen Matera
Eric Mauguy
Greg Mazer
Donald Munn
N. Nault
Josh Norris
Michael O'Brien
Julie O'Donnell
Peter Ovington
Dan Page
Jeannie Park
Stephen Park
Teresa Pedersen
Simon Pollack
Jeff Powell
Jean Power
Mary Rausch
Bruce Reed
Jayne Reed
Bob Rees
Thomas Reese
Debra Rehn
Catherine Reynolds
David Richmond
River Eyes
James Roberts
Julie Rodgers

Table 2 – List of commenters who submitted identical or nearly identical letters

Commenter
Susan Rosenthal
Debra Saude
Patricia Scott
Mark Seery
Rich Sheibley
Barbara Shelton
Forest Shomer
DawnHeather Simmons
Rich Simms
Diana Smith
Richard Smith
Venus St. Paul-Endicott
Charlotte Stahl
Brad Stanersen
Laura Stembridge
Robin Supplee
Ellyn Sutton (2 letters)
Kathy Sweeney
Walter Sykes
Justin Taylor
Ricky Taylor
Fred Teixeira
Bob Thomas
Judith Vincent
Lesa Wagner
Lawrence Wallman
Patricia Walter
Richard Ward
Carol Watts
Ken and Jocelyn Weeks
Kent Werlin
Julie Whitacre
Christopher White
Maria White
Stephen White
Karen Wible

Table 2 – List of commenters who submitted identical or nearly identical letters

Commenter
Janus Wilhelm
Erin Wilson
Greg Wingard
Marguerite Winkel
Lisa Wong
Joan Wozniak
Jeremy Yates
Jo Yount
Matt Zemek

Comment TRB-0001

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
15 West Yakima Avenue, Suite 200
Yakima, Washington 98902-3401
Email: DSAN461@ECY.WA.GOV

David Kaumheimer
Bureau of Reclamation
Upper Columbia Area Office
1917 Marsh Road
Yakima, Washington 98901-2058
Fax: 509-454-5650
Email: storagestudy@pn.usbr.gov

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

1

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. 01 02 03 04

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 05

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. 05

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. 06 07 08

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 09

"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. 09

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. 10

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". 11

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. 11

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. 12

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 13

5

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. 14

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. 15

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 16

6

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.

16

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.

17

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

7

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. 17

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 18

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? 19

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. 20

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. 21

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. 22

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. **23**

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. **24**

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. **25**

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? **26**

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. **27**

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. **28**

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. **29**

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,. **30**

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)"? **31**

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? **32**

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)? **33**

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). **34**

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? **35**

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)? **36**

10

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. **37**

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?" **38**

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. **39**

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? **40**

11

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. 41

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. 42

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? 43

3.1.17 Is the Vantage Sandstone hydrologically part of the Frenchman Springs aquifer system or the Grande Ronde aquifer system. 44

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). 45

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. 46

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. 47

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. 48

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. 49

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.

12

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. **50**

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. **51**

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. **52**

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. **53**

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. **54**

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. **55**

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. **56**

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. **57**

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. **58**

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. **59**

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? **60**

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). **61**

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."

61

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.

62

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. 63

Xvi remove "natural", replace with unregulated 64

Xvii Change wording: ~~Demand for water~~ Existing water rights from the Yakima River cannot always be met in years with below-average runoff. 65

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. 66

Xxv Unclear what is meant by "change the allocation of conserved water" 67

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). 68

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." 69

Xxxi Wymer: Is this saying that doubling winter flows causes less than 10% habitat increase in the Cle Elum River? 70

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. 71

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. 72

16

Comment TRB-0002

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
15 West Yakima Avenue, Suite 200
Yakima, Washington 98902-3401
Email: DSAN461@ECY.WA.GOV

David Kaumheimer
Bureau of Reclamation
Upper Columbia Area Office
1917 Marsh Road
Yakima, Washington 98901-2058
Fax: 509-454-5650
Email: storagestudy@pn.usbr.gov

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

01

1

Post Office Box 151, Fort Road, Toppenish, WA 98948 (509) 865-5121

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. 02

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. 03 04

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. 05

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. 05

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 06

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. 07

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. 08

Sincerely,

Ralph Sampson Jr.

Ralph Sampson, Jr., Chairman
Yakama Tribal Council

Ric Valicoff

Ric Valicoff, Chairman
Roza Irrigation District Board of Directors

Comment TRB-0003

Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855

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

March 26, 2008

Subject: Yakama Nation Cultural Resources Program Comments on the Yakima River Basin Water Storage Feasibility Study Draft Planning Report/EIS

Dear Mr. Kaumheimer,

Enclosed are the Yakama Nation Cultural Resources Program (CRP) comments on the above noted draft planning report/EIS. These comments are focused on both the EIS and the Storage Study Class I inventory report prepared for Reclamation by Archaeological Investigations Northwest (AINW) and are divided as such.

Please contact me at 1-509-865-5121 ext. 4737 or Yakama Nation archaeologist Dave Woody at ext. 4760 if you have any questions.

Sincerely,

Johnson Meninick, Program Manager
Cultural Resources Program

General Concerns

The areas of potential affect 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. 01 02 03 04

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. 05

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 06 07 08

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.

08

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 have managed to boil down the intertribal trading economies of Plains and the Plateau to create a mono-Plains horse culture.

09

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

10

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. 10

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". 11

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.

Comments on Specific Sections of the Draft EIS

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. 12

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). 13

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 a mitigation MOA is likely to be viewed as the creation of Reclamation policy, which would therefore be subject to Executive Order 13175 which requires 14

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.

15

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 are 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.

16

Comment FED-0001

U.S. Department of Energy
Hanford Site

MAR 3 1 2008

Received In Mailroom
UCAO APR 02 2008 YFO
Yakima, Washington

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: **01**

   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 **02**

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

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

Comment FED-0001

U.S. Department of Energy
Hanford Site

MAR 3 1 2008

Received In Mailroom
UCAO APR 02 2008 YFO
Yakima, Washington

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: **01**

   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 **02**

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." 03

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. 04

5. The PR/EIS should address the potential for dam failure due, e.g., to seismic events. 05

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. 06

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." 07

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. 08

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. 09

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. 10 11

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

Comment FED-0002

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.* 01 02

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.* 03
- *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.* 04

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.* 05 06
- *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.* 07

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.* **08**

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.* **09**

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.* **10**

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.

Comment FED-0003

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.		

Comment FED-0004

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. **01**

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. **02**

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. **03**

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 **04**

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). 04

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. 05

6. My staff suggests that the socioeconomics section of Chapter 4 include the analysis of the NED which is currently located in Chapter 2. 06

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. 07

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). 08

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. 09

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

Comment FED-0005

Pacific Northwest
National Laboratory
Operated by Battelle for the
U.S. Department of Energy

March 27, 2008

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

ATTENTION: MR. DAVID KAUMHEIMER

Gentlemen:

Ref: Letter to Interested Individuals, Organizations and Agencies from Gerald Kelso, Bureau of Reclamation and Derek I. Sandison, Washington Department of Ecology dated January 29, 2008, "Yakima River Basin Water Storage Feasibility Study, Kittitas, Yakima, And Benton Counties, Washington, Draft Planning Report and Environmental Impact Statement"

The Pacific Northwest National Laboratory (PNNL) appreciates the opportunity to review and comment on the Draft Planning Report/Environmental Impact Statement for the Yakima River Basin Water Storage Feasibility Study, dated January 2008. The context of our review was on the specific work PNNL performed for the Bureau of Reclamation and its representation in this Draft Planning Report. PNNL recognizes the importance of efforts to created sustainable water resources future for the Yakima River and lower Columbia Basin, and applaud the Bureau of Reclamation and Washington Department of Ecology's efforts in addressing this important regional outcome.

Specific comments on the Draft document are as follows:

1. The last sentence of the first paragraph in Draft PR/EIS page 4-35 states:

"The investigation also incorporated the results of recent geologic drilling and aquifer testing by Reclamation at the proposed Black Rock site (Pacific Northwest National Laboratory [PENN], 2007....."

"[PENN]" should be corrected to "[PNNL]", and the corresponding reference on page R-27 should be: "PNNL, 2007. 'The Black Rock Reservoir Study: Results of the Borehole Hydrologic Field Testing Characterization Program at the Potential Damsite Southern Abutment Location.' PNNL-16716, Pacific Northwest National Laboratory, Richland, Washington."

01

902 Battelle Boulevard • P.O. Box 999 • Richland, WA 99352

Telephone (509) 375-4343 ■ Email mike.davis@pnl.gov ■ Fax (509) 375-6991

2. We also suggest adding to the last sentence of the first paragraph in Draft PR/EIS page 4-35 the Bureau of Reclamation report that discusses Black Rock damsite abutment studies (TS-YSS-18). The revised last part of the last sentence of the first paragraph on page 4-35 would then read: "... and aquifer testing by Reclamation at the proposed Black Rock site (Pacific Northwest National Laboratory [PNNL], 2007; Reclamation, 2004g and 2007h)." 02

The Reclamation (2007h) reference to be added to page R-31 would be: "Reclamation. 2007h. 'Supplemental Report for Appraisal Assessment - Geology and Hydrogeology, Right Abutment, Black Rock Damsite.' Technical Series No. TS-YSS18, U.S. Department of Interior, Bureau of Reclamation, Technical Service Center, Denver, Colorado." 03

Again, thank you for the opportunity to comment on this important study. Please direct any questions to Frank Spane at (509) 371-7087 or frank.spane@pnl.gov or Charles Brandt at (509) 375-2858 or charles.brandt@pnl.gov.

Sincerely,

J. Michael Davis
Associate Laboratory Director

JMD/CAB/BJW

cc: Charles A. Brandt
Frank A. Spane

Comment FED-0006

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Spokane District
Wenatchee Field Office
915 Walla Walla Avenue
Wenatchee, Washington 98801

IN REPLY REFER TO
1795 (134)

March 26, 2008

Mr. David Kaumheimer
Bureau of Reclamation
1917 Marsh Road
Yakima, Washington 98901-2058

Dear Mr. Kaumheimer:

Thank you for the opportunity to respond to the Draft EIS on the Yakima River Basin Water Storage Study. Both Black Rock Reservoir and the Wymer Dam Reservoir are large and ambitious projects. While we have more questions than answers at this point, we have enclosed some initial comments compiled by our natural resource specialists and we would welcome an opportunity to meet with you and discuss these alternatives in more detail.

The proposed Black Rock Reservoir will have the largest impact upon Bureau of Land Management (BLM) lands, since several BLM parcels would potentially be inundated by or lie immediately adjacent to the water storage facility. If a determination is made to proceed with a reservoir project, please be aware that either a withdrawal or a BLM right-of-way would be needed. The Wymer Dam Reservoir proposed for the Lmuma Creek area would be located very close to some of our most heavily visited recreation sites located in the Yakima Canyon. 01

If you have any questions or you would like to discuss these matters in more detail, I can be reached at 509-665-2100. We look forward to participating in this process in the future.

Sincerely,

Donald Washco

Donald Washco
Acting Field Manager

Enclosure

March 26, 2008

Bureau of Land Management Wenatchee Field Office
Comments for Yakima River Basin Water Storage Feasibility Study Draft PR/EIS

Fisheries: The major impact to fisheries resources in both the Yakima River and the Columbia River will be from the water intake pumping facilities in both rivers. The pumping facilities will not be on BLM and will be closely permitted and monitored by appropriate agencies ie. WDFW and NOAA Fisheries. Both reservoirs have the potential to increase the water temperatures by a large reservoir surface exposed to high ambient summer temperatures. This could result in releasing warmer water back into the systems. Both the Columbia and the Yakima have pretty consistently cool water temperatures. 2

All alternatives propose changing the flow regime in the Yakima River. It's not clear how that might affect anadromous fisheries in the Yakima. Currently the flows are kept artificially high after spring runoff through the 5 impoundments in the headwaters of the Yakima and Cle Elum Rivers. It is not clear how the more natural flows without the input from the Yakima reservoirs will impact anadromous fish habitats. 3

The study should consider the cost effectiveness of raising the pool height and volume impounded in the 5 headwater reservoirs of the Yakima River, as an alternative to building the two proposed dams and pumping stations. 4

Range: Based on a review of the draft Black Rock project map, public lands within two grazing allotments will be inundated and no longer available for grazing. In accordance with the 43 CFR 4110.4-2, the lessee will have to be given two years notice prior to loss of grazing use. Access to public lands will also be impacted. 5

Cultural Resources: The draft EIS/Yakima River Basin Water Storage Feasibility study includes a proposed reservoir east of Wymer, Washington and a second reservoir in Black Rock Valley, east of the Rattlesnake Hills. Another project proposed in the draft EIS is the Wymer Dam Plus Yakima River Pump Exchange Alternative; this project requires pipeline construction. There are no BLM-administered lands within the proposed Wymer Reservoir; however, the Black Rock Reservoir will inundate roughly 578 acres of BLM lands and the proposed pipeline corridors may also impact additional BLM lands in Yakima and Benton Counties (not 100% sure due to the scale of the EIS maps): T 9N R 27E Sections 8 & 10 (Sec. 10 is part of the Maughn land exchange), T 9N R 28E Sections 18, 26 & 28 (Secs. 18 & 26 are in the Maughn land exchange), T12N R 21E Sections 4 & 10, and T 12N R 22E Sec. 18. Until more explicit information is available regarding the pipelines, cultural resource comments only address the Black Rock APE.

Compliance with Section 106 would be required prior to the implementation of the water storage projects. The process is outlined in the draft EIS in Chapters 4 (4:253-261) and 5 (5:87-90). Properties having traditional, religious and cultural significance (Traditional Cultural Properties or TCPs) to members of the Tribes would also need to be identified and evaluated through consultations with the affected Tribes. 6

Black Rock Reservoir: A review of the BLM and DAHP databases and archival records indicates that some of the affected BLM parcels in T 12N R 23E Sections 2, 10, and 14

March 26, 2008

have been inventoried for cultural resources in the past. Lands in Sections 2 and 10 were selectively surveyed for a land exchange in 1977; in 2002, following wildfire suppression efforts, a portion of Section 14 was surveyed at BLM's Class III level. The 1977 surveys do not meet current survey standards and would require additional cultural inventories, this would apply to approximately 560 acres of BLM within the proposed Black Rock Reservoir. Thus far, no cultural properties have been identified in the Black Rock Area of Potential Effect (APE). The slopes above the proposed reservoir in the YTC contain many recorded sites, so the potential for sites on BLM is high. The 1881 cadastral survey map of T 12N R 23E shows one E-W trail paralleling a dry channel through the center of Black Rock Valley; no other cultural features were noted in the area at that time. TCPs in the Black Rock reservoir area have yet to be identified, but they potentially include traditional plant gathering areas in shrub-steppe communities; the draft EIS specifically notes that the proposed projects would result in a loss of shrub-steppe habitat. By extension, traditional native plant gathering locales may also be lost. 07

Wildlife: The analysis of impacts to wildlife populations and habitats is lacking in-depth discussion of State Threatened and Federal ESA Candidate greater sage-grouse. 08

Section 4.7.1.2—Movement Corridors

Little mention is made concerning movements of greater sage-grouse between known populations in Yakima Training Center (YTC) and Douglas County and to potential habitats on adjacent and nearby lands identified by the Washington State Greater Sage-grouse Recovery Plan (Stinson et al. 2004) as recovery units. Four paragraphs are dedicated to elk movements. A similar discussion would be appropriate for greater sage-grouse because of its State Threatened status and potential for federal listing. 09

Section 4.7.2—Environmental Consequences

Section 4.7.2.1—Methods and Assumptions—Shrub-Steppe Habitat

HEP analysis uses Brewer's sparrow to represent sagebrush obligate species. While this is reasonable, using greater sage-grouse as the representative species may have been more appropriate because it is the species of greatest concern in the area, and would also represent other sagebrush obligates well. Habitat requirements for both species are similar, but there are some differences. Altman and Holmes' Conservation Strategy for Landbirds in the Columbia Plateau of Eastern Oregon and Washington (2000) uses Brewer's sparrow as a focal species for "sagebrush cover," while using greater sage-grouse as a focal species for "expansive areas of high quality sagebrush habitat with a diverse understory of native grasses and forbs." 10

Section 4.7.2.1—Methods and Assumptions —Movement Corridors

The analysis focuses completely on movements of Rocky Mountain Elk. While elk are a major management issue in the area, greater sage-grouse is a Federal Candidate species of great concern and should also be analyzed for impacts to movements. Genetic exchange is essential to recovery of species with small populations, and impacts to movement and dispersal can have direct consequences to the species and recovery efforts. 11

March 26, 2008

Sections 4.7.2.3 and 4.7.2.4—Blackrock Alternative and Wymer Dam and Reservoir Alternative—Construction Impacts

Analysis should discuss potential for disturbance of greater sage-grouse, especially during the breeding season. The State Recovery Plan (Stinson et al. 2004) recommends preventing disturbance such as development, blasting and recreation in sage-grouse nesting and brood rearing habitat from March 1 to June 15. Discussion should include distances to known leks and subsequent potential for disturbance. 12

Sections 4.7.2.3 and 4.7.2.4—Blackrock Alternative and Wymer Dam and Reservoir Alternative—Long-Term Impacts—Shrub-Steppe Habitat

HEP analysis of the Blackrock Alternative first uses the entire site to estimate habitat units, including shrub-steppe, grassland, CRP land, agricultural croplands and developed lands, and then omits agricultural and developed lands. It does not indicate if CRP lands were considered agricultural, as they should be unless they are permanently protected. It then states that the analysis "indicates that the lands within the reservoir and dam footprint are of relatively low value for shrub-steppe species. This may be largely due to the fact that less than half of the site is actually in shrub-steppe." 13

The Wymer Dam and Reservoir Alternative first uses the entire site to estimate habitat units, including shrub-steppe, grassland, barren land, riparian, cliff/canyon, agricultural cropland, developed land, forest and wetlands, and then omits "lands not suitable for Brewer's sparrow." It does not indicate which lands were considered suitable for Brewer's sparrow. 14

The analysis is of shrub-steppe habitat, and Brewer's sparrow was chosen to represent sagebrush obligate species. Therefore, using lands that aren't shrub-steppe while calculating the value of shrub-steppe is not appropriate because is "waters down" the analysis, giving the appearance of marginal shrub-steppe quality when in reality, the shrub-steppe habitat that is present may be of very high quality. Quality of other habitat types within the site footprint should be evaluated using different standards that are more appropriate for the species that use them. 15

Sections 4.7.2.3 and 4.7.2.4—Blackrock Alternative and Wymer Dam and Reservoir Alternative—Long-Term Impacts—Movement Corridors

There is no section for Movement Corridors for either alternative, only a paragraph dedicated to impacts to elk movements. To be consistent with the structure of the rest of the analysis, a separate section heading for Movement Corridors should be added. Within this section there should also be discussion of impacts to greater sage-grouse movements. 16

Section 4.7.2.6—Mitigation

Potential mitigation measures are very general, more specific measures should be identified. Concerning sage-grouse, the idea of "no net loss of sagebrush habitat" has been suggested by many agencies and groups, including BLM, the Western Association of Fish and Wildlife Agencies, and Partners in Flight Western Working Group for other areas in the west. A similar approach would be appropriate for this area. 17

March 26, 2008

Section 4.7.2.7—Cumulative Impacts—Shrub-Steppe Habitat and Wildlife Movement Corridors

The cumulative effects analysis for this section is brief and quite general. More specific, quantitative analysis of the rates and types of development and potential impacts would be appropriate. 18

Recreation: The Black Rock alternative would directly affect BLM-managed lands, due to some BLM lands being inundated with water, and other nearby BLM lands being adjacent to the new reservoir. The Feasibility Study and EIS assumes that there will be great public demand for recreation use of the reservoir and its shoreline, and that future shoreline improvements for recreation will occur (page 4-177 projects annual Black Rock visitation during the first 5 years after reservoir construction at 250-304,000 people). The proximity of BLM lands to the new reservoir and any recreation improvements which will occur indicates that visitor use will likely spill over onto BLM land. This could lead to management issues with litter, dispersed camping, weeds and possibly OHV use along the shoreline when the reservoir is drawn down. BLM might eventually need to monitor and provide staffing for site upkeep to areas where we currently have little on the ground presence. This could potentially lead to the need for site improvements on BLM land along or near the reservoir. 19

The Wymer reservoir and Wymer Reservoir/Pump Exchange alternatives would indirectly affect BLM due to the proximity or the Wymer reservoir to Spokane District's most heavily visited recreation sites in the Yakima Canyon. The reservoir pump station and head of the dam are adjacent to BLM's Lmuma Creek recreation site, which receives approximately 12,000 visitors each year (BLM use figures). Page 4-175 of the Feasibility Study/EIS lists "Estimated 2006 Annual Visitation to the Yakima River" as being 18,000 people. These figures are much too low, as BLM manages 4 river access sites along the Yakima Canyon, and estimates annual use at these sites at approximately 120,000 visitors. 20

The Feasibility Study and EIS notes that the Wymer reservoir would be popular with local residents. The reservoir would also draw in many visitors from out of town, as most of the high summer use in the Yakima Canyon is from outside the Kittitas County area. Increased visitor use of the Wymer Reservoir (Table 4.39 on page 4-180 projects annual Wymer reservoir visitation during the first five years after reservoir construction at 40,000-45,300 people) and any future recreation improvements along the shoreline which will occur, will likely result in increased use of the nearby BLM recreation sites. It will also increase traffic on busy Highway 821, as this highway will be the gateway to the reservoir. The fluctuating water line of the reservoir might make OHV access possible when the water levels are low. This OHV use could spill over onto private and nearby BLM land. 21

The pumping plant and switchyard which would be built where Lmuma Creek enters the Yakima, will greatly change the appearance of the area. Currently, views of the future pumping plant/switchyard area from the river, highway and adjacent BLM recreation site, are of irrigated fields, a farmhouse, and relatively low development. The switchyard with its' 80-ft towers, pumping plant building, transmission line and associated roads, will add 22

March 26, 2008

a much higher level of development and visual resource impacts to the area which will be difficult to mitigate.

The Black Rock reservoir, Wymer reservoir and Wymer reservoir/Pump Exchange alternatives all change river flows in the Yakima River. The alternatives estimate higher winter/spring flows and lower summer flows on the upper Yakima. Higher winter/spring flows could result in additional flooding and/or ice damage to nearby BLM recreation sites and other properties. Lower summer flows might result in more difficulty by recreationists in navigating the shallow places in the river and avoiding rock barb fisheries improvements along the shoreline.

23

Comment FED-0007

From: <Rick_Donaldson@fws.gov>
To: <kimccartney@pn.usbr.gov>
Date: Wed, Apr 2, 2008 10:56 AM
Subject: Fw: comments on the Yakima DEIS

Kim,

See attached document, with draft FWS comments pertaining to wildlife issues in the subject DEIS. Please note, due to other work priorities, we were unable to provide comments on fisheries issues in the DEIS. We intend to send you a signed PAM with attached comments on Friday. I don't anticipate any changes in our comments from what is shown in the attached document (in this email).

Rick

_____

Rick Donaldson
Manager, Habitat Conservation Branch
Upper Columbia Fish & Wildlife Office
U.S. Fish & Wildlife Service - Spokane
Phone: 509-893-8009
FAX : 509-891-6748
email: : rick_donaldson@fws.gov
----- Forwarded by Rick Donaldson/UCRB/R1/FWS/DOI on 04/02/2008 10:47 AM

Mark Snyder/UCRB/R1/FWS/DOI
To Rick Donaldson/UCRB/R1/FWS/DOI@FWS 04/02/2008 10:28
cc AM Dan Trochta/UCRB/R1/FWS/DOI@FWS
Subject comments on the Yakima DEIS

Rick -

Here are the revised comments on the Yakima River Basin Water Storage Feasibility Study DEIS. See attached file: BOR-Yakima_DEIS4208.doc)

Mark R. Snyder
Fish and Wildlife Biologist
Upper Columbia Fish and Wildlife Office
11103 E. Montgomery Dr.
Spokane Wa. 99206
509)893-8019

CC: <Mark_Snyder@fws.gov>, <Dan_Trochta@fws.gov>, <Mark_Miller@fws.gov>, <Greg_VanStralen@fws.gov>, <Stephen_Lewis@fws.gov>, Jessica_Gonzales@fws.gov

Yakima River Basin Water Storage Feasibility Study
Draft Planning Report and Environmental Impact Study
USFWS (Service) COMMENTS
04/02/08

Executive Summary

1) Page xxix – ***Wymer Dam and Reservoir Alternative:*** The Service disagrees that this alternative would have a negligible or slight effect on shrub-steppe habitat and movement corridors. Given the historic and continuing losses of shrub-steppe habitats, actions related to any alternative that would eliminate shrub-steppe habitat should be considered significant in nature. Washington Department of Fish and Wildlife(WDFW) has identified the area in the vicinity of the Wymer Reservoir site as wintering core habitat for bighorn sheep and core habitat for mule deer. Based on this, the Service believes that implementation of the Wymer Dam and Reservoir alternative would have a significant effect on wildlife movement corridors. **01**

2) Page xxxviii – ***Table ES.6 Comparative analysis of Joint Alternatives by indicator. Disturbance- number of places animal corridors are disturbed:*** Based on the reasons described in comment No. 1 above, the Service disagrees with the Bureau of Reclamation's (Reclamation) negligible determinations for the Wymer alternatives. **02**

Main Report

3) Page 4-87- ***Black Rock Alternative, Construction Impact:*** Many species of migratory and resident birds would be affected when the reservoir is filled, especially during the nesting season. Nests and eggs on the ground and in shrubs would be destroyed by reservoir inundation. **03**

4) Pages 4-88 (1st paragraph) and 4-90 (3rd paragraph) ***HEP Analysis discussion*****:** Although the Habitat Evaluation Procedures (HEP) results for Brewers sparrow did not indicate that the shrub-steppe habitats in the affected areas of both reservoir alternatives were of high value, the Service believes that these habitats are still important for shrub-steppe dependent species of wildlife. These habitats provide connectivity to adjacent shrub-steppe habitats, and if eliminated (by the creation of the reservoirs), would further fragment the remaining shrub-steppe communities that exist in this area. **04**

5) Page 4-88 – ***Movement corridors*** **(3rd paragraph):** The Service recommends that the movement corridors expected to be utilized by elk **after** creation of the Black Rock reservoir be identified in an effort to determine any significant negative effects that might occur. A large block of agricultural or developed land falling within the expected movement corridor may increase landowner conflicts, **05**

and potential negative secondary or indirect effects that could be attributed to the alternative.

6) Page 4-89 -Wetlands (2nd paragraph) ***Fluctuations in the water level in Black Rock Reservoir…*****:**We agree that fluctuations in the water level in Black Rock reservoir would not be conducive to growth of a water-dependent shoreline plant community. However, there are wetland habitat enhancement techniques available to regulate water levels and possibly create and maintain productive wetland habitats in some areas. For example, dike construction that would hold water behind the dike for longer periods during reservoir drawdown, creating shallow wetland areas. 06

7) Page 4-89 - ***Wymer Dam and Reservoir Alternative, Construction Impacts*****:** Many species of migratory and resident birds would be affected when the reservoir is filled during the nesting season. Not to mention foraging habitat that would also be lost. Nests and eggs on the ground and in shrubs may be destroyed by reservoir inundation. 07

8) Page 4-90 – ***Movement corridors*** **(5th paragraph):** Bighorn sheep and mule deer should be addressed in this section. WDFW has identified the Wymer Reservoir site as wintering core habitat for bighorn sheep and core habitat for mule deer. Based on this, the Service believes that the Wymer Dam and Reservoir would have a significant effect on movement corridors for these species of wildlife and should be addressed. 08

9) Page 4-165 – ***Greater Sage Grouse***: We expect that implementation of the Black Rock Alternative would result in the loss of nests and eggs from reservoir inundation, depending on the timing of implementation. 09

10) Page 4-166 and 4-169 – ***Sage Grouse Movement Corridors:*** The Service recommends that Reclamation identify and delineate potential movement corridors that would be available to sage grouse, after implementation of either reservoir alternative. Developed lands and/or certain agricultural practices may hinder sage grouse movement, and could lead to secondary or indirect negative effects that could be attributed to the alternative. 10

Comment WAS-0001

Region 3 Headquarters
1701 South 24th Ave., Yakima, Washington 98902
Phone: (509) 457-9330, Fax: 575-2474, e-mail: eastejae@dfw.wa.gov

March 31, 2008

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

SUBJECT: Review of Draft Planning Report/EIS – Yakima Basin Water Storage Feasibility Study

Dear Mr. Kaumheimer:

The Washington Department of Fish & Wildlife has reviewed the Draft PR/EIS for the Yakima River Basin Water Storage Feasibility Study (**SFS**) and provides the following assessment and comments. Our comments reflect our mandate to "… preserve, protect, perpetuate, and manage the wildlife and food fish, game fish, and shellfish in state waters and offshore waters" (RCW 77.04.012).

We would like to reiterate the importance of providing instream flows for fish in the Yakima Basin as well as the other watersheds in the Columbia Basin. We support opportunities to increase flows in the Yakima Basin that benefit the species we are mandated to protect, perpetuate and manage. In addition it is important for the DPR/EIS to recognize the benefits of increased flows for fish in the Yakima Basin. Our comments follow.

Technical Reports

The purpose of the Yakima River Basin Water Storage Feasibility Study is to improve instream flows and out-of-stream water availability in the Yakima River. The DPR/EIS does a reasonable job of covering the general topics of concern for instream flows for fish, but it relies on information from other documents and models to form conclusions. The information is referenced but not available within the DPR/EIS. One must read and review all technical reports to be able to adequately comment on the findings and conclusions of the DPR/EIS. In addition, there were other technical reports, more specifically the U.S. Department of Energy analysis of seepage from the Black Rock alternative that will not be available until the final version of the PR/EIS is released. We would like to propose an extended comment period for the final PR/EIS so that the public has an opportunity to provide comments on all the relevant documentation. 01

Executive Summary

Table ES.1

The April target flow for the Wapato Reach (Parker Gage) appears to be erroneous. April is the primary month for spring chinook, coho and steelhead smolt downstream migration and mean monthly flow should be significantly higher than in March---not 300 cfs lower. This is the case for all the other reaches, but not the Wapato Reach---the key reach that the System Operations Advisory Committee (SOAC) monitors during smolt migration to determine if migration pulse flow releases from storage are required. Under-estimating the April flow objective for the Wapato Reach would likely affect the anadromous fish benefit analysis and comparisons between each of the "Joint Alternatives". 02

Page xix. Accomplishments. - The Wapato Reach does not represent the lower 40 miles of the river. It does not compare fish use, fish stocks, channel morphology, island habitat, bedload material, velocity, and in many areas, volume (flow volume varies because of gage placement and return flows). It's functions and values are much more dynamic and complex, especially because of its proximity to the free flowing portion of the mainstem Columbia River. 03

Table ES.2

The entire analysis of anadromous and resident fish benefits in the SFS is based on the "seasonal volume objectives" in Table ES.2, which are derived from the monthly flow objectives in Table
ES.1. There is a very significant error in the calculation of the volume objectives for both the Ellensburg and Wapato reaches during the "spring" and "winter" seasons (see Excel spreadsheet attachment). WDFW staff used this spreadsheet to check the volume objectives and found significant discrepancies. Oddly, the "summer" season volume objectives were correct, but all the spring and winter objectives in Table ES.2 04

over-estimate the true volumes required to achieve the monthly flow targets in Table ES. 1. The discrepancies ranged from a low of 51,079 acre-feet (Spring, Wapato) to a high of 411,395 acre-feet (Winter, Wapato). Since the "No Action" alternative is compared to the volumetric seasonal flow objectives and the "Joint Alternatives" are compared to the "No Action" alternative to measure relative accomplishments, a significant mathematical error in establishing the volumetric flow objectives at the very beginning casts doubt over the validity of the entire comparative benefit analysis. The entire benefit-to-cost analysis (BCA) must be run again using the correct volumetric seasonal flow objectives before the Final PR/EIS can be issued. 04

Page xx and Table ES.2 – It would be helpful to put the cubic feet per second (cfs) conversion for acre-feet (af) in parentheses. Although af is the unit for storage, cfs is the unit for flow. Other areas of the DPR/EIS compare seepage and volume using different units. Please consider utilizing one unit or putting the second unit in parentheses so that comparisons are transparent and easily understood. 05

Page xxi – Black Rock Alternative - "Water from the Columbia River would be pumped from the Priest Rapids Lake any time Columbia River water is available in excess of current instream target flows and storage space is available in a Black Rock reservoir, with the exception of July and August, when no Columbia River withdrawals would occur." Instream flows were set in the 1980s with limited information before ESA listings. It is questionable to assume that those instream flows are a threshold for no impact at higher flows.In addition, spring water withdrawals could potentially modify flows to the degree that some bird nesting islands would be connected to the shore and would allow access for predators such as coyotes and foxes. Terminology for instream target flows elsewhere in the DPR/EIS suggest that the Columbia River instream target flows refer to the 2004 BiOp flows, but the terminology should be clarified, at a minimum, and if the BiOp flows are not what is meant, then clarifications should be made. 06

Page xxx - Anadromous Fish; No Action Alternative - Under current conditions an ongoing decline in fish population is evident (wild or natural stock) and under drought conditions population impacts are probably severe. In the same paragraph that a "no effect" is noted, the authors state that "the greater spring flows downstream of Parker are considered beneficial to improve anadromous salmon smolt outmigration through the middle and lower Yakima River. Please clarify this contradiction. Also clarify how increases in velocity influence riparian, floodplain, and side channel habitats. 07

Page xxxi - Anadromous Fish - Please clarify the rationale regarding how higher flows result in reduced summer rearing habitat in the lower Yakima River 08

Page xxxi - Anadromous Fish -The Joint Alternatives may also provide opportunity to affect access to habitat and habitat conditions in the tributaries. See more comments on this subject below.

Resource Analysis – Water Resources/Anadromous Fish:

No Action Alternative

This discussion fails to recognize the benefits to fish resources that will occur if water conserved under the existing YRBWEP Basin Conservation Program (BCP) can be "blocked up", stored in the existing reservoirs and called on for release by SOAC to meet highest priority fish needs. The fish managers need the flexibility to use "conserved fish water" to maximize benefits. Incremental increases in summer flows in the Wapato Reach (below Parker Dam) may not be the highest priority use of this water. Flow objectives within various reaches would expect to vary with varying storage options. 09

Anadromous Fish

Ignoring, for the moment, the flaws with the comparative benefit analysis described above, the Black Rock Reservoir (BRR) alternative appears to provide the highest level of benefits for anadromous fish. However, the $8.7 million over the 100-year benefit stream (i.e. approximately $87,000 annual increase relative to the "no action alternative") seems ridiculously low relative to $602 million for recreation and $287 million for M&I water use. The benefit analysis is too narrowly focused and does not quantify the synergistic benefits to on-going habitat protection and restoration projects funded by USBR's YRBWEP program, the Salmon Recovery Funding Board (SRFB), Yakima Tributary Access and Habitat Program, Water Acquisition Programs, Regional Fisheries Enhancement Group, BPA's Fish & Wildlife Program, and others. Significant improvements in anadromous fish abundance (particularly spring chinook and coho salmon) have already occurred because of habitat projects without the benefit of more water that can be stored, "shaped" and released at the discretion of the fish managers. The SFS Team needs to estimate how SOAC-managed flow releases using 500-800 KAF annually from the BRFR can leverage habitat protection/restoration projects to increase fish production at much higher levels than currently modeled. 10

The benefit analysis of the Joint Alternatives also ignores the opportunity and value of storage in improving flows (and leveraging habitat improvements) in key tributaries for the benefit of steelhead, coho, spring chinook, rainbow/cutthroat trout and bull trout. SOAC would not limit use of stored blocks of "fish water" solely to increase mainstem flows below the existing USBR reservoirs. The Study Team should show how stored "fish water" under the three joint alternatives would typically be distributed between the reservoirs (i.e. where and how much). Then the Study Team should work with the SSTWG to identify creative ways using existing irrigation system infrastructure (or improvements) to deliver fish water released from reservoirs to tributaries and other off-channel habitats as recommended by the authors of the "Reaches Project" (Stanford et al., 2002) and discussed in the PR on Page 1-21. 11 12

The six indicators for evaluation of fish benefits: Summer Rearing Habitat in the Easton and Ellensburg Reaches for Spring Chinook and Steelhead Fry and 13

Yearlings; Flip-Flop in Both the Upper Yakima and Naches Rivers for Yearling Steelhead and Spring Chinook; Spring Flow Downstream from the Parker Gage; July-September Flow Downstream from the Parker Gage; Estimated Anadromous Fish Population Size; and False Attraction, are reasonable, but two others, Side Channel Connectivity and Winter Habitat Conditions in the Yakima River basin, should also be considered. Interaction of water quality and physical habitat (modeled in instream flow studies) is not addressed, but could be significant. Side Channel Connectivity - A specific concern is connectivity of off-channel or lateral habitat with the Yakima River. There is some discussion of floodplain processes, including cottonwood recruitment, and there is recognition that floodplain and river have become disconnected to a large degree (e.g., see 1.2.2.1; 1.7.2.3; 1.7.2.4; 4.8). Lateral or off-channel habitat is connected to the main channel at high flow. As flow drops, lateral habitat disconnects from the main channel. Fish, usually juveniles that are in the lateral habitats when they become disconnected, are forced to stay in the lateral habitats until they are reconnected. Once disconnected, usually in late spring or early summer, the lateral habitats may warm more than water in the main channel, often to temperatures that are not favorable or even lethal to young salmonids (in the absence of groundwater connectivity). If, on the other hand, connectivity persists into the warming period, a temperature gradient may develop that leads young fish to leave the lateral habitats at the time when favorable habitat shifts from the lateral habitats towards the main channel. This timing and temperature and rate of flow change (ramping) aspect of connectivity are not addressed, yet it has great potential to affect survival and production of salmonids, particularly coho and spring Chinook salmon.

Winter Habitat Conditions in the Yakima River Basin - Winter conditions get relatively little attention in this document. Most concern has been focused on spring, summer, and fall, but winter water is stored and flow management practices do influence fish habitat and survival. Flow stability is generally favorable to winter salmonid survival and storing any winter flow pulses buffers downstream reaches from such pulses. On the other hand, keeping flows low in winter increases risk of freezing of young fish and eggs. Some flow fluctuations in winter is often desirable to moderate very cold water temperatures.

Fish that spawn below Prosser are impacted significantly by river operations and flow management. In many years, there is a significant difference in spawning (both fall Chinook and coho) between the lower reach and the Wapato reach. The lower reach had over 3,000 fall Chinook adults that never passed over the Prosser fish passage facilities and spawned in the Yakima River in the late 1990's (See Watson's PSMFC reports on lower Yakima River spawning estimates to supplement Table 4.24). Since then, the redd counts below Prosser have declined with the loss of spawning habitat attributed to star grass colonies. Those habitat functions remain and could be manifested if the river conditions (flow and water quality) change within this reach.

The proposed Black Rock management emphasizes minimum Columbia River diversions at the expense of more normative flows. In wet years, more water would be diverted from the Yakima River rather than from Black Rock, missing the opportunity to provide more normative flows and flow variability with higher

flows in wetter years. On p. 2-4, the DPR/EIS refers to: "Title XII target flows do not necessarily provide for a natural (unregulated) ecosystem function. Title XII target flows at the two control points do not address fish habitat and food web needs at the basin level and thus, by themselves, cannot be expected to lead to restoration of anadromous fish runs (SOAC, 1999)."

Chapter 2 - Joint Alternative

The proposed Black Rock management emphasizes minimum flows at the expense of normative flows. In wet years irrigators would get more water and would get it from the Yakima River rather than from Black Rock, leaving Black Rock more full and missing the opportunity to provide more normative flows and flow variability with higher flows in wetter years. On p. 2-4, the DPR/EIS refers to: "Title XII target flows do not necessarily provide for a natural (unregulated) ecosystem function. Title XII target flows at the two control points do not address fish habitat and food web needs at the basin level and thus, by themselves, cannot be expected to lead to restoration of anadromous fish runs (SOAC, 1999)."

14

Page 2-4, Table 2.2 - The seasonal volumetric flow objectives in Table 2.2 for the Ellensburg and Wapato reaches do not match the values shown in Table ES.2 (and Table 2.10). The objectives shown in Table 2.2 are closer to the actual objectives shown in WDFW's attached Excel spreadsheet, but are still erroneous. WDFW has not checked the volumetric flow objectives for the Easton, Cle Elum or Lower Naches River, but we suspect they may also be incorrect. The Study Team needs to check your math calculations to make sure your flow objectives are correct and are displayed the same in all tables throughout the document. Otherwise, comparison of goal attainment and monetary benefits between the "no action" and "joint alternatives" will be erroneous and invalid. Simple math errors in calculating volumetric flow objectives do not "inspire confidence" that more complex fish benefit model outputs (e.g. DSS, AHA and EDT) can be trusted to be accurate.

15

Page 2-31, Tables 2.10 and 2.11; Page 2-35, Table 2.12 - The flow objective values in Table 2.10 are the same erroneous values shown in ES.2. Consequently, the differences between the "no action" alternative flows and the volumetric flow objectives shown in Table 2.11 are incorrect. For example, the difference for Umtanum – Spring is **not -9%**, but is **actually +6%** when compared to the true objective of 646,355 ac-ft (not the erroneous 741,915 ac-ft shown in ES.2 and Table 2.10). There is no way to tell if the flow comparisons (percent differences) between the joint alternatives and "no action" in Table 2.12 are accurate because only model result totals are shown in Table 2.10. The flow objective totals are incorrect in Table 2.10; hence the volume totals for the various alternatives may also be incorrect.

16

Page 2-48 and Table 2.21 - The lowest proposed level for Black Rock Reservoir is 80 percent in July and September, respectively. Please clarify why Black Rock Reservoir volumes are maintained at 80 percent or greater year round. Holding the reservoir at lower levels may benefit migrating fish in the Columbia River during September.

Page 2-55; Page 2-57, Table 2.30

The Wymer pump station has to lift (i.e. push) water to elevation 1,730' (not elev. 1,610') in order to fill the reservoir to full pool. The pipeline discharge into the reservoir may be at elev. 1,610', but full pool elevation is 120' higher. The "top of inactive (dead) storage" elevation in Wymer Reservoir is incorrect…it should read 1,375' to coincide with the low-level outlet elevation. 17

Page 2-70 Operations - Does the proposed pipeline for the Wymer Reservoir and pump exchange alternative go across Amon Creek in Yakima River delta? Amon Creek is completely absent from the impact analysis. 18

Page 2-70 Operations - The amount of water delivered through the pipeline for the Wymer Reservoir and pump exchange alternative is less in a wet year than a dry year. Please evaluate the value of high flows for fish life and consider maintaining dry year pump exchange totals in a wet year as well. Evaluation should include floodplain analysis, hydro-geo analysis, bedload movement, increased values for rearing, etc. To provide for the maximum extent (benefit) of improved stream flows, this extra water should stay in the river. In order to achieve fish stock restoration, the habitats and river channel need high flows to restore instream, riparian, and floodplain diversity. Diversity and complexity contribute to a healthy river ecosystem. 19

Page 2-71/72

The irrigation season flow objective (and equivalent volume) at the Parker Gage (Wapato Reach) for the Wymer + Pump Exchange alternative is stated to be 1,500 cfs, less the YRBWEP Title XII flows and water conservation gains. Establishing a 1,500 cfs flow objective is a substantial improvement relative to the "no action" alternative, particularly during the summer period (July-Oct.), and should not be minimized. This flow objective provides an additional 48,708 ac-ft for Wapato Reach summer flow relative to the 1,300 cfs target flow used to evaluate the BRR and 20

"Wymer Only" alternatives. However, during the spring period, operating the pump exchange to supplement YRBWEP flows up to 1,500 cfs only provides a combined total volume of 362,340 ac-ft, as opposed to the target for BRR and "Wymer Only" of 729,331 ac-ft from Table ES.2, 2.2 and 2.10 (using the WDFW corrected volumetric objective from the attachment). The difference of 366,991 ac-ft represents an unfair comparison---a much lower target that makes a straight benefits comparison with the other two joint alternatives difficult to impossible (an "apples vs. oranges" comparison). All three joint alternatives should be evaluated against the same volumetric flow objectives.

Page 2-76 - 2.7 Economics, Fisheries Benefits - Please provide an analysis of population structure. In order to produce harvestable fish that are valued, some percentage of each generation must spawn successfully and the relationship between spawners and harvestable surplus may not be linear. In addition, extensive recent literature has pointed to the role of carcasses of adult spawners to contribute to subsequent generation's growth and productivity; this is also likely 21

to be a non-linear relationship.

Page 2-95, Fisheries Benefits

There are a number of problems with the anadromous and resident fish benefits analysis that reduce or ignore benefits that can be expected to accrue during the 100-year benefit stream used in the analysis:

1) The analysis does not include sockeye salmon, which are proposed for reintroduction into Cle Elum and Bumping Reservoirs under the USBR storage dam fish passage program, and which is currently in the feasibility phase. Considering the long-term benefit period for the storage study, it is reasonable to assume that permanent upstream and downstream fish passage facilities can and will be constructed and sockeye re-established. The "use values" of a Yakima Basin sockeye run should be estimated and included in the benefits analysis. **22**

2) Yakima steelhead are harvested in Columbia R. tribal commercial and subsistence fisheries (Zone 6) and Yakima R. tribal subsistence fisheries. Unlike the non-treaty commercial and sport fishery, the treaty tribes harvest wild steelhead as well as hatchery fish. The statement that wild Yakima steelhead (there are no hatchery steelhead in the Yakima Basin) have little to no "fishery use value" is incorrect. Use values for these two harvest categories need to be computed for steelhead and included in the benefit analysis. Table 4.26 (Page 4-115) does show tribal harvest of steelhead, but no benefit is calculated in the economic analysis. **23**

3) Use values for non-listed resident fish species (e.g. kokanee in reservoirs; rainbow and cutthroat trout in streams) are not calculated. These species will benefit to varying degrees from fish-oriented water management under the joint alternatives like anadromous species. Resident trout in rivers currently support an important sport fishing commercial guide industry that contributes to the local economy, as well as non-commercial recreational fishing that has measurable economic value. **24**

4) "Non-use" (non-consumptive) values for both anadromous and resident fish are excluded from the benefit analysis. Significant increases in abundance, productivity, distribution and life history diversity of ESA-listed steelhead and bull trout should accrue from creatively managing as much as 500-800 MAF of stored "fish water blocks" (i.e. BRR alternative). Even though no harvest of bull trout currently occurs and steelhead harvest is limited to tribal commercial (Zone 6) and subsistence fisheries, the benefits analysis ignores the very real costs to society required to recover these ESA "threatened" species. If any of the joint alternatives can produce demographic benefits leading to the de-listing of steelhead and/or bull trout, these societal costs can be avoided and recovered populations can begin to provide fishery "use **25**

values". "Avoided costs" of T&E species recovery that can be directly attributed to storage study alternative accomplishments should be used in the fish benefit analysis. 25

Page 2-101 - Economics – The watchable wildlife public expenditure component(s) is underestimated. There is a lack of analysis indicating how restoration efforts will lead to increased nonuse value benefits by the public. 26

Page 2-106; Table 2.66

Not much significance is given to T&E species in the Environmental Quality (EQ) Evaluation (only a combined weight of 4%). This is probably because steelhead and bull trout are considered "non-use" species and currently do not contribute economic benefits to the Benefit: Cost Analysis (BCA) because "avoided costs" of ESA species recovery are not counted as economic benefits. Table 2.66 shows "zero" significance (no effect) for bull trout for any of the joint alternatives and only minor positive effects for steelhead. WDFW believes that creative use of 500-800 MAF of stored "fish water" that can be managed by the SOAC fish managers annually to enhance flow and leverage habitat protection/restoration in the mainstem, tributaries and reservoirs, has the best chance of leading to the recovery of steelhead and bull trout. 27

Page 2-115 - Various reaches of the Columbia River are also designated as a Wild and Scenic River reach and this information should be included. 28

Page 2-115 and Table 2.69 (also Table 4.25) - Tables 2.69 (also Table 4.25) list expected quantified effects of the different proposals. For fish, the benefits are modest, although the Black Rock alternative appears to provide the greatest benefits to salmonid habitat identified in this chapter, based on the indicators in 4.8.2.1; however, Side Channel Connectivity and Winter Habitat Conditions in the Yakima River basin should also be considered. 29

Page 2-115 and Table 2.69 - Aquatic Invertebrates benefits are understated. The analysis does not include the potential production of the reservoir habitat. There are also tributary aquatic invertebrate benefits that would add to the quantitative, as well as qualitative measures if tributary habitats were included in the studies. 30

Instream Flows

- Columbia River flows

  The rate of withdrawal from the Columbia River mainstem is discussed as a proportion of daily pool and flow fluctuation (see 4.8.2.2). The withdrawal from the Columbia is treated as very small, yet fish interests have emphasized the importance of flow and the potential for cumulative impacts. Work by Anglin (see 4.8.2.1) is the best analysis available of fish habitat response to flow.

  Instream flow constraints on withdrawals from the Columbia are referenced (e.g., see 2.4.2.1, Table 2.17), but there are several different possible instream flow constraints, and it is not always clear which instream flows take precedence. Ecology adopted instream flows as WAC 173-563 in the 1980s, based on limited study of instream flow needs and before most listings of Columbia River salmonids under the federal Endangered Species Act (ESA). The 2004 Biological Opinion flows developed by federal fish researchers and managers addressed instream flows needed for outmigration of smolts of ESA-listed salmonids through the Columbia River hydropower system. Seasonal constraints were developed for the Columbia River Basin Water Management Program as a result of state legislation. The document does not address these different criteria and does not indicate which of these constraints will be met. **31**

  The DPR/EIS implies that no flow requirements constrain withdrawal from the Columbia River in the fall, yet upstream migration, spawning, and incubation take place then for salmon. **32**

- Yakima River flows

  The driving instream flow targets are addressed (e.g., Tables 2.1, 4.1) in the DPR/EIS for the Yakima River. Given there are several sets of instream flows (Title XII, SOAC, SSTWG; see Tables 2.1, 2.2), it would be helpful to compare the instream flow targets in one table. **33**

Chapter 3 - State Alternative

Page. 3-5 - Please note error in a-f Total column of Table 3.1 for Cascade Irrigation District (288 should be 2088). Kiona Irrigation is also confusing between a-f columns. **34**

Page 3-5 - Table 3.1 notes various amounts of trust water. Please provide a discussion on the intended use of the saved water. **35**

Page 3-23 and Table 3.3 - Please elaborate on the potential impacts in the anadromous fish section. **36**

Chapter 4 - Affected Environment and Environmental Consequences

Page 4-2 - 4.2.1.1 River Regulation - Early in the document Reclamation notes how important Stanford et al 2002 recommendations are for restoration of normative flow. Stanford et al 2002 is rarely referenced again in the entire document. This is an **37**

important reference for noting deficiencies and how to achieve potential biological gains. The DPR/EIS should compare the various alternatives and their ability to meet Stanford et al 2002 recommendations. This section provides an opportunity to incorporate and discuss the Stanford et al 2002 recommendations. **37**

Page 4-29 - Groundwater Resources -. It is noted that since predevelopment, a 31 percent mean annual increase in basin recharge has occurred due to application of irrigation water to croplands. Has this stabilized or will this continue to increase? **38**

Page 4-33 - Irrigation return flows to the lower Yakima River account for about 75 percent of the streamflow downstream of the Parker gage. Please identify the time period for those return flows. Also, please explain how the data was analyzed (where, when, frequency, etc.). **39**

Page 4-51 - Figure 4.10 is a reasonable itemization of elements of stream fish habitat, but it doesn't explain relationships. Please identify relationships. **40**

Page 4-54 - 4.5.2.2. No Action Alternative - The volume of sand (fines) is important to fish survival. Excessive amounts can injure fish and cover the redds. Under any of the alternatives, sand volumes would have a direct relationship to habitat conditions and fish survival. This relationship should be considered in more detail. **41**

Page 4-68, 69, and -112 (Indicator 4) - Additional information is necessary to validate the model used (Carroll and Joy 2001). Please provide how the data were analyzed, and methods of collection (when, where, frequency, etc.). The model may/could apply to a specific reach; specific time period. When flows increase 352 cfs, and 666 cfs, respectively, anywhere on the river, much less in the lower river during the summer period, the aquatic habitat is going to respond in several beneficial ways and yet temperature, DO, sediment load, and other water quality parameters are noted to experience "virtually no change". **42**

Page 4-95 – Affected Environment - Please adjust fall Chinook adult upstream migration timing in table 4.23. Fall Chinook peak migration occurs at Bonneville about September 1 rather mid August is the onset of the fall Chinook upstream migration. Peak migration in 2007 at McNary Dam was September 25. **43**

Page 4-95 – Affected Environment and Table 4.23 - Adjust the juvenile fall Chinook and summer Chinook outmigration window to be from April through August. **44**

Page 4-95 – Affected Environment - Under status and distribution, include the upper Columbia River fall Chinook stocks. The DPR/EIS states, "to some extent, in Priest Rapids Lake..", but does not describe any further spawning or dam counts further up the river. The Wenatchee River is well known for fall Chinook stocks. **45**

Page 4-98/99, Habitat Conditions for Anadromous Fish; Page 4-125, Cumulative Impacts

If unregulated flow with natural variability and the "interaction of these habitat elements, combined with streamflow" is so important in producing "a complex mosaic under which native aquatic species assemblages evolved and live", then why does the Planning Report ignore the fish benefits that could accrue from the joint alternatives from being able to creatively manage significant amounts of stored fish water (especially BRR)? The fish managers will continue to use SRFB, RFEG, BPA and other funding to implement prioritized habitat access, protection and restoration projects that could work synergistically with SOAC-recommended management of "new fish water" from the joint alternatives to provide significantly higher benefits than presently shown in the PR. The Study Team should attempt to factor "flow leverage of habitat projects" into the BCA to maximize productivity. **46**

Page 4-103, Methods and Assumptions

Temperature

It was not indicated what model was used for temperature. The DEIS indicates that there was no difference between the Joint Alternatives and the No Action Alternative. However, no data or variances regarding temperatures were shown within the various index reaches and the parameters that were included in the model were not described. It was not indicated if only differences in the means temperatures were modeled or is changes would occur based on water year. For example, the Black Rock alternative may have resulted in notable differences in temperatures within some reaches during drought or very wet years. **47**

The DEIS recognized the altered nature of the hydrograph including truncation of runoff peaks and duration and the associated effects on quality, quantity, and temporal duration of groundwater discharge to the river. However, no attempt was made to "game the model" to assess if water saved through reductions in late summer flows in the lower Yakima River might be used to increase groundwater storage through providing higher peak flows in the spring. Thus, returning groundwater might moderate temperatures in the lower river and/or associated side channels later into the summer months. If temperature modeling indicated no fish benefit associated with increased flows in the lower river due to excessive temperatures, the flow objectives should have been adjusted to use the water elsewhere and/or at different times in an attempt to maximum fish productivity. **48**

For example, reducing flow objectives in the lower river for a 70day period by 600 or 900 cfs would provide about 83,000 to 125,000 acre-feet of flow respectively. If this water were to be used during the April-early May out-migration period during natural spring runoff flows, increased hyporheic storage of cold water within the floodplain of the Wapato reach would occur. This may reduce temperatures in the lower river over an extended, critical time period.

Predation might be moderated as well due to increased flow volumes and colder water.

We realize that there could be an infinite number of output flow objective scenarios that could be reviewed with the DSS model. The DEIS used only one flow objectives for each stream reach assuming it would be optimal for production and/or survival of salmonids. It was apparently assumed that a flow objective roughly reflecting the natural hydrograph would be a reasonable template to use with greater weighting of importance towards some stream reaches than others. However, it was also discussed that if 650,000 acre-feet were provided to SOAC through a Black Rock alternative for fish management the water would likely be managed very differently between good water years and drought. It would be expected that flows within certain reaches would be weighted of much greater priority than in others during droughts, while other flow scenarios might be used during years with heavy snow pack. Within year adjustments would likely be necessary as well to ensure optimal use of water for fish production. An algorithm tied to *Riverware* and *EDT* models could be developed to optimize fish benefit under various scenarios. **49**

Page 4-104 - Two-dimensional Hydraulic Model

While we have confidence in the model we have concerns with the sensitivity of the data collection methods for the data used in the model as it may have underestimated channel complexity and juvenile salmonids rearing habitat in some reaches. Thre floodplain habitat in ythe upper Easton reach and Wapato reach are very complex and difficult to accurately survey with any method. Ken Bovee indicated that LIDAR was effective to within 1 meter and didn't penetrate dense canopy areas. It would be preferable to truth some of the LIDAR data with more traditional methods such as sonar or cross sectional measurements of the floodplain and associated side-channel habitat to ensure that an acceptable degree of precision occurred. **50**

During the presentation of the DSS model it was indicated that LIDAR were sensitive to within 1 meter which may have excluded many small habitat features including shallow off channel/side channel habitats especially areas where extensive complexity exists. We much prefer sonar or transects at a subset of location to ground truth the changes in the DSS model.

The model apparently used habitat preference data for various life history stages of salmonids that was a collective opinion of various experts rather than empirical data. It was not indicated regarding whether or not this data was compared to empirical data and preference curves that are available.

Evaluation of Fish Benefits - Modeling

The areas of interest for anadromous fish incorporate the existing and proposed reservoirs within the basin, and the mainstem Yakima, Naches and Tieton Rivers

from the headwater reservoirs to the confluence of the Yakima River with the Columbia River. The areas of interest for resident fish include the existing and proposed reservoirs within the basin, and the mainstem Yakima, Cle Elum, Naches, Tieton, and Bumping Lakes Rivers from the headwater reservoirs to the confluence of the Yakima River.

- Modeling efforts are limited by available data to five stream reaches, hence it is assumed that because fish benefits created by additional flows in the lower Yakima reach were not evaluated, the data does not exist or was not provided to the modeler. Was it assumed that excessive temperatures alone during the rearing period eliminated this reach from consideration? It is our professional opinion that with increased flows and river rejuvenations that significant habitat may be established within the lower Yakima reach. Alternatives flow scenarios that change flow objectives within this reach may result in temperature moderation. **51**

- The lower reach (Prosser to Columbia River confluence) is absent from most of the modeling efforts. We question the relationship between flows and habitat that indicates a decrease in habitat, even when there is a potential to increase flow by as much as 50 percent. Were only direct flow increases considered and not flow increases realized through hyporheic exchange within this reach? As velocity increases, especially in the lower gradient stream reaches, the juveniles seek out the low energy zones created by the horizontal and vertical increases upon the floodplain. There is a significant amount of floodplain habitat (as noted in the document) in the lower river for fish to utilize if wetted up. Please provide where and under what flow regimes the flow measurements and channel configuration data were taken. This would affect the data analysis. Also, indicate if the temperature model addressed side-channel habitat independently from the mainstem , as groundwater influence would be different. **52** **53** **54**

- The document focuses on the mainstem Yakima River habitat functions and values. It seems that the models or estimates do not include any of the tributary values. Most of the middle to lower Yakima Basin tributaries is influenced by irrigation practices, and most of them carry irrigation return flows, including Satus and Toppenish Creek on the Yakama Reservation. A major omission in the DPR/EIS is the analysis of tributary habitat function and values, fish life and their relationship to mainstem Yakima River Reclamation operations. Increased storage in conjunction with other habitat restoration efforts would provide significantly opportunities for improving instream flow within tributaries that wouldn't otherwise be possible. **55**

- The flow models used to predict habitat suitability appear to be flawed regarding flow and habitat relationships. Deprivation of and beneficial lateral connectivity is overlooked or somehow miscalculated in the five **56**

index areas (perhaps due to the math errors noted above). Please review these calculations.

- The coho and fall Chinook life history functions were not comprehensively addressed by the EDT analysis for the lower 40 miles of the Yakima River. Surrogate reaches were used instead. Applying traditional assessment methods within these reaches would be preferred to assess model precision. **57**

- It is not clear how accurate the assessments of the resource indicator measurements are (Table 2.69). Flow-habitat modeling was used, but models are only our simplifications of our incomplete understanding of fish ecology. Benefits of the proposed projects (see 4.8.2.7) are greater for older year classes rather than the year classes measured. **58**

- Please explain why the models indicate a reduction of flow in the lowest reach. Municipal sources appear not to be clearly delineated. **59**

- The use of DSS to model coho rearing habitat is problematic (Beecher, WDFW; Brad Caldwell, Ecology). In many streams the models apparently indicate that the lowest stream flows produce the best habitat for coho based on weighted usable area and preference curves. However, much empirical data from smolt trapping by WDFW has found that increased stream flows result in successively increased coho productivity. Ecology and WDFW have typically disregarded the WUA results because of the conflict with what we know about stream flow for coho juveniles. Smolt trapping data indicates a strong correlation between higher summer/fall stream flow and resultant increased adult coho returns. Empirical data suggests that a one-percent increase in stream flow in Aug/Sept will result in a one percent increase in the adult coho population two years later. **60**

Page 4-115, Steelhead

A 51 percent increase in steelhead adult abundance resulting from the Black Rock Alternative is not a "minor effect" (from the EQ Evaluation), especially when the benefit analysis did not use any of the new fish water to improve habitat and production in tributaries. The actual improvement should be higher if the means to direct some of the 500-800 MAF to tributaries can be identified and implemented. This is probably our best chance to recover Yakima steelhead to the level that they can be de-listed and support a sustainable tribal subsistence and terminal sport fishery. **61**

Page 4-118, juvenile salmonid productivity

On page 4-118, it is noted in the DSS that the model assumed no changes in the existing channel configuration, just changes in flow. The limited changes in salmon and steelhead productivity for each alternative appeared linked to the altered nature of the floodplain and changes in the cross-sectional channel configuration. The incised and simplified nature of the existing channels **62**

reflected minimal gain in habitat quantity until flow stages were quite high or low. Over bank flows provided significant access to perched side channel habitats and backwater areas. The DSS model could be used as a tool to refine and prioritize where floodplain connectivity would result in the greatest fish benefit or incorporate modifications to the bed that are proposed. Gaming the model would highlight which restoration alternatives resulted in greatest production. 62

The various alternative also assumed that other restoration programs and alternatives would not provide synergistic fish benefits. Yakima river Basin Water enhancement Program, and Salmon recovery funds could be used to later exist water delivery systems to convey and wheel water from the Yakima River to water users current diverting from the small tributaries. Resolving instream flow fish passage barriers within the lower reaches from flow exchanges could provide better anadromous access many miles of habitat.

These exchange benefits are not reflected in the fish benefit calculations within the model.

Page 4-132, Table 4.31

The summary of impacts of the joint alternatives on rainbow trout and bull trout does not include any estimates of improved adult production…why? Why no attempt to estimate economic "use values" for river-dwelling rainbow and cutthroat trout or ESA "avoided cost" values from improvement in viable salmonid population (VSP) parameters for bull trout leading to de-listing? 63

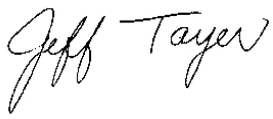
Additional Comments

- WDFW and PSMFC found that the lower Yakima River fall Chinook stock was genetically different from the Hanford Reach, Snake River, and Marion Drain Up River Brights (See 1998, 1999, 2000, and 2001 PSMFC reports). This stock warrants greater consideration regarding habitat values, habitat association and use, and identifying potential benefit from the Yakima River Storage EIS alternatives. We suggest identifying some index areas within this reach as well. 64
- Please elaborate on increased water use and the potential locations of future withdrawals for municipalities with regard to ground water sources and surface water from the Yakima River. 65
- Please consider a pipeline be built to direct flows from the outlet of Wymer Reservoir to the Yakima River rather than realigning the existing channel. Lower Lmuma Creek (below SR-821 bridge) is valuable coho and steelhead rearing habitat. 66

- There was no mention of the positive relationship between nutrients and salmonid production. There is significant literature regarding the benefit of additional marine derived nutrients on salmonid productivity. Although the DEIS assumed to channel in the existing habitat increased escape of some species, particularly fall Chinook and perhaps coho, might measurably increase productivity of existing habitats. The enhancement effects of spawning pink salmon on stream rearing juvenile coho salmon are well documented. **67**

- The proposed Black Rock Reservoir could affect the existing groundwater contamination at the Hanford Nuclear Reservation. Seepage from the proposed reservoir would increase the ground water flow in the aquifer under the reservoir. This has potential to increase the movement of contaminants from the central part of the site. Such an increase in groundwater flow has the potential to change containment plume shapes, travel times, and peak concentrations. The seepage from the proposed reservoir also has the potential to raise the water table level beneath the Hanford site and mobilizing the contaminants currently in the soil. **68**

Sincerely,



Jeff Tayer
Regional Director

Attachment (Table 1 – Storage Study Flow Objective

Comment WAS-0001

Region 3 Headquarters
1701 South 24th Ave., Yakima, Washington 98902
Phone: (509) 457-9330, Fax: 575-2474, e-mail: eastejae@dfw.wa.gov

March 31, 2008

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

SUBJECT: Review of Draft Planning Report/EIS – Yakima Basin Water Storage Feasibility Study

Dear Mr. Kaumheimer:

The Washington Department of Fish & Wildlife has reviewed the Draft PR/EIS for the Yakima River Basin Water Storage Feasibility Study (**SFS**) and provides the following assessment and comments. Our comments reflect our mandate to "… preserve, protect, perpetuate, and manage the wildlife and food fish, game fish, and shellfish in state waters and offshore waters" (RCW 77.04.012).

We would like to reiterate the importance of providing instream flows for fish in the Yakima Basin as well as the other watersheds in the Columbia Basin. We support opportunities to increase flows in the Yakima Basin that benefit the species we are mandated to protect, perpetuate and manage. In addition it is important for the DPR/EIS to recognize the benefits of increased flows for fish in the Yakima Basin. Our comments follow.

Technical Reports

The purpose of the Yakima River Basin Water Storage Feasibility Study is to improve instream f lows and out-of -stream water availability in the Yakim a River. The DPR/EIS does a reasonable job of covering the general topics of concern for instream flows for fish, but it relies on inform ation from other docum ents and m odels to form conclusions. The inform ation is referenced but not available within the DPR/EIS. One must read and review all technical repor ts to be able to adequately com ment on the findings and conclusions of the DPR/EIS. In addition, there were other technical reports, more specifically the U.S. Department of Energy analysis of seepage from the Black Rock alternative that will not be ava ilable until the f inal version of the PR/EIS is released. W e would like to propose an extended com ment period for the final PR/EIS so that the public has an opportunity to provide com ments on all the relevant documentation. **01**

Executive Summary

Table ES.1

The April target flow for the Wapato Reach (Parker Gage) appears to be erroneous. April is the primary month for spring chinook, coho and steelhead smolt downstream migration and mean monthly flow should be significantly higher than in March---not 300 cfs lower. This is the case for all the other reaches, but not the Wapato Reach---the key reach that the System Operations Advisory Committee (SOAC) monitors during smolt migration to determine if migration pulse flow releases from storage are required. Under-estimating the April flow objective for the Wapato Reach would likely affect the anadromous fish benefit analysis and comparisons between each of the "Joint Alternatives". **02**

Page xix. Accomplishments. - The Wapato Reach does not represent the lower 40 miles of the river. It does not compare fish use, fish stocks, channel morphology, island habitat, bedload material, velocity, and in many areas, volume (flow volume varies because of gage placement and return flows). It's functions and values are much more dynamic and complex, especially because of its proximity to the free flowing portion of the mainstem Columbia River. **03**

Table ES.2

The entire analysis of anadromous and resident fish benefits in the SFS is based on the "seasonal volume objectives" in Table ES.2, which are derived from the monthly flow objectives in Table
ES.1. There is a very significant error in the calculation of the volume objectives for both the Ellensburg and Wapato reaches during the "spring" and "winter" seasons (see Excel spreadsheet attachment). WDFW staff used this spreadsheet to check the volume objectives and found significant discrepancies. Oddly, the "summer" season volume objectives were correct, but all the spring and winter objectives in Table ES.2 **04**

over-estimate the true volumes required to achieve the monthly flow targets in Table ES. 1. The discrepancies ranged from a low of 51,079 acre-feet (Spring, Wapato) to a high of 411,395 acre-feet (Winter, Wapato). Since the "No Action" alternative is compared to the volumetric seasonal flow objectives and the "Joint Alternatives" are compared to the "No Action" alternative to measure relative accomplishments, a significant mathematical error in establishing the volumetric flow objectives at the very beginning casts doubt over the validity of the entire comparative benefit analysis. The entire benefit-to-cost analysis (BCA) must be run again using the correct volumetric seasonal flow objectives before the Final PR/EIS can be issued. **04**

Page xx and Table ES.2 – It would be helpful to put the cubic feet per second (cfs) conversion for acre-feet (af) in parentheses. Although af is the unit for storage, cfs is the unit for flow. Other areas of the DPR/EIS compare seepage and volume using different units. Please consider utilizing one unit or putting the second unit in parentheses so that comparisons are transparent and easily understood. **05**

Page xxi – Black Rock Alternative - "Water from the Columbia River would be pumped from the Priest Rapids Lake any time Columbia River water is available in excess of current instream target flows and storage space is available in a Black Rock reservoir, with the exception of July and August, when no Columbia River withdrawals would occur." Instream flows were set in the 1980s with limited information before ESA listings. It is questionable to assume that those instream flows are a threshold for no impact at higher flows.In addition, spring water withdrawals could potentially modify flows to the degree that some bird nesting islands would be connected to the shore and would allow access for predators such as coyotes and foxes. Terminology for instream target flows elsewhere in the DPR/EIS suggest that the Columbia River instream target flows refer to the 2004 BiOp flows, but the terminology should be clarified, at a minimum, and if the BiOp flows are not what is meant, then clarifications should be made. **06**

Page xxx - Anadromous Fish; No Action Alternative - Under current conditions an ongoing decline in fish population is evident (wild or natural stock) and under drought conditions population impacts are probably severe. In the same paragraph that a "no effect" is noted, the authors state that "the greater spring flows downstream of Parker are considered beneficial to improve anadromous salmon smolt outmigration through the middle and lower Yakima River. Please clarify this contradiction. Also clarify how increases in velocity influence riparian, floodplain, and side channel habitats. **07**

Page xxxi - Anadromous Fish - Please clarify the rationale regarding how higher flows result in reduced summer rearing habitat in the lower Yakima River **08**

Page xxxi - Anadromous Fish -The Joint Alternatives may also provide opportunity to affect access to habitat and habitat conditions in the tributaries. See more comments on this subject below.

Resource Analysis – Water Resources/Anadromous Fish:

No Action Alternative

This discussion fails to recognize the benefits to fish resources that will occur if water conserved under the existing YRBWEP Basin Conservation Program (BCP) can be "blocked up", stored in the existing reservoirs and called on for release by SOAC to meet highest priority fish needs. The fish managers need the flexibility to use "conserved fish water" to maximize benefits. Incremental increases in summer flows in the Wapato Reach (below Parker Dam) may not be the highest priority use of this water. Flow objectives within various reaches would expect to vary with varying storage options. 09

Anadromous Fish

Ignoring, for the moment, the flaws with the comparative benefit analysis described above, the Black Rock Reservoir (BRR) alternative appears to provide the highest level of benefits for anadromous fish. However, the $8.7 million over the 100-year benefit stream (i.e. approximately $87,000 annual increase relative to the "no action alternative") seems ridiculously low relative to $602 million for recreation and $287 million for M&I water use. The benefit analysis is too narrowly focused and does not quantify the synergistic benefits to on-going habitat protection and restoration projects funded by USBR's YRBWEP program, the Salmon Recovery Funding Board (SRFB), Yakima Tributary Access and Habitat Program, Water Acquisition Programs, Regional Fisheries Enhancement Group, BPA's Fish & Wildlife Program, and others. Significant improvements in anadromous fish abundance (particularly spring chinook and coho salmon) have already occurred because of habitat projects without the benefit of more water that can be stored, "shaped" and released at the discretion of the fish managers. The SFS Team needs to estimate how SOAC-managed flow releases using 500-800 KAF annually from the BRFR can leverage habitat protection/restoration projects to increase fish production at much higher levels than currently modeled. 10

The benefit analysis of the Joint Alternatives also ignores the opportunity and value of storage in improving flows (and leveraging habitat improvements) in key tributaries for the benefit of steelhead, coho, spring chinook, rainbow/cutthroat trout and bull trout. SOAC would not limit use of stored blocks of "fish water" solely to increase mainstem flows below the existing USBR reservoirs. The Study Team should show how stored "fish water" under the three joint alternatives would typically be distributed between the reservoirs (i.e. where and how much). Then the Study Team should work with the SSTWG to identify creative ways using existing irrigation system infrastructure (or improvements) to deliver fish water released from reservoirs to tributaries and other off-channel habitats as recommended by the authors of the "Reaches Project" (Stanford et al., 2002) and discussed in the PR on Page 1-21. 11 12

The six indicators for evaluation of fish benefits: Summer Rearing Habitat in the Easton and Ellensburg Reaches for Spring Chinook and Steelhead Fry and 13

13

Yearlings; Flip-Flop in Both the Upper Yakima and Naches Rivers for Yearling Steelhead and Spring Chinook; Spring Flow Downstream from the Parker Gage; July-September Flow Downstream from the Parker Gage; Estimated Anadromous Fish Population Size; and False Attraction, are reasonable, but two others, Side Channel Connectivity and Winter Habitat Conditions in the Yakima River basin, should also be considered. Interaction of water quality and physical habitat (modeled in instream flow studies) is not addressed, but could be significant. Side Channel Connectivity - A specific concern is connectivity of off-channel or lateral habitat with the Yakima River. There is some discussion of floodplain processes, including cottonwood recruitment, and there is recognition that floodplain and river have become disconnected to a large degree (e.g., see 1.2.2.1; 1.7.2.3; 1.7.2.4; 4.8). Lateral or off-channel habitat is connected to the main channel at high flow. As flow drops, lateral habitat disconnects from the main channel. Fish, usually juveniles that are in the lateral habitats when they become disconnected, are forced to stay in the lateral habitats until they are reconnected. Once disconnected, usually in late spring or early summer, the lateral habitats may warm more than water in the main channel, often to temperatures that are not favorable or even lethal to young salmonids (in the absence of groundwater connectivity). If, on the other hand, connectivity persists into the warming period, a temperature gradient may develop that leads young fish to leave the lateral habitats at the time when favorable habitat shifts from the lateral habitats towards the main channel. This timing and temperature and rate of flow change (ramping) aspect of connectivity are not addressed, yet it has great potential to affect survival and production of salmonids, particularly coho and spring Chinook salmon.

Winter Habitat Conditions in the Yakima River Basin - Winter conditions get relatively little attention in this document. Most concern has been focused on spring, summer, and fall, but winter water is stored and flow management practices do influence fish habitat and survival. Flow stability is generally favorable to winter salmonid survival and storing any winter flow pulses buffers downstream reaches from such pulses. On the other hand, keeping flows low in winter increases risk of freezing of young fish and eggs. Some flow fluctuations in winter is often desirable to moderate very cold water temperatures.

Fish that spawn below Prosser are impacted significantly by river operations and flow management. In many years, there is a significant difference in spawning (both fall Chinook and coho) between the lower reach and the Wapato reach. The lower reach had over 3,000 fall Chinook adults that never passed over the Prosser fish passage facilities and spawned in the Yakima River in the late 1990's (See Watson's PSMFC reports on lower Yakima River spawning estimates to supplement Table 4.24). Since then, the redd counts below Prosser have declined with the loss of spawning habitat attributed to star grass colonies. Those habitat functions remain and could be manifested if the river conditions (flow and water quality) change within this reach.

The proposed Black Rock management emphasizes minimum Columbia River diversions at the expense of more normative flows. In wet years, more water would be diverted from the Yakima River rather than from Black Rock, missing the opportunity to provide more normative flows and flow variability with higher

flows in wetter years. On p. 2-4, the DPR/EIS refers to: "Title XII target flows do not necessarily provide for a natural (unregulated) ecosystem function. Title XII target flows at the two control points do not address fish habitat and food web needs at the basin level and thus, by themselves, cannot be expected to lead to restoration of anadromous fish runs (SOAC, 1999)."

Chapter 2 - Joint Alternative

The proposed Black Rock management emphasizes minimum flows at the expense of normative flows. In wet years irrigators would get more water and would get it from the Yakima River rather than from Black Rock, leaving Black Rock more full and missing the opportunity to provide more normative flows and flow variability with higher flows in wetter years. On p. 2-4, the DPR/EIS refers to: "Title XII target flows do not necessarily provide for a natural (unregulated) ecosystem function. Title XII target flows at the two control points do not address fish habitat and food web needs at the basin level and thus, by themselves, cannot be expected to lead to restoration of anadromous fish runs (SOAC, 1999)."

14

Page 2-4, Table 2.2 - The seasonal volumetric flow objectives in Table 2.2 for the Ellensburg and Wapato reaches do not match the values shown in Table ES.2 (and Table 2.10). The objectives shown in Table 2.2 are closer to the actual objectives shown in WDFW's attached Excel spreadsheet, but are still erroneous. WDFW has not checked the volumetric flow objectives for the Easton, Cle Elum or Lower Naches River, but we suspect they may also be incorrect. The Study Team needs to check your math calculations to make sure your flow objectives are correct and are displayed the same in all tables throughout the document. Otherwise, comparison of goal attainment and monetary benefits between the "no action" and "joint alternatives" will be erroneous and invalid. Simple math errors in calculating volumetric flow objectives do not "inspire confidence" that more complex fish benefit model outputs (e.g. DSS, AHA and EDT) can be trusted to be accurate.

15

Page 2-31, Tables 2.10 and 2.11; Page 2-35, Table 2.12 - The flow objective values in Table 2.10 are the same erroneous values shown in ES.2. Consequently, the differences between the "no action" alternative flows and the volumetric flow objectives shown in Table 2.11 are incorrect. For example, the difference for Umtanum – Spring is **not -9%**, but is **actually +6%** when compared to the true objective of 646,355 ac-ft (not the erroneous 741,915 ac-ft shown in ES.2 and Table 2.10). There is no way to tell if the flow comparisons (percent differences) between the joint alternatives and "no action" in Table 2.12 are accurate because only model result totals are shown in Table 2.10. The flow objective totals are incorrect in Table 2.10; hence the volume totals for the various alternatives may also be incorrect.

16

Page 2-48 and Table 2.21 - The lowest proposed level for Black Rock Reservoir is 80 percent in July and September, respectively. Please clarify why Black Rock Reservoir volumes are maintained at 80 percent or greater year round. Holding the reservoir at lower levels may benefit migrating fish in the Columbia River during September.

Page 2-55; Page 2-57, Table 2.30

The Wymer pump station has to lift (i.e. push) water to elevation 1,730' (not elev. 1,610') in order to fill the reservoir to full pool. The pipeline discharge into the reservoir may be at elev. 1,610', but full pool elevation is 120' higher. The "top of inactive (dead) storage" elevation in Wymer Reservoir is incorrect…it should read 1,375' to coincide with the low-level outlet elevation. **17**

Page 2-70 Operations - Does the proposed pipeline for the Wymer Reservoir and pump exchange alternative go across Amon Creek in Yakima River delta? Amon Creek is completely absent from the impact analysis. **18**

Page 2-70 Operations - The amount of water delivered through the pipeline for the Wymer Reservoir and pump exchange alternative is less in a wet year than a dry year. Please evaluate the value of high flows for fish life and consider maintaining dry year pump exchange totals in a wet year as well. Evaluation should include floodplain analysis, hydro-geo analysis, bedload movement, increased values for rearing, etc. To provide for the maximum extent (benefit) of improved stream flows, this extra water should stay in the river. In order to achieve fish stock restoration, the habitats and river channel need high flows to restore instream, riparian, and floodplain diversity. Diversity and complexity contribute to a healthy river ecosystem. **19**

Page 2-71/72

The irrigation season flow objective (and equivalent volume) at the Parker Gage (Wapato Reach) for the Wymer + Pump Exchange alternative is stated to be 1,500 cfs, less the YRBWEP Title XII flows and water conservation gains. Establishing a 1,500 cfs flow objective is a substantial improvement relative to the "no action" alternative, particularly during the summer period (July-Oct.), and should not be minimized. This flow objective provides an additional 48,708 ac-ft for Wapato Reach summer flow relative to the 1,300 cfs target flow used to evaluate the BRR and **20**

"Wymer Only" alternatives. However, during the spring period, operating the pump exchange to supplement YRBWEP flows up to 1,500 cfs only provides a combined total volume of 362,340 ac-ft, as opposed to the target for BRR and "Wymer Only" of 729,331 ac-ft from Table ES.2, 2.2 and 2.10 (using the WDFW corrected volumetric objective from the attachment). The difference of 366,991 ac-ft represents an unfair comparison---a much lower target that makes a straight benefits comparison with the other two joint alternatives difficult to impossible (an "apples vs. oranges" comparison). All three joint alternatives should be evaluated against the same volumetric flow objectives.

Page 2-76 - 2.7 Economics, Fisheries Benefits - Please provide an analysis of population structure. In order to produce harvestable fish that are valued, some percentage of each generation must spawn successfully and the relationship between spawners and harvestable surplus may not be linear. In addition, extensive recent literature has pointed to the role of carcasses of adult spawners to contribute to subsequent generation's growth and productivity; this is also likely **21**

to be a non-linear relationship.

Page 2-95, Fisheries Benefits

There are a number of problems with the anadromous and resident fish benefits analysis that reduce or ignore benefits that can be expected to accrue during the 100-year benefit stream used in the analysis:

1) The analysis does not include sockeye salmon, which are proposed for reintroduction into Cle Elum and Bumping Reservoirs under the USBR storage dam fish passage program, and which is currently in the feasibility phase. Considering the long-term benefit period for the storage study, it is reasonable to assume that permanent upstream and downstream fish passage facilities can and will be constructed and sockeye re-established. The "use values" of a Yakima Basin sockeye run should be estimated and included in the benefits analysis. **22**

2) Yakima steelhead are harvested in Columbia R. tribal commercial and subsistence fisheries (Zone 6) and Yakima R. tribal subsistence fisheries. Unlike the non-treaty commercial and sport fishery, the treaty tribes harvest wild steelhead as well as hatchery fish. The statement that wild Yakima steelhead (there are no hatchery steelhead in the Yakima Basin) have little to no "fishery use value" is incorrect. Use values for these two harvest categories need to be computed for steelhead and included in the benefit analysis. Table 4.26 (Page 4-115) does show tribal harvest of steelhead, but no benefit is calculated in the economic analysis. **23**

3) Use values for non-listed resident fish species (e.g. kokanee in reservoirs; rainbow and cutthroat trout in streams) are not calculated. These species will benefit to varying degrees from fish-oriented water management under the joint alternatives like anadromous species. Resident trout in rivers currently support an important sport fishing commercial guide industry that contributes to the local economy, as well as non-commercial recreational fishing that has measurable economic value. **24**

4) "Non-use" (non-consumptive) values for both anadromous and resident fish are excluded from the benefit analysis. Significant increases in abundance, productivity, distribution and life history diversity of ESA-listed steelhead and bull trout should accrue from creatively managing as much as 500-800 MAF of stored "fish water blocks" (i.e. BRR alternative). Even though no harvest of bull trout currently occurs and steelhead harvest is limited to tribal commercial (Zone 6) and subsistence fisheries, the benefits analysis ignores the very real costs to society required to recover these ESA "threatened" species. If any of the joint alternatives can produce demographic benefits leading to the de-listing of steelhead and/or bull trout, these societal costs can be avoided and recovered populations can begin to provide fishery "use **25**

values". "Avoided costs" of T&E species recovery that can be directly attributed to storage study alternative accomplishments should be used in the fish benefit analysis. 25

Page 2-101 - Economics – The watchable wildlife public expenditure component(s) is underestimated. There is a lack of analysis indicating how restoration efforts will lead to increased nonuse value benefits by the public. 26

Page 2-106; Table 2.66

Not much significance is given to T&E species in the Environmental Quality (EQ) Evaluation (only a combined weight of 4%). This is probably because steelhead and bull trout are considered "non-use" species and currently do not contribute economic benefits to the Benefit: Cost Analysis (BCA) because "avoided costs" of ESA species recovery are not counted as economic benefits. Table 2.66 shows "zero" significance (no effect) for bull trout for any of the joint alternatives and only minor positive effects for steelhead. WDFW believes that creative use of 500-800 MAF of stored "fish water" that can be managed by the SOAC fish managers annually to enhance flow and leverage habitat protection/restoration in the mainstem, tributaries and reservoirs, has the best chance of leading to the recovery of steelhead and bull trout. 27

Page 2-115 - Various reaches of the Columbia River are also designated as a Wild and Scenic River reach and this information should be included. 28

Page 2-115 and Table 2.69 (also Table 4.25) - Tables 2.69 (also Table 4.25) list expected quantified effects of the different proposals. For fish, the benefits are modest, although the Black Rock alternative appears to provide the greatest benefits to salmonid habitat identified in this chapter, based on the indicators in 4.8.2.1; however, Side Channel Connectivity and Winter Habitat Conditions in the Yakima River basin should also be considered. 29

Page 2-115 and Table 2.69 - Aquatic Invertebrates benefits are understated. The analysis does not include the potential production of the reservoir habitat. There are also tributary aquatic invertebrate benefits that would add to the quantitative, as well as qualitative measures if tributary habitats were included in the studies. 30

Instream Flows

- Columbia River flows

  The rate of withdrawal from the Columbia River mainstem is discussed as a proportion of daily pool and flow fluctuation (see 4.8.2.2). The withdrawal from the Columbia is treated as very small, yet fish interests have emphasized the importance of flow and the potential for cumulative impacts. Work by Anglin (see 4.8.2.1) is the best analysis available of fish habitat response to flow.

  Instream flow constraints on withdrawals from the Columbia are referenced (e.g., see 2.4.2.1, Table 2.17), but there are several different possible instream flow constraints, and it is not always clear which instream flows take precedence. Ecology adopted instream flows as WAC 173-563 in the 1980s, based on limited study of instream flow needs and before most listings of Columbia River salmonids under the federal Endangered Species Act (ESA). The 2004 Biological Opinion flows developed by federal fish researchers and managers addressed instream flows needed for outmigration of smolts of ESA-listed salmonids through the Columbia River hydropower system. Seasonal constraints were developed for the Columbia River Basin Water Management Program as a result of state legislation. The document does not address these different criteria and does not indicate which of these constraints will be met. **31**

  The DPR/EIS implies that no flow requirements constrain withdrawal from the Columbia River in the fall, yet upstream migration, spawning, and incubation take place then for salmon. **32**

- Yakima River flows

  The driving instream flow targets are addressed (e.g., Tables 2.1, 4.1) in the DPR/EIS for the Yakima River. Given there are several sets of instream flows (Title XII, SOAC, SSTWG; see Tables 2.1, 2.2), it would be helpful to compare the instream flow targets in one table. **33**

Chapter 3 - State Alternative

Page. 3-5 - Please note error in a-f Total column of Table 3.1 for Cascade Irrigation District (288 should be 2088). Kiona Irrigation is also confusing between a-f columns. **34**

Page 3-5 - Table 3.1 notes various amounts of trust water. Please provide a discussion on the intended use of the saved water. **35**

Page 3-23 and Table 3.3 - Please elaborate on the potential impacts in the anadromous fish section. **36**

Chapter 4 - Affected Environment and Environmental Consequences

Page 4-2 - 4.2.1.1 River Regulation - Early in the document Reclamation notes how important Stanford et al 2002 recommendations are for restoration of normative flow. Stanford et al 2002 is rarely referenced again in the entire document. This is an **37**

important reference for noting deficiencies and how to achieve potential biological gains. The DPR/EIS should compare the various alternatives and their ability to meet Stanford et al 2002 recommendations. This section provides an opportunity to incorporate and discuss the Stanford et al 2002 recommendations. **37**

Page 4-29 - Groundwater Resources -. It is noted that since predevelopment, a 31 percent mean annual increase in basin recharge has occurred due to application of irrigation water to croplands. Has this stabilized or will this continue to increase? **38**

Page 4-33 - Irrigation return flows to the lower Yakima River account for about 75 percent of the streamflow downstream of the Parker gage. Please identify the time period for those return flows. Also, please explain how the data was analyzed (where, when, frequency, etc.). **39**

Page 4-51 - Figure 4.10 is a reasonable itemization of elements of stream fish habitat, but it doesn't explain relationships. Please identify relationships. **40**

Page 4-54 - 4.5.2.2. No Action Alternative - The volume of sand (fines) is important to fish survival. Excessive amounts can injure fish and cover the redds. Under any of the alternatives, sand volumes would have a direct relationship to habitat conditions and fish survival. This relationship should be considered in more detail. **41**

Page 4-68, 69, and -112 (Indicator 4) - Additional information is necessary to validate the model used (Carroll and Joy 2001). Please provide how the data were analyzed, and methods of collection (when, where, frequency, etc.). The model may/could apply to a specific reach; specific time period. When flows increase 352 cfs, and 666 cfs, respectively, anywhere on the river, much less in the lower river during the summer period, the aquatic habitat is going to respond in several beneficial ways and yet temperature, DO, sediment load, and other water quality parameters are noted to experience "virtually no change". **42**

Page 4-95 – Affected Environment - Please adjust fall Chinook adult upstream migration timing in table 4.23. Fall Chinook peak migration occurs at Bonneville about September 1 rather mid August is the onset of the fall Chinook upstream migration. Peak migration in 2007 at McNary Dam was September 25. **43**

Page 4-95 – Affected Environment and Table 4.23 - Adjust the juvenile fall Chinook and summer Chinook outmigration window to be from April through August. **44**

Page 4-95 – Affected Environment - Under status and distribution, include the upper Columbia River fall Chinook stocks. The DPR/EIS states, "to some extent, in Priest Rapids Lake..", but does not describe any further spawning or dam counts further up the river. The Wenatchee River is well known for fall Chinook stocks. **45**

Page 4-98/99, Habitat Conditions for Anadromous Fish; Page 4-125, Cumulative Impacts

If unregulated flow with natural variability and the "interaction of these habitat elements, combined with streamflow" is so important in producing "a complex mosaic under which native aquatic species assemblages evolved and live", then why does the Planning Report ignore the fish benefits that could accrue from the joint alternatives from being able to creatively manage significant amounts of stored fish water (especially BRR)? The fish managers will continue to use SRFB, RFEG, BPA and other funding to implement prioritized habitat access, protection and restoration projects that could work synergistically with SOAC-recommended management of "new fish water" from the joint alternatives to provide significantly higher benefits than presently shown in the PR. The Study Team should attempt to factor "flow leverage of habitat projects" into the BCA to maximize productivity. **46**

Page 4-103, Methods and Assumptions

Temperature

It was not indicated what model was used for temperature. The DEIS indicates that there was no difference between the Joint Alternatives and the No Action Alternative. However, no data or variances regarding temperatures were shown within the various index reaches and the parameters that were included in the model were not described. It was not indicated if only differences in the means temperatures were modeled or is changes would occur based on water year. For example, the Black Rock alternative may have resulted in notable differences in temperatures within some reaches during drought or very wet years. **47**

The DEIS recognized the altered nature of the hydrograph including truncation of runoff peaks and duration and the associated effects on quality, quantity, and temporal duration of groundwater discharge to the river. However, no attempt was made to "game the model" to assess if water saved through reductions in late summer flows in the lower Yakima River might be used to increase groundwater storage through providing higher peak flows in the spring. Thus, returning groundwater might moderate temperatures in the lower river and/or associated side channels later into the summer months. If temperature modeling indicated no fish benefit associated with increased flows in the lower river due to excessive temperatures, the flow objectives should have been adjusted to use the water elsewhere and/or at different times in an attempt to maximum fish productivity. **48**

For example, reducing flow objectives in the lower river for a 70day period by 600 or 900 cfs would provide about 83,000 to 125,000 acre-feet of flow respectively. If this water were to be used during the April-early May out-migration period during natural spring runoff flows, increased hyporheic storage of cold water within the floodplain of the Wapato reach would occur. This may reduce temperatures in the lower river over an extended, critical time period.

Predation might be moderated as well due to increased flow volumes and colder water.

We realize that there could be an infinite number of output flow objective scenarios that could be reviewed with the DSS model. The DEIS used only one flow objectives for each stream reach assuming it would be optimal for production and/or survival of salmonids. It was apparently assumed that a flow objective roughly reflecting the natural hydrograph would be a reasonable template to use with greater weighting of importance towards some stream reaches than others. However, it was also discussed that if 650,000 acre-feet were provided to SOAC through a Black Rock alternative for fish management the water would likely be managed very differently between good water years and drought. It would be expected that flows within certain reaches would be weighted of much greater priority than in others during droughts, while other flow scenarios might be used during years with heavy snow pack. Within year adjustments would likely be necessary as well to ensure optimal use of water for fish production. An algorithm tied to *Riverware* and *EDT* models could be developed to optimize fish benefit under various scenarios. **49**

Page 4-104 - Two-dimensional Hydraulic Model

While we have confidence in the model we have concerns with the sensitivity of the data collection methods for the data used in the model as it may have underestimated channel complexity and juvenile salmonids rearing habitat in some reaches. Thre floodplain habitat in ythe upper Easton reach and Wapato reach are very complex and difficult to accurately survey with any method. Ken Bovee indicated that LIDAR was effective to within 1 meter and didn't penetrate dense canopy areas. It would be preferable to truth some of the LIDAR data with more traditional methods such as sonar or cross sectional measurements of the floodplain and associated side-channel habitat to ensure that an acceptable degree of precision occurred. **50**

During the presentation of the DSS model it was indicated that LIDAR were sensitive to within 1 meter which may have excluded many small habitat features including shallow off channel/side channel habitats especially areas where extensive complexity exists. We much prefer sonar or transects at a subset of location to ground truth the changes in the DSS model.

The model apparently used habitat preference data for various life history stages of salmonids that was a collective opinion of various experts rather than empirical data. It was not indicated regarding whether or not this data was compared to empirical data and preference curves that are available.

Evaluation of Fish Benefits - Modeling

The areas of interest for anadromous fish incorporate the existing and proposed reservoirs within the basin, and the mainstem Yakima, Naches and Tieton Rivers

from the headwater reservoirs to the confluence of the Yakima River with the Columbia River. The areas of interest for resident fish include the existing and proposed reservoirs within the basin, and the mainstem Yakima, Cle Elum, Naches, Tieton, and Bumping Lakes Rivers from the headwater reservoirs to the confluence of the Yakima River with the Columbia River.

- Modeling efforts are limited by available data to five stream reaches, hence it is assumed that because fish benefits created by additional flows in the lower Yakima reach were not evaluated, the data does not exist or was not provided to the modeler. Was it assumed that excessive temperatures alone during the rearing period eliminated this reach from consideration? It is our professional opinion that with increased flows and river rejuvenations that significant habitat may be established within the lower Yakima reach. Alternatives flow scenarios that change flow objectives within this reach may result in temperature moderation. **51**

- The lower reach (Prosser to Columbia River confluence) is absent from most of the modeling efforts. We question the relationship between flows and habitat that indicates a decrease in habitat, even when there is a potential to increase flow by as much as 50 percent. Were only direct flow increases considered and not flow increases realized through hyporheic exchange within this reach? As velocity increases, especially in the lower gradient stream reaches, the juveniles seek out the low energy zones created by the horizontal and vertical increases upon the floodplain. There is a significant amount of floodplain habitat (as noted in the document) in the lower river for fish to utilize if wetted up. Please provide where and under what flow regimes the flow measurements and channel configuration data were taken. This would affect the data analysis. Also, indicate if the temperature model addressed side-channel habitat independently from the mainstem , as groundwater influence would be different. **52** **53** **54**

- The document focuses on the mainstem Yakima River habitat functions and values. It seems that the models or estimates do not include any of the tributary values. Most of the middle to lower Yakima Basin tributaries is influenced by irrigation practices, and most of them carry irrigation return flows, including Satus and Toppenish Creek on the Yakama Reservation. A major omission in the DPR/EIS is the analysis of tributary habitat function and values, fish life and their relationship to mainstem Yakima River Reclamation operations. Increased storage in conjunction with other habitat restoration efforts would provide significantly opportunities for improving instream flow within tributaries that wouldn't otherwise be possible. **55**

- The flow models used to predict habitat suitability appear to be flawed regarding flow and habitat relationships. Deprivation of and beneficial lateral connectivity is overlooked or somehow miscalculated in the five **56**

index areas (perhaps due to the math errors noted above). Please review these calculations.

- The coho and fall Chinook life history functions were not comprehensively addressed by the EDT analysis for the lower 40 miles of the Yakima River. Surrogate reaches were used instead. Applying traditional assessment methods within these reaches would be preferred to assess model precision. **57**
- It is not clear how accurate the assessments of the resource indicator measurements are (Table 2.69). Flow-habitat modeling was used, but models are only our simplifications of our incomplete understanding of fish ecology. Benefits of the proposed projects (see 4.8.2.7) are greater for older year classes rather than the year classes measured. **58**
- Please explain why the models indicate a reduction of flow in the lowest reach. Municipal sources appear not to be clearly delineated. **59**
- The use of DSS to model coho rearing habitat is problematic (Beecher, WDFW; Brad Caldwell, Ecology). In many streams the models apparently indicate that the lowest stream flows produce the best habitat for coho based on weighted usable area and preference curves. However, much empirical data from smolt trapping by WDFW has found that increased stream flows result in successively increased coho productivity. Ecology and WDFW have typically disregarded the WUA results because of the conflict with what we know about stream flow for coho juveniles. Smolt trapping data indicates a strong correlation between higher summer/fall stream flow and resultant increased adult coho returns. Empirical data suggests that a one-percent increase in stream flow in Aug/Sept will result in a one percent increase in the adult coho population two years later. **60**

Page 4-115, Steelhead

A 51 percent increase in steelhead adult abundance resulting from the Black Rock Alternative is not a "minor effect" (from the EQ Evaluation), especially when the benefit analysis did not use any of the new fish water to improve habitat and production in tributaries. The actual improvement should be higher if the means to direct some of the 500-800 MAF to tributaries can be identified and implemented. This is probably our best chance to recover Yakima steelhead to the level that they can be de-listed and support a sustainable tribal subsistence and terminal sport fishery. **61**

Page 4-118, juvenile salmonid productivity

On page 4-118, it is noted in the DSS that the model assumed no changes in the existing channel configuration, just changes in flow. The limited changes in salmon and steelhead productivity for each alternative appeared linked to the altered nature of the floodplain and changes in the cross-sectional channel configuration. The incised and simplified nature of the existing channels **62**

reflected minimal gain in habitat quantity until flow stages were quite high or low. Over bank flows provided significant access to perched side channel habitats and backwater areas. The DSS model could be used as a tool to refine and prioritize where floodplain connectivity would result in the greatest fish benefit or incorporate modifications to the bed that are proposed. Gaming the model would highlight which restoration alternatives resulted in greatest production. 62

The various alternative also assumed that other restoration programs and alternatives would not provide synergistic fish benefits. Yakima river Basin Water enhancement Program, and Salmon recovery funds could be used to later exist water delivery systems to convey and wheel water from the Yakima River to water users current diverting from the small tributaries. Resolving instream flow fish passage barriers within the lower reaches from flow exchanges could provide better anadromous access many miles of habitat.

These exchange benefits are not reflected in the fish benefit calculations within the model.

Page 4-132, Table 4.31

The summary of impacts of the joint alternatives on rainbow trout and bull trout does not include any estimates of improved adult production…why? Why no attempt to estimate economic "use values" for river-dwelling rainbow and cutthroat trout or ESA "avoided cost" values from improvement in viable salmonid population (VSP) parameters for bull trout leading to de-listing? 63

Additional Comments

- WDFW and PSMFC found that the lower Yakima River fall Chinook stock was genetically different from the Hanford Reach, Snake River, and Marion Drain Up River Brights (See 1998, 1999, 2000, and 2001 PSMFC reports). This stock warrants greater consideration regarding habitat values, habitat association and use, and identifying potential benefit from the Yakima River Storage EIS alternatives. We suggest identifying some index areas within this reach as well. 64
- Please elaborate on increased water use and the potential locations of future withdrawals for municipalities with regard to ground water sources and surface water from the Yakima River. 65
- Please consider a pipeline be built to direct flows from the outlet of Wymer Reservoir to the Yakima River rather than realigning the existing channel. Lower Lmuma Creek (below SR-821 bridge) is valuable coho and steelhead rearing habitat. 66

- There was no mention of the positive relationship between nutrients and salmonid production. There is significant literature regarding the benefit of additional marine derived nutrients on salmonid productivity. Although the DEIS assumed to channel in the existing habitat increased escape of some species, particularly fall Chinook and perhaps coho, might measurably increase productivity of existing habitats. The enhancement effects of spawning pink salmon on stream rearing juvenile coho salmon are well documented. **67**
- The proposed Black Rock Reservoir could affect the existing groundwater contamination at the Hanford Nuclear Reservation. Seepage from the proposed reservoir would increase the ground water flow in the aquifer under the reservoir. This has potential to increase the movement of contaminants from the central part of the site. Such an increase in groundwater flow has the potential to change containment plume shapes, travel times, and peak concentrations. The seepage from the proposed reservoir also has the potential to raise the water table level beneath the Hanford site and mobilizing the contaminants currently in the soil. **68**

Sincerely,

Jeff Tayer

Jeff Tayer
Regional Director

Attachment (Table 1 – Storage Study Flow Objective

Table 1

Mean Monthly Flow Targets and Required Volume (AF) from Tables ES. 1, ES.2, 2.2 and 2.10

Reach	March	April	May	June	**Spring Total**	July	August	Sept.	October	**Summer Total**	November	December	January	February	**Winter Total**	
Ellensburg																
Mean CFS	1,982	2,424	3,700	2,586		2,000	1,000	1,000	1,000		980	1,016	1,257	1,459		
Volume (AF)	121,655	143,986	227,106	153,608	646,355	122,760	61,380	59,400	61,380	304,920	58,212	62,362	77,155	80,887	278,616	
		Value in Tables ES.2 & 2.10 =			741,915		Value in Tables ES.2 & 2.10 =			304,920		Value in Tables ES.2 & 2.10 =			380,010	
				diff. =	95,560				diff. =	0				diff. =	101,394	
Table 2.2	117,938	144,238	220,150	153,849	636,175	119,000	59,500	59,500	59,500	297,500	58,311	60,446	74,807	86,821	280,385	Table 2.2 values
Wapato																
Mean CFS	3,109	2,794	3,500	2,655		1,300	1,300	1,300	1,300		1,758	1,854	2,163	2,460		
Volume (AF)	190,830	165,964	214,830	157,707	729,331	79,794	79,794	77,220	79,794	316,602	104,425	113,799	132,765	136,382	487,371	
		Value in Tables ES.2 & 2.10 =			780,410		Value in Tables ES.2 & 2.10 =			316,602		Value in Tables ES.2 & 2.10 =			898,766	
				diff. =	51,079				diff. =	0				diff. =	411,395	
Table 2.2	184,978	166,261	208,250	157,958	717,447	77,350	77,350	77,350	77,350	309,400	104,616	110,295	128,712	146,389	490,012	Table 2.2 values

= "actual seasonal volume objectives"

= discrepancy between "actual seasonal volume objectives" and values shown in Tables ES.2, 2.2 and 2.10

= **NO** discrepancy between "actual seasonal volume objectives" and values shown in Tables ES.2 and 2.10, however discrepancy exists with Table 2.2 values

69

70

J.A. Easterbrooks, WDFW
March 27, 2008

Comment WAS-0002

STATE OF WASHINGTON
DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION
1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

February 19, 2008

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

Re: Yakima River Basin Water Storage Feasibility Study
Log No: 013108-05-BOR

Dear Mr. Kaumheimer;

Thank you contacting our department. We have reviewed Draft Planning Report/ Environmental Impact State for the proposed Yakima River Basin Water Storage Feasibility Study in Benton and Yakima Counties, Washington.

As described in Chapter 4 any alteration, excavation, and construction of the proposed project would result in the adverse effect to significant cultural resources. As a consequent, substantive inventory, evaluation, and development of treatment plans for significant cultural properties will be required. **01**

Rather than a Memorandum of Agreement as suggested on page 4-258 we would suggest a Programmatic Agreement be developed for the project. **02**

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on the behalf of the State Historic Preservation Officer in conformance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 586-3080
email: rob.whitlam@dahp.wa.gov

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION
Protect the Past. Shape the Future

Comment WAS-0003

WASHINGTON STATE DEPARTMENT OF
Natural Resources

DOUG SUTHERLAND
Commissioner of Public Lands

March 31, 2008

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

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

Thank you for the opportunity to provide comments on the Yakima River Basin Water Storage Feasibility Study Draft Planning Report and EIS. The Washington Natural Heritage Program is responsible for maintaining information on rare plant species and high quality native wetland and terrestrial ecosystems.

We recommend rare plant surveys be performed, at the appropriate time of year, to determine whether the proposed project areas contain rare plant species. The Washington Natural Heritage Program strongly encourages the protection of rare plant populations and their habitats in their natural condition. Maintaining viable populations of rare plants in their natural habitats is the best way to ensure their long-term survival. This may mean simply protecting the habitat from disturbance, or it may mean active management of the habitat to restore and maintain its natural condition. 01

The benefits for conserving rare plants in their natural habitat are many: 1) suitable conditions such as soil, light, moisture, exposure, and other influences exist for their continued survival, meaning less effort and fewer resources will be required; 2) the intricate interactions of both plant and animal species are conserved; 3) other natural resources such as water quality and open space are preserved; 4) scientists gain an understanding of the species' biology and habitat requirements.

Conserving rare plant species through introductions or reintroductions (translocation or propagation) is at best an uncertain tool and can only be considered experimental. To determine success of projects would take decades. Success would require the establishment of ecosystem functions, not just the presence of a few individuals of a rare species. 02

Little is known about most rare plant species' biology, such as their pollination systems or germination requirements. Such lack of knowledge would hinder artificial efforts. Relocating plants may also interfere with their natural evolution. Plant species' genetics could be negatively affected by mixing with local populations – or by becoming limited in genetic variation from having too small of a population. Therefore we cannot support relocation of sensitive species as appropriate mitigation.

1111 WASHINGTON ST SE ▮ PO BOX 47000 ▮ OLYMPIA, WA 98504-7000
TEL: (360) 902-1000 ▮ FAX: (360) 902-1775 ▮ TTY: (360) 902-1125
Equal Opportunity Employer

03

The loss of shrub-steppe habitat is a great concern to our program. Any loss of shrub-steppe adds to the cumulative loss of this irreplaceable resource. We agree with the US Fish and Wildlife Service's comments that shrub-steppe is a limited and endangered resource. Over half of the state's shrub-steppe has been converted. Only 1% of the original shrub-steppe is protected in preserves designated solely for shrub-steppe and associated species. The preservation of shrub-steppe is also critical for the birds and other animals that use this declining habitat.

The proposed mitigation to compensate for shrub-steppe losses by converting agricultural lands to shrub-steppe is unrealistic since conversion of even degraded shrub-steppe to functional shrub-steppe has yet to be demonstrated.

We hope that the Bureau of Reclamation will work with the Natural Heritage Program to identify and protect rare plant species and high-quality ecosystems in the project area.

Thank you for your consideration of these comments.

Sincerely,

Sandy Swope Moody

Sandy Swope Moody, Environmental Review Coordinator
Washington Natural Heritage Program
Asset Management & Protection Division
PO Box 47014
Olympia WA 98504-7014

C: DNR SEPA Center

Comment WAS-0004

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. **1**

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. **2**

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. 03

   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. 04

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. 05

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. 06

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. 07

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

Comment LOC-0001

Received in Mailroom
MAR 20 2008

Yakima County Auditor

Corky Mattingly, Auditor
Diana Soules, Assistant Auditor

Yakima, Washington

March 18, 2008

Att: David Kaumheimer
1917 Marsh Road
Yakima, WA 98901

Dear Mr. Kaumheimer:

As a native of the Yakima Valley and the granddaughter of pioneer farmers in this area, I have grave concerns about the future availability of water to this valley. We all know that over the years the snow pack (which serves as another storage for water) has fluctuated greatly and cannot be depended on from year to year.

The Yakima Valley has the most diverse agricultural products grown anywhere in the world. The economy of this entire region is based on this production. Without a dependable water supply this area would be devastated. This devastation would not only affect this area but also national agricultural production and exportation.

The BOR has not taken into consideration the full economic and ecological impact that Black Rock would have on this area, Washington State and the United States. The presence of Black Rock would provide for dependable and abundant agricultural production and the expansion of tourism in the Yakima River Basin.

01

Being a YBSA board member, I have known the concerns that we have had about the study from the beginning. The Bureau's study has been going on far too long. The time for studying this issue is up. It is time for the BOR to take a stand and recognize that Black Rock meets all the goals stipulated in the study.

The Bureau of Reclamation does not have the option to choose "no action". BOR must take a stand to protect the viability of this area's economic well being and to protect its most valuable asset, water.

Sincerely yours,

Corky Mattingly
Yakima County Auditor

128 North Second Street • Room 117 • Yakima, Washington 98901 • (509) 574-1400 • FAX (509) 574-1341

Accounting	Administration	Elections	License	Payroll	Recording
574-1310	574-1402	574-1340	574-1370	574-1392	574-1330

Comment LOC-0002

BOARD OF **YAKIMA COUNTY** COMMISSIONERS

★ District One	★ District Two	★ District Three
Michael D. Leita	**Ronald F. Gamache**	**Rand Elliott**

March 31, 2008

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

Dear Mr. Marquis:

Yakima County cover letter re: Draft PR/EIS Yakima River Basin Water Storage Feasibility Study

The Board of Yakima County Commissioners is writing this cover letter to express our objections regarding the Draft PR/EIS Yakima River Basin Water Storage Feasibility Study findings and conclusions. We have attached specific comments made by our Yakima County staff.

Historically, Yakima County has been known as the "fruit bowl" of the Nation and the watershed cradle of ESA recovery efforts within the Pacific Northwest. Municipal water demands continue to grow.

The last water projects for this unique area were created by our Federal government over 70 years ago. Over the last 30 years, various actions have been taken to mitigate growing water demands. Water conservation, innovative irrigation practices, reservoir "flip-flops", huge salmon recovery efforts, temporary well drillings, removal of orchards, and other solutions have fallen short. Compounding these shortfalls are diminishing annual mountain snow packs. Yakima County's basic water needs can no longer be mitigated by past shortsighted solutions.

Yakima County can not accept second-best solutions. Seventy years ago vision and commitment made this valley fertile. Only a visionary major water project will solve our region's impending long term water crisis. The EIS economic analysis based on limiting and short sighted parameters is unacceptable. The deadline for completing the final draft PR/EIS is in December 2008. In that document, the Bureau of Reclamation is required to identify a preferred alternative.

Sincerely,

Ronald F. Gamache, Chairman

J. Rand Elliott, Commissioner

Michael D. Leita, Commissioner

cc: file
Public Services

128 North Second Street • Yakima, Washington 98901 • 509-574-1500 • FAX: 509-574-1501

Comments on the Yakima River Basin Water Storage Feasibility Study Draft PR / EIS

Terry Keenhan, P.E. [1]
Joel Freudenthal, Fish and Wildlife Biologist [2]

Preamble / Overview

The Executive Summary of the Yakima Basin Storage Study Planning Report / EIS (PR / EIS) states *"(the) finite (water) supply and limited storage capability does not meet the water supply demands in all years and results in significant adverse impacts to the Yakima River basin's economy, which is agriculture-based, and to the basin's aquatic resources - specifically those resources supporting anadromous fish."* This statement is not surprising since the total Yakima Basin reservoir storage is only 30% of the annual basin runoff. This compares to the Colorado River dams built by the Bureau which hold between 400 and 500% of annual runoff and provide drought resistant water supply to the users.

This Yakima Project's low level of drought resistance has been an issue for irrigators, municipalities, fisheries and market economies both national and international for a long period and its long term viability has become of increasing concern with increased frequency of droughts/proration of water users, and with the documented one and a half degree regional warming and reduced snow packs since 1946. According to studies quoted by the EIS this reduction in summer flow supply is anticipated to accelerate to an additional 40% reduction of current flows. We are all aware that the basin water is currently over-allocated yet non-irrigation water demands (on surface and subsurface which may be connected) within the valley are increasing primarily due to regional and State growth pressures.

The Yakima Project undertaken by reclamation in 1905 has provided a valued local, regional and national contribution to the economies despite its small size, limited drought resistance and basin water over-allocation. The project has shaped the local economy, the local communities and the regional, state and nation's food production, particularly for high value crops. However, past experience, most recently in the 2005 and in the 1990s, has shown the increasingly limited drought resistance, and the resultant hardships, recoveries and impacts on modified crop selection, rotation and the resultant reduction to total capital investment - valley-wide. The PR / EIS has failed to adequately address water supply and demand issues as they relate to competing demands and environmental impacts, including damages as they relate to droughts and stability of the water supply.

Further, the World Commission on Dams November 2000 Report *"Dams and Development, a New Framework for Development"* which surveyed large dams worldwide reveals that large irrigation dams (non-hydroelectric and non-flood control) have ***not*** provided positive benefit

---

[1] *Mr. Keenhan is currently Surface Water Manager for Yakima County Public Services. Mr. Keenhan has over fifteen years experience in the design of damns, related infrastructure, and management of water resources.*

[2] *Mr. Freudenthal is currently Fish & Wildlife Biologist for Yakima County Public Services, he is the primary author of the Yakima Sub-Basin Plan and Draft Yakima Basin Salmon Recovery Plan. He has over 20 years experience in the development and implementation of water and aquatic habitat*

to cost ratios. One of the authors of this comment worked on the International Joint Venture establishing the International Funding Feasibility (including national benefits) of the hydroelectric Three Gorges Dam, which failed to provide an agreed upon positive BC ratio despite the huge transformative national benefits of the hydroelectric gains. So it is disappointing that this report characterizes the NED account as a benefit/cost analysis that must be greater than 1 for a proposed water project or plan to be *"economically justified"*, which is a concept that does not appear in the P&Gs. The NED account is intended to measure benefit to the Nation according to specific categories of benefits defined in the P&G's, and as such is not a cost/benefit analysis to be used to determine if a project or plan is "economically justified" as mentioned in the PR/EIS.

It is our view that the Storage Study PR / EIS falls well short of accurately depicting the economic and environmental issues facing the Yakima Basin and notably, benefits to adjacent areas in the Columbia Basin. Consequently, we think the PR / EIS in its present form will seriously hamper future efforts to maintain or improve the economy and/or the environment in the Yakima and Columbia Basins to the detriment of the residents in these areas, the State of Washington and the United States as a whole. We believe this could have been avoided by a fuller involvement of local municipalities and agricultural interests beyond that offered from the study outset, as recommended by the WCD 2000 Report and in the P&Gs.

The Storage Study has been in progress since 2003, and by the time the Study is concluded, some $16 to $18 million will have been spent by the Federal Government and the State of Washington in examination of alternatives for improving water supply and fish habitat in the Yakima basin. The County believes that a more open Yakima Valley input to the alternative evaluation, criteria and selection and to the PR / EIS is required. Decision making revealed in Chapters 1 and 2 of this document reveal a lack of connectivity and involvement between the local, regional, and state parties and the Bureau, plus exclusion of some important issues. There is also a disconnect between conclusions in Chapter 2 (the PR) and the material presented in Chapters 3, 4 and 5 (EIS). It is apparent that many of the conclusions reached in Chapter 2 were reached prior to consideration of the information in Chapters 3,4, and 5 in the draft document. We are also aware of information from the DSS model and the EDT model runs that were not included in the Draft PR/EIS, but will be included in the final. The substantive and procedural validity of the Final PR/EIS and the process used to develop it will be in question without a more clear linkage between the completed chapters 3,4, and 5 and the conclusions reached in Chapter 2.

It is in the interests of all parties that the information presented in the PR / EIS, - particularly the economic, fisheries, and water supply issues which are the core of the PR / EIS - accurately reflect the current and anticipated future supply and demand conditions within the basin and are framed in the context of the Federal and State Governments policy objectives that drove the funding to support preparation of the Storage Study PR / EIS. An accurate and consistent discussion of the issues and effects of the current economic and environmental issues facing the basin would allow a more accurate appraisal of the individual alternatives and also allow interested parties in the basin to move forward collaboratively in the future if none of the current alternatives are implemented, or new alternatives arise as a result of the shortcomings of the alternatives presented.

Major Issue 1 - Agricultural Economy of the Yakima Basin and its susceptibility

Specifically, we feel that the effects of any of the alternatives on the agricultural economy, particularly the National Economic Development (NED) account, are seriously in error and do not reflect the economic severity of the past droughts or the economic benefits that would accrue from reducing or eliminating the frequency of short water supply years. The PR / EIS states that it was prepared in conformance with the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&Gs)*, which contain extensive direction on preparation of the NED account for agriculture. We find that the economic analysis for agriculture in the PR/EIS or in the Economics Technical Report is not in compliance with the P&Gs due to lack of analysis of damage reduction, intensification, change in cropping patterns, and insufficient scope. 01

The Yakima Valley agricultural economy is dependent to a large degree on perennial crops such as fruit, grapes, asparagus and other specialty crops, as well as livestock and dairy production. The PR / EIS's lack of consideration of drought-induced damage to orchards, vineyards, other perennial crops as well as the productive capacity of livestock operations seriously underestimates the effect of drought on the basin's economy. These damage effects are especially severe for fruit and grape production and require several years after the substantial droughts for a farm unit to return to full capacity. The PR / EIS only considers the effect of drought as a loss of farm income in a short water year, and does not consider the damage to productive capacity of farm units and the Basin as a whole that occurs during drought, continues to constrain productivity in subsequent years, and results in inefficient water use in all years. It is this concept that resulted in the local development of the 70% or greater proration goal that is adopted also as a goal in the PR/EIS. It is this lack of consistency between the economic rationale behind the goal and the economic analysis of the beneficial effects of meeting this goal (or increased reliability/flexibility of water supply in general) which will thwart or retard the alternatives put forth in the PR/EIS and any subsequent proposals. 02

Improvements in water supply will reduce risks to agricultural producers, which in turn should lead to changes in the intensity of use on individual parcels, and a shift in cropping patterns, especially where economic/water supply risk is most severe - such as the KID, KRD and the Roza Irrigation Districts. The P&Gs suggest market analysis, interviews with local farmers, and interactions with experienced local property appraisers to account for these effects. These procedural requirements of the P&Gs were not performed for the PR / EIS, leading to an underestimation of the current effect that high risk has on the agricultural economy nor the benefits of reducing that risk. 03

The Kennewick Irrigation District (KID) is the most junior of the Reclamation Water Contract Holders in the Yakima Basin. Improvement of the water supply to this district should be expected to have significant effects on the agricultural economy given its recent status as a premier wine-producing area and the acknowledged lack of predictable water supply necessary to take advantage of the unique soil and climactic conditions present in the KID. Yet the KID (or any other area whose diversion point is below Sunnyside Dam) is not included in the PR / EIS analysis of the agricultural economy or the economics model as Reclamation Crop Reports were not available for this area. Not including the area which would arguably have the most benefit from an increased water supply in the PR / EIS leaves the document substantively flawed in its evaluation of the agricultural economy of the Basin. 04

The Economics Technical Report for the Yakima River Basin appears to be in error in several places on page 29. Table 2-20 appears to suffer from transposition of numbers in the first line, and arguably, in line 5, which shows the probability of dry years. In paragraph 2.3.1.1.5 this same example "probability of a dry year" is shown as the probability of a dry year that was used in the PR/EIS. The probability of a dry year, using the selected 25 year period, is 0.24 (6/25) and 0.20 (5/25) for the No Action alternative. If frequency (0.04) was actually used in the PR/EIS, then the benefits side of both the NED and RED accounts is underestimated by 80%. As noted earlier, this under-estimation is further exacerbated by the unjustified exclusion of the intervening year impacts following droughts and the exclusion of benefits for years below 100%. This of course influences the RED account which also exhibits low multiplier factors. Generally the Economics Technical Report excludes vital information for assessment or comments

05

Summary - The analysis of the Agricultural economy of the Yakima Basin is seriously flawed in the report and underestimates the inefficiencies associated with pro-rationing of irrigation water and droughts. This underestimation is so skewed that the prospect for change or relief in the pro-rationing system, the Storage Capacity of the Yakima Project, or the rationale for increased conservation are all equally set back by the EIS.

Major Issue II - Uncertainty, Likelihood, Risk and Mitigation of Impacts

The P&Gs also thoroughly discuss the concepts of risk and uncertainty, but these concepts are not dealt with consistently in the document. Potential impacts (or benefits), environmental or otherwise, do not translate into reasonable or realistic impacts without the screening of likelihood (or uncertainty), an evaluation of actual risk, and a determination of reasonably attainable mitigation measures. This is not only a standard engineering approach but a technique required of environmental impact statements (including NEPA and SEPA) to meet legal concerns, and also consistent with the recommended approach in the P&Gs. There are several cases of an incomplete or minimal analysis of these aspects prior to report inclusion. Two of the significant impacts are noted below.

Climate Change - The effects of Climate Change are discussed in the document, but are not modeled and were not included in the evaluation of alternatives. The quoted Climate models and studies show a high probability of increases in mean temperature by 3 degrees and decrease in snowpack and summer streamflow in the order of 40% (Table 4.9) by 2050. Recent NRCS North Cascade glacial mass studies and measurements at snowpack measurement sites, which are not quoted in the PR / EIS, have measured a substantial wasting away of local Cascade glaciers and 25% reduction in snow water equivalent over the last 60 years in response to the 1.5 degree increase and small precipitation increase in the area since 1946. The PR/EIS states that consideration of climate change effects was not considered in any of the recommended accounts because of the uncertainties associated with separate precipitation studies. The P&Gs specifically calls for the inclusion of these types of uncertainties in the decision making process, and the risk and uncertainties associated with climate change should be incorporated into the alternative evaluation process with the inclusion in the matrices and tables for at least one, and probably 3 (NED, RED, EQ) accounts in the PR/EIS. The impacts of the decision to disregard the projected 40% reduction in summer flows (water supply) cannot be understated in a basin which is far from even being considered drought resistant now. The reduction in water availability in the summer cannot help but result in tighter water supply and more instances of pro-ration within the Basin. Alternatives in the PR / EIS

06

should have been evaluated according to not only the ability to reduce proration under the present climate, but in this predicted future climate. There are no attempts to model or address mitigation of this significant and likely impact. In essence, this states that more frequent and extended droughts in a basin which is minimally drought resistant are okay. 06

Seepage - Environmental risks and likelihoods as well as reasonable mitigation associated with Seepage from Black Rock have not yet been established or quantified since studies are still ongoing. This is promised within the Final PR / EIS. County comments on the November draft to remove report seepage conclusions prior to completion of the studies were removed in the Executive Summary and Chapter 4 but not in Tables 2.62, 2.64 and 2.66. We repeat that evaluation of alternatives for "seepage risk" including mitigation should not occur prior to the completion of the seepage report, but should occur prior to their inclusion in the Final PR / EIS. We expect these tables to be further assessed since they should evaluated including agencies other than the Bureau, as was stated in Chapter 2. 07

Increased usage and reliance of wells - The uncertainty and impacts of current emergency usage of more wells to safeguard crops and other supplies has not been addressed, particularly with regard to the interconnection between surface and groundwater. The current mining of this resource due to the limited drought resistance and the potential damage already done or predicted in the next few years has not been analyzed, included or acknowledged. This is a concern for all Columbia irrigated basins. 08

Summary - The PR / EIS does not follow the recommendations in the P&Gs for consistently dealing with risk and uncertainty, and is therefore substantively and procedurally deficient. These concepts should be dealt with fairly and consistently prior to formulation of the Final PR / EIS.

Major Issue III - Columbia River Water Supply Development Account

The Storage Study is funded by the Washington State Department of Ecology through the Columbia River Water Supply Development Account. The major goals of the Water Supply Development Account are defined by the legislature are:

(1) A key priority of water resource management in the Columbia River basin is the development of new water supplies that includes storage and conservation in order to meet the economic and community development needs of people and the instream flow needs of fish.
(2) A Columbia River basin water supply development program is needed, and directs the Department of Ecology to aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses.

Ecology and Reclamation cooperated in the development of the *Columbia River Mainstem Storage Options Off-Channel Assessment Pre-Appraisal Report*. This report looks at criteria for siting of off-channel storage reservoirs that would have the ability to capture the same Columbia River flows (i.e. October through June) that are targeted by the Black Rock Alternative in the Storage Study. Also similar to the Black Rock Alternative, the reservoir sites would ultimately release water to the mainstem Columbia or allow reduction in diversion of water from the mainstem Columbia during the summer months, when water supply for irrigation, hydropower, and fish are most limited.

During the preparation of the *Off-Channel Assessment*, Ecology stated that the Black Rock Alternative would be "further considered" in the Storage Study EIS. To date, the effects of the Black Rock Alternative on the summer flows in the Columbia River, and potential beneficial uses of such water (similar to the benefits examined in the *Off-Channel Assessment)* has not occurred. 09

Such an analysis must be included in the final PR / EIS to conform to the purposes for which State Funding was provided, and also to conform to the requirements for preparation of the NED account as laid forth in the P&Gs.

Summary: The PR / EIS draws an artificial line at the mouth of the Yakima River and does not consider beneficial effects downstream of that point as required by the P&Gs and in furtherance of the policy of the State of Washington for the Columbia River Water Supply Development Account which funded the State portion of the PR / EIS.

Major Issue IV - Fish and Habitat

One of the main drivers for habitat restoration in the Yakima Basin is the listing of the Middle Columbia River Steelhead DPS and the Columbia River Bull Trout DPS as threatened under the Endangered Species Act. There should be discussion of the impact of doubling of the population of Steelhead in the Yakima Basin relative to the listing status of the populations within the Yakima Basin and across the DPS of the Mid-Columbia. An alternative that actually did double the abundance of this species in the Yakima Basin would probably lead to delisting of the entire Mid-Columbia ESU, and affect the economy and environment of other areas of Washington State and Oregon. 10

The effects of modifications to the flow and diversion regime on fish and fish habitat are extremely complex. Reclamation has spent considerable time and effort in development of analysis tools to evaluate these effects. Only recently, after the completion of the draft PR/EIS, have these tools been completed and an analysis of the results/outputs generated by these tools performed. From this initial analysis two things are apparent, the storage alternatives do not appreciably change the extent or distribution of habitat types in the upper river, and almost all of the improvements in abundance are derived from increased flow in the lower river, mostly during June and early July. This indicates that the alternatives themselves suffered from significant design flaws and fail to meet the goal to "Improve anadromous fish habitat by restoring the flow regimes of the Yakima and Naches Rivers to more closely resemble the natural (unregulated) hydrograph." Even though the SSTWG was used to develop flow objectives, the development of those flow objectives, and the design of alternatives themselves, was only a coarse approximation of desired flow characteristics. What would be required is a more iterative approach that uses the tools developed by Reclamation for the storage study to optimize fishery benefit for a given set of opportunities and constraints presented by the infrastructure characteristics of each alternative. In essence, the alternatives were poorly designed but the tools to develop a much better set of designs now exist, and should be used prior to development of the Final PR/EIS. Optimizing the alternatives to benefit fisheries is necessary to meet the goals of the PR/EIS, but even if it wasn't, the flow management scenarios should still be optimized as a component of mitigation sequencing for all of the other effects associated with the new infrastructure required by the Storage Alternatives and the State's more programmatic alternatives. 11

Summary: The PR/EIS fails to adequately address the effects on ESA listed species in the context of the Steelhead DPS as a whole, this information should be included. The development of the flow management scenarios was completed in the absence of evaluation and analysis tools that now exist. All alternatives, including the no action alternative, should have their flow management scenarios optimized in light of these new tools. This is necessary not only to meet the goal of the PR/EIS relative to anadromous fisheries, but also from the standpoint of mitigation for the infrastructural elements of each alternative.

Comment LOC-0003

Yakima Regional Clean Air Authority

Received in Mailroom
MAR 31 2008
Yakima, Washington

Six So. Second St., Suite 1016, Yakima, WA 98901
Phone: (509) 834-2050, Fax: (509) 834-2060
http://www.co.yakima.wa.us/cleanair

March 27, 2008

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

RE: Yakima River Basin Water Storage Feasibility Study

Dear Mr. Maples:

Thank you for providing the Yakima Regional Clean Air Authority (YRCAA) the opportunity to review and comment on the Yakima River Water Storage Feasibility Study.

01

Prior to starting the renovation work, the following is required:

1. Contractors doing clearing, grading, construction, paving, or landscaping work must file a dust control plan with YRCAA.

Thank you for the opportunity to connect with the city's continued support-in-protecting the air quality in Yakima County.

Best regards,

Hasan M. Tahat, Ph.D.
Engineering, Planning & Monitoring Division Supervisor

Cc: File

Comment LOC-0004

31 March 2008

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

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

Dear Mr. Kaumheimer:

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

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

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

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

P.O. Box 190, Prosser, WA 99350-0190; Phone (509) 786-5600 or (509) 736-3080, Fax (509) 786-5625
commissioners@co.benton.wa.us

1

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

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

Yakima River Basin Water Enhancement Project

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

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

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

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

The Storage Feasibility Study and Draft Planning Report / EIS

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

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

- Improve the water supply for proratable (junior) irrigation entities by providing a not less than 70-percent irrigation water supply for irrigation districts during dry years relying on diversions subject to proration. This 70-percent goal equates to 896,000 acre-feet of proratable entitlements.

- Meet future municipal water supply needs by maintaining a full municipal water supply for existing users and providing additional surface water supply of 82,000 acre-feet for population growth to the year 2050.

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

01

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

02

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

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

3

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

Supply Alternatives

It is Benton County's opinion that the current water supply goals cannot be achieved by any single or combination of alternatives currently being evaluated internal to the Yakima River Basin. Either importation of water from the Columbia River via a project such as the Black Rock Reservoir is required or the goals must be significantly modified/reduced with respect to water supply needs. Benton County supports continued study of the Black Rock Reservoir alternative with emphasis on resolving the critical issue of potential effect of reservoir seepage on the Hanford Reservation, the degree of such effect, and the opportunities for mitigation of such effects. 03

Benton County further urges Reclamation and Ecology to not be constrained to limiting the final PR/EIS to "stand alone" alternatives. Combinations of alternatives should be evaluated in the context of this study being an element of the on-going YRBWEP program. 04

Conclusions

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

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

Recommendations

Based on our conclusions, Benton County recommends:

- That the goals of the Study should be considered as a sub-set of the YRBWEP goals; and that the Study should be considered a part of and a continuation of the YRBWEP. 05
- The current rights of junior irrigation entities should be determined and identified. 06
- Required additional water supplies for irrigation use should be quantified. 07
- That the proposed Black Rock Reservoir project be fully-examined. The Lower Yakima Basin would benefit enormously from the Black Rock project, which would assure an adequate and reliable water supply and neutralize the biggest risk to the Basin's economy – drought. Irrigators and municipalities would be protected and could depend on sufficient supplies to support a growing region. Lower Yakima River flows, which drop dangerously low for fish during water-short years, would be improved. Water quality problems would be significantly reduced or eliminated. A clean, high flow river would attract more recreational users and fisheries would be greatly enhanced. 08

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

Sincerely,

BOARD OF COUNTY COMMISSIONERS

Claude Oliver, Chairman

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

5

Comment ORG-0001

YAKIMA BASIN FISH AND WILDLIFE RECOVERY BOARD

March 27th, 2008

Mr. David Kaumheimer
Bureau of Reclamation
1917 Marsh Rd.
Yakima, WA 98901-2058

Dear Mr. Kaumheimer,

On behalf of the Yakima Basin Fish & Wildlife Recovery Board, I would like to offer the following brief comments on the Yakima River Basin Water Storage Feasibility Study.

The flows of the Yakima River and its tributaries sustain one of the nation's most productive agricultural regions, growing communities with diverse economies, and a productive natural ecosystem that is home to multiple runs of salmon and steelhead. In drought years, the river's flows can not meet all of these needs. Anticipated reductions in summer water supply due to climate change are expected to further reduce our ability to meet these competing demands for water.

Balancing these competing demands for water requires forward thinking efforts to 1) make the most of existing water supplies and infrastructure, 2) increase storage capacity to better manage the seasonal distribution of river flows, and 3) evaluate the use, if necessary after other options are fully explored, of Columbia River water within the Yakima Basin. All of these options (which are the focus of the Storage Study) have real potential to increase our ability to better manage instream flows in the Yakima Basin for the benefit of salmon and steelhead and the broader ecological system that sustains them. Yet the Storage Study's assessment of the benefits of these options falls short by 1) failing to address the added stresses created by climate change, and 2) assessing changes in flow in isolation. These points are expanded below. 01

While climate change predictions are inherently uncertain, there is a growing consensus that the Yakima Basin will face reductions in snow pack and summer stream flow in the next 50 years; indeed there is considerable evidence showing that snow pack in the Pacific Northwest has been trending downward since the 1920's. The current analysis assumes that future conditions will be essentially identical to the period of record (1981 to 2006) used in the study's analyses. The Storage Study needs to do a better job of anticipating how different climate and precipitation scenarios would affect the ability of the proposed alternatives--including the no action alternative--to meet the basin's water needs. While we understand that we can not predict future climate in detail at this time, we can develop a 02

PO Box 2662, Yakima, WA 98907
Phone (509) 453-4104 Email: info@ybfwrb.org Web: www.ybfwrb.org

set of scenarios that allows us to model the types of impacts that would result from different--even contrasting--climate change hypotheses.

Improving flow conditions is a key component of fisheries recovery in the Yakima Basin, but truly restoring the basin's salmon and steelhead runs also requires significantly improving habitat conditions and continuing to use targeted hatchery programs to reintroduce extirpated salmon runs. When assessed in isolation, any one of these three components of recovery will appear to fall short; indeed, the Storage Study's assessed benefits of flow improvements to fisheries has been widely viewed as disappointing. Yet if these three key component- improvements in flow, habitat enhancement and hatchery programs- are implemented as a single unified fish recovery program, the benefits will be far more substantial. Two quick examples illustrate this point: 03

1) The Bureau's use of the 2-d models of floodplain habitat availability under different flow scenarios is commendable, and adds considerably to our understanding of the interaction between flows and habitat conditions. Yet the models are static and do not indicate how targeted projects to change the form of floodplain habitat can in turn improve the ability of improved flows to produce desired habitat conditions. Modeling that combines the Study's assessment of response to flow changes with assessments of our ability to reopen side-channel habitat and add complexity to the river channel would show significantly greater ability to improve habitat conditions, and correspondingly greater increases in fish production. 04

2) Re-opening fish passage to Cle Elum and Bumping Lakes and the watersheds above them is being actively pursued by the Bureau, WDFW and the Yakama Nation, yet is not addressed in the Storage Study. Assessing the benefits of providing fish passage at the storage dams in combination with the increase flexibility in managing flows from the Storage Study alternatives and new hatchery production initiatives will show benefits significantly greater than any action on its own (especially if a sockeye run can be re-established in the Yakima Basin). 05

The Storage Study provides a valuable beginning for ongoing discussion of ways to increase the flexibility of water management in the Yakima Basin. The Bureau is also closely assessing how it can optimize operations of the Yakima project as part of securing a Biological Opinion for Yakima Project Operations, and we are encouraged to see the Bureau's commitment to involving stakeholders and utilizing the DSS and other analytic tools from the Storage Study in their Biological Opinion discussions. The Yakima Basin Fish & Wildlife Recovery Board has developed the Yakima Subbasin Plan, the Yakima Subbasin Salmon Recovery Plan, and the Yakima Steelhead Recovery Plan. These plans give the best overview of what is required to maintain and restore anadromous fish habitat in the Yakima Basin. The Yakima/Klickitat Fisheries Project has or is developing detailed master plans for all anadromous species in the basin that evaluate hatchery supplementation options in great detail. These different elements--flows, habitat enhancement and hatchery supplementation--need to be analyzed together to get a full picture of the potential for anadromous fish restoration in the Yakima Basin. 06

We look forward to continuing to work with the Bureau, WDFW, the Yakama Nation, BPA, the Northwest Power & Conservation Council and other key stakeholders to define, promote and implement an integrated approach to salmon and steelhead recovery in the Yakima Basin.

Sincerely,

David B. Bowen

David Bowen
Chair

Comment ORG-0002

Hop Growers of Washington
WA State Dairy Federation
P O Box 1207 ⁂ Moxee, WA 98936
509-453-4749 ⁂ Fax 509-457-8561
E-mail: steve@wahops.org

February 27, 2008

US Bureau of Reclamation
Attn: David Kaumheimer
1917 Marsh Road
Yakima, WA 98901

RE: Comments On Recent Storage Study

I represent hop and dairy producers in the Yakima Basin. Nearly all of these producers use water from the Reclamation project through local irrigation districts. Combined, these industries generate close to one half billion dollars in farm gate value annually.

As these agricultural activities require huge amounts of inputs, those dollars help to stimulate our local, state and national economies.

These industries, like most agricultural operations, require a source of stable inputs. As testimony to the structure present in the Yakima Valley, agricultural inputs such as land, equipment, transportation and "water" have been available that allow for these industries to become established and maintained. Without input stability, these industries can not operate.

Since 1977, the Yakima Basin has had severe water shortages. In the beginning, these shortages were primarily due to weather. Since that time, water shortages have come more frequently, mostly due to weather, but also due to additional demands on our water sources, exasperating the situation.

The state sponsored watershed plan known as the 2514 process, after the House Bill that created it, completed a multi-year water study a couple of years ago. This study cost nearly $3 million and acquired the services of some of the best water consultants in the state. The study found that there was a shortage of water in the Yakima Basin. Those shortages were identified as for fish, people and agriculture. It is my understanding that the BOR studied some of the same elements in their process that brought us here today.

This study found that the basin can be short approximately 475,000 acre feet of water annually. It also found that conservation measures can not meet this requirement for water, can't even come close to meeting it. The study also found

that there was little support for on-stream storage facilities. The Black Rock reservoir met the qualifications of an off-stream storage site.

The study that we are commenting on today has found that the cost-benefit ratio for the Black Rock project is not positive. However, since the BOR has restrictive guidelines, it did not take into account all of the elements that would affect the outcome. Other studies have found that by taking these "undocumented" elements into account, the ratio could be positive.

01

It seems ironic that the issue of fish restoration was not fully taken into account as the BOR works on fish enhancement and passage issues, as we speak today. One would think there would be a high value placed on fish with all of the resources going into this effort and all of the litigation that has transpired in the past. One would think that crops would have a very high value as we look at less than a 30 day world supply of wheat, and shortages of acreages to grow crops such as hay, corn and hops.

02

03

Not only do fish and agriculture need ample water supplies, but "people" will need water as our communities continue to grow. Static or declining communities do not flourish. Taking water from current allocations for other uses does not address our water shortage issue, it only diminishes the value from where it was taken.

Water storage sites and management structures have been studied in the Yakima Basin for years. We know how much water we need, and we know where it is needed today, and into the future. The Black Rock Reservoir is the only alternative that meets these requirements, both in the amount of water it can generate, and being located in the least environmentally sensitive area in the Basin. If all economic considerations were taken into account, it could likely have a very positive return ratio.

04

Water management and supply in the Yakima Basin continues to be precarious. Some of these issues should have been addressed when the Reclamation project was initiated, but they were not leaving one to wonder what liability the BOR has, and if this liability will translate into future litigation. The Yakima Basin continues to rely on water storage structures that were build over 80 years ago, that can not meet today's demand, nor that of the future. Millions of dollars have been spent on studying this situation. We know what needs to be done. Its time the Yakima Basin embarked on an adequate, stable water supply. A no-action recommendation is not acceptable, nor is a plan that will not meet current and future water needs.

Thank you for your time concerning this matter. Please feel free to contact me if you have any questions.

Sincerely,

Steven E. George
Governmental Affairs

c. Congressman Doc Hastings
Governor Christine Gregoire
Jay Manning, Director, Dept. of Ecology

Comment ORG-0003

From: Rosemary Sikes <rosemarysikes@olympus.net>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Mar 18, 2008 8:14 PM
Subject: Yakima Storage Study

March 17, 2008

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

We are commenting on the Draft Yakima River Basin Water Storage Feasibility Study and Environmental Impact. In particular we wish to comment on the Black Rock dam and reservoir. We do not think the study adequately addresses the danger of reservoir water flushing radioactive water in the nearby Hanford nuclear waste site into the Columbia River. The Bureau of Reclamation and the Department of Ecology has failed to include the Department of Energy's groundwater report on potential impacts of seepage from the Black Rock reservoir. This DOE study is critical for having a credible environmental impact statement. Also who will pay the electrical power cost for pumping Columbia River water into the new reservoir? **01**

Mitigation for project does not adequately address wildlife migration corridor needs or adequate water rights for fish and wildlife dependent on the Yakima River. Mitigation should include consolidation of public lands and adding lands to create wildlife corridors as part of the Hanford National Monument. Project waters from the Columbia diverted to the Yakima, should be used to create a series of wetlands. Dikes and floodgates should be installed to maintain wetlands as reservoir waters are drawn down. Full mitigation should be made to protect fish, native plants, and the wildlife of the Hanford Reach from the effects of withdrawing 600,000-acre feet of water for the Black Rock Reservoir. **02** **03**

Sincerely,

Rosemary Sikes, president
Admiralty Audubon Society

Comment ORG-0004

From: "riparian owners of ferryco." <riparian_owners_of_ferryco@bossig.com>
To: "Black Rock Storage Study" <storagestudy@pn.usbr.gov>
Date: Thu, Mar 27, 2008 11:36 AM
Subject: Black Rock Dam Storage Study Public Comment

The Riparian Owners of Ferry County are a private property and water rights protection group of citizens of Ferry County, Washington..

We are also supportive of efforts to add to the long term water storage capacity of our state in other counties. Water accumulation facilities in one county help other counties by reducing cross-county demand for water transfers and the cost of litigation, facilities, continuing maintenance, and long term management of water transfer agreements. Seepage of large reservoirs also add to the aquifer recharge capabilities of a county. 01

Additionally, local reservoir facilities add esthetic and recreational facilities for the local community and are an economic attraction to the community for vacationers and new business and residents.

Yours truly,

Gary Howden for
Riparian Owners of Ferry County

Comment ORG-0005

From: Katie Fite <katie@westernwatersheds.org>
To: <storagestudy@pn.usbr.gov>
Date: Thu, Mar 27, 2008 6:40 AM
Subject: Black Rock and other New Dams

Dear Washington State Department of Ecology, BuRec, Governor's Office and others,

We are very much opposed to the proposal to construct the new Black Rock and other dams that Governor Gregoire has proposed.

This is the dead opposite path that any western state should be taking. Dams have already destroyed so much of the West's natural areas, and critical fish and wildlife habitats.

As an alternative, to conserve water and decrease global warming and desertification processes, we ask that Washington state fully evaluate alternatives to reduce domestic livestock grazing on public and private lands in all watersheds east of the Cascades. For a small fraction of the cost of new dam construction, permits on public land could be purchased and retired The state should also immediately begin to phase out any grazing permits on DNL or WDFW lands. **01**

The Governor, instead of encouraging more waste and abuse of Washington's resources through dam building and other current proposals, such as cattle grazing on WDFW and other state lands, should establish programs to diminish growing of water-wasteful livestock forage crops on irrigated lands. A shift to other higher value less wasteful crops should be state policy. **02**

This, in fact, is the only path that will lead to sustainable and ecologically sound use and protection of waters and watersheds.

As part of this process, please provide a detailed analysis of the global warming costs of the production of all livestock, and livestock forage crops, in Washington state. Please also provide a complete analysis of how much water is currently be used (and natural stream flows diminished and wasted) in livestock production. **03** **04**

Sincerely,

Katie Fite
Biodiversity Director
Western Watersheds Project
PO Box 2863
Boise, ID 83701

Comment ORG-0006

March 31, 2008

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

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

Via email: storagestudy@pn.usbr.gov

Dear Mr. Kaumheimer and Mr. Sandison:

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

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

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

NORTHWEST REGIONAL OFFICE * 4005 20TH AVE WEST, SUITE 221 * SEATTLE, WA 98199
206-213-0330 (PHONE) * 213-0334 (FAX) * WWW.AMERICANRIVERS.ORG

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

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

The "Purpose and Need" of the federal portion of the DEIS is based exclusively on a narrow reading of Section 214 of the Act of February 20, 2003 (Public Law 108-7). As we mentioned in our comments on the scoping of the EIS, not only could this law be read to permit at least a somewhat more inclusive examination of alternatives, the 1994 reauthorization of the Yakima River Basin Water Enhancement Project (YRBWEP) gives the BOR authority to look at water management alternatives other than new storage. *See* Public Law 103-434, Section 1201 (Title XII). 01

The specific federal authorization for this EIS, even absent the YRBWEP authority, calls on the BOR to study "options for additional water storage in the Yakima River Basin." As the EIS does not restrict examination of storage alternatives to *surface* storage, this must include looking at aquifer/groundwater storage and recharge. As shown by the state alternative examining groundwater storage, aquifer/groundwater storage and recharge is a reasonable alternative to surface storage or no action, and NEPA regulations require a federal agency to "rigorously explore and evaluate *all reasonable alternatives*." 40 CFR 1502.14 (emphasis added). This regulation also requires discussion of why an alternative was eliminated from study, and no such discussion is provided for aquifer/groundwater storage in the DEIS. 02

The existing YRBWEP authorization would appear to allow the BOR to incorporate all the state-only alternatives discussed in the DEIS into the joint federal-state alternatives. Given that the State of Washington's Department of Ecology (Ecology) has already developed an analysis of those alternatives and included it in the DEIS, it would take minimal resources to incorporate, for federal purposes, the state's analysis of enhanced water conservation, market-based reallocation of water resources, and groundwater storage. While current federal limitations under YRBWEP may limit the federal funding available for a particular alternative, this should not be an obstacle to the BOR's consideration of the state alternatives presented in the DEIS – NEPA regulations require an EIS to include not just those alternatives for which an agency would bear primary responsibility, but "reasonable alternatives not within the jurisdiction of the lead agency." *Id.* 03

A. The Basis for Study Goals is Not Sufficiently Justified

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

i. Improving Fish Returns

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

04

ii. Improving Water Availability for Farms

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

05

iii. Municipal Water Supply

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

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

06

iv. Global Warming

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

07

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

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

08

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

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

As noted above, the state alternatives should be adopted as joint alternatives by BOR. Even if the BOR does not join in analyzing these options in violation of NEPA, given the clear environmental risk associated with Black Rock and the low benefit-cost ratio for all of the new surface storage proposals examined, we encourage Ecology to further develop its analysis of the potential of the three state alternatives, perhaps in combination with other salmon habitat restoration and water management options. In particular, Ecology should: 09

- Analyze the potential of municipal/domestic water conservation and efficiency, including working with the Washington Department of Health to propose policies that could help meet this potential (only agricultural conservation projects are specifically highlighted in the DEIS); 10
- involve a range of stakeholders in further discussions of the best way(s) to pursue market-based reallocation of water resources and come up with a recommended course of action; 11
- Continue to develop more specific information about the instream and out-of-stream water supply benefits of groundwater/aquifer storage and recharge; 12
- Work with the Washington Department of Fish and Wildlife, the Yakima Nation, and the Yakima Basin Fish and Wildlife Recovery Board to identify the most cost-effective specific salmon and steelhead recovery actions, including, but not limited to measures to improve flows in critical river and stream reaches. 13

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

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

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

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

DEIS at 4-71 (emphasis added).

14

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

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

15

i. Effect on BiOp Flow Targets

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

16

would make hitting BiOp flow targets that much harder, and could measurably slow the downstream migration of juvenile salmon and steelhead. Pumping in September also has the potential to harm already slow migration travel times for late-migrating Snake River fall chinook. Accordingly, these potential impacts should be evaluated in the final EIS. 16

ii. Hanford Reach Fall Chinook

Discussion in the DEIS of the potential effects of pumping to fill Black Rock reservoir on fall chinook that spawn in the Hanford Reach is inadequate. The DEIS asserts that operations will be within the constraints of existing operating agreements, but does not attempt to quantify how pumping from Priest Rapids pool would actually affect the health of the Hanford Reach fall chinook population. The final EIS should include that information. 17

iii. False Attraction

Regarding the issue of false attraction, there is some risk that both upper Columbia salmon and steelhead and Yakima salmon and steelhead could become confused about which river is which as they travel past (or to) the mouth of the Yakima. The DEIS indicates that there could be a particular risk of false attraction for the first generation of post-Black Rock fish returning to the Yakima, which might not recognize the Yakima as their home river. While the DEIS suggests that this issue would be resolved in successive generations as they acclimate to an altered chemical signature in the Yakima, the issue of how big the risk is to the first generation is not resolved in any detail (DEIS at 4-108). Since large impacts to one generation of fish impact future generations as well, the final EIS should be clearer about the magnitude of this risk. 18

IV. Economics/Cost

The benefit-cost ratios for all of the surface storage options considered in the DEIS fall below the standard for recommendation as a preferred alternative in a draft EIS. Factors other than economics can lead to a recommendation of a preferred alternative in a final EIS, but the economics on the surface storage projects discussed in the DEIS appear such that selecting any as a preferred alternative would be unwise and unsubstantiated. 19

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

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

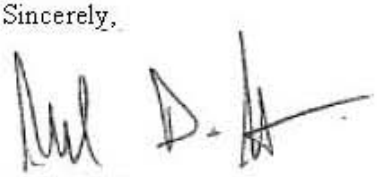
20

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

21

Thanks again for the opportunity to comment.

Sincerely,



Michael Garrity
Associate Director, Columbia Basin Programs

Comment ORG-0007

CLEAN, FLOWING WATERS FOR WASHINGTON

The Center for Environmental Law & Policy

March 31, 2008

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

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

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

Dear Mr. Kaumheimer:

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

Our comments are attached.

Yours very truly,

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

and for:

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

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

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

1. Purpose & Need (Section 1.2)

The Bureau of Reclamation's limited review of alternatives to proposals involving dams & reservoirs improperly restricts consideration of other alternatives to satisfy the needs of the project, including non-structural and operational actions that could improve water supply and instream flows. However, the Joint No Action Alternative considers conservation pursuant to sections 1203 and 1204 of Title XII. Moreover, under the SEPA/state alternatives, the term "storage" and the objectives of the study are interpreted in a manner that encompasses a variety of non-structural activities relating to water supply. 01

It is inappropriate for the Bureau to separate analysis in this study conservation alternatives and other, ongoing studies. Given the critically low water supplies described in the DEIS and quoted above, it is a rather large oversight that conservation is not examined in more detail in the Joint Alternatives. The fact that declared droughts are occurring roughly every five years emphasizes the need for effective conservation measures. Likewise, the "Cle Elum and Bumping Lake Dams Fish Passage Facilities Planning Report," (discussed at Section 1.8.3), scheduled for completion later this year, should be incorporated into this effort. More extensive passage in the Yakima basin will considerably change the nature of water management potential. 02

2. Storage Study Goals

With respect to the Storage Study Goals (p. 1-3), the DEIS fails to provide information explaining the goal of achieving a 70% proratable supply (896,000 acre feet) for the basin. The goal to make this enormous quantity of water available creates an critical, perhaps unachievable benchmark, and should be thoroughly explained and vetted to determine whether alternative goals are more appropriate. Section 2.2.1.2 is inadequate to explain, other than that irrigation districts assert this is necessary to "avert major economic losses." However there is no discussion of how the term is defined or whether objective evidence indicates this is an appropriate figure. Do Yakima basin pro-ratable irrigators really require 896,000 additional acre-feet of water, and if so, why? The DEIS indicates that Sunnyside and Tieton divisions are not interested in receiving drought water. (Executive Summary, p. xxi). How do these statements affect the goal of 70%? 03

Likewise, the goal of 82,000 acre-feet for municipal supply admittedly does not include consideration of the potential for water conservation and pricing as a mechanism to control demand. Section 2.2.1.3. Further, there is no discussion of how the acre-feet requirements fit with recent municipal water conservation planning requirements and reasonable efficiency requirements for water rights. 04

3. Monthly Flow Objectives

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

objectives. However, we note that objectives for the Naches Arm, an important tributary of the Yakima basin, are missing. The technical process used to establish flow objectives for the DEIS should be utilized to analyze and project similar needs for the Naches subbasin. 05

4. No Action Alternative

The Bureau should select the No-Action Alternative (as described in Section 2.3) as its preferred alternative for the EIS. However, we note that the use of this alternative as "no-action" is problematic because it may lead readers to the incorrect assumption that the various activities (conservation plan implementation, land and water acquisitions, system improvements) are in fact funded and will in fact occur. (Indeed, the alternative contains a confusing mix of actions that have and have not occurred.) Setting these actions as the "baseline" then undercuts understanding of the substantial improvements in instream flow and water supply that could result if this alternative is actually and fully implemented. 06
Further, failure to conduct a benefit-cost analysis for the "no-action" alternative also limits full understanding by readers and decision makers of the comparative costs of the dam-reservoir alternatives to a conservation-oriented approach. 07

The No Action alternative is also deficient in its failure to discuss the merits of adjusting basin water demand to actual supply. Water rights in the Yakima were issued according to the exact tenets of the prior appropriation doctrine, that is, over-appropriation to ensure that all water is used during good years, with the assumption that junior water users will plant crops accordingly (ie, not plant perennial crops on lands that may not receive a full supply of water). A large, new storage reservoir would provide an "over-supply" of water to the basin, not needed in many (most) years, and therefore constitute substantial economic waste. Leaving the system as is, i.e., continuing to allow weather and markets to adjust demand, is not adequately explored in the DEIS. 08

5. Black Rock Alternative

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

a) Hanford contamination

First, the DEIS fails to provide information about and analyze seepage of groundwater beneath the reservoir and the potential for harm to the cleanup of radioactive and toxic contaminants beneath the Hanford Nuclear Reservation. The DEIS instead defers to a future Department of Energy EIS and states that more information will be provided in the final Yakima Storage study EIS (p. 4-37, 4-71). This is a fatal flaw. The Bureau has the two studies necessary to model and determine impacts (the seepage report and the Hanford groundwater modeling report). The bureau also has the obligation, under NEPA, to address all significant adverse environmental impacts associated with a proposal. Leaving out this discussion frustrates the purposes of NEPA and renders this DEIS inadequate. 09

Second, even though the DEIS fails to discuss potential adverse impacts to Hanford, it includes discussion of mitigation concepts, presumably to assure readers that we are not to worry about the possibility of harming cleanup at one of (if not THE) most polluted sites in the United States (p. 4-39). This is an improper "cart before horse" approach to discussing impacts. 10

Third, the costs associated with the Bureau's alleged mitigation schemes for addressing seepage impacts on Hanford are not incorporated into the benefit-cost analysis for the Black Rock alternative (p. 4-39). Again, the DEIS is deficient for its lack of thorough discussion of impacts and costs associated with this critical environmental impact. 11

b) Geology

The Bureau's discussion of seismic and other geologic issues at the Black Rock site is both inaccurate and inadequate. The DEIS takes the view that any earthquake related hazard, or any other geologic hazard, will be dealt with during dam design and construction. This is not reasonable – it is impossible to engineer the proposed dams to withstand a hazard when the nature and degree of the hazard are unknown. Characterization of the geologic hazards must occur during the Storage Study process. Indeed, the preliminary geologic studies upon which the DEIS is based called for acknowledges that data is sparse and recommends that further studies be conducted. That recommendation has been ignored. The draft EIS is inadequate because it does not address the seismic hazards and other geologic hazards in enough detail to judge the seismic safety of the proposed dams, or to make rational planning decisions. 12

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

6. Wymer Dam and Wymer Plus Alternative

The Bureau's discussion of seismic and other geologic issues at the Wymer Dam site is both inaccurate and inadequate. The DEIS takes the view that any earthquake related hazard, or any other geologic hazard, will be dealt with during dam design and construction. This is not reasonable – it is impossible to engineer the proposed dams to withstand a hazard when the nature and degree of the hazard are unknown. Characterization of the geologic hazards must occur during the Storage Study process. Indeed, the preliminary geologic studies upon which the DEIS is based called for acknowledges that data is sparse and recommends that further studies be conducted. That recommendation has been ignored. The draft EIS is inadequate because it does not address the seismic and landslide hazards in enough detail to judge the seismic safety of the proposed dams, or to make rational planning decisions. 13

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

7. Cumulative Impacts

In Section 4.2.2.6, the difference between the discussion of the cumulative effects associated with the Columbia River Water Management Program (CRWMP) (one paragraph) and climate change scenarios (13 pages) is striking. Yet we can say CRWMP is likely to affect surface flows in the Columbia River with much greater certainty than we can predict regional future climate (temperature and precipitation changes). The DEIS is deficient for its failure to discuss cumulative impacts associated with various CRWMP projects as they will affect Columbia River flows, including the Lake Roosevelt drawdown, the Potholes Supplemental Feedroute, and the Columbia Mainstem Offchannel dam-reservoir projects (Lower Crab, Sand Hollow and Hawk Creeks). Detailed information is available regarding 14

each of these projects, including draft and/or final environmental impact statements (SEPA and NEPA driven), appraisal studies, etc. This problem is again repeated in Section 4.4.2.7, which discusses cumulative impacts on hydropower, but fails to discuss the multiple proposed projects that would both require substantial energy resources for pumping, and would remove water from the Columbia River, resulting in net reduction of hydropower production. 14

The DEIS cumulative impacts analysis fails to identify or address the effects of the proliferation of exempt wells in the already over-appropriated Yakima River Basin. A legislative exemption currently allows unmetered groundwater withdrawals without a permit. Due to the absence of unallocated water in the basin, and the unavailability of water rights for purchase, the legislative exemption has become the rule, rather than the exception, for new residential developments. During 2007 land owners dramatically increased the use of the exemption to support new construction in developments without a water right. Based on 2008 projections, the use of the exemption continues increase at an alarming rate. Unless Ecology quantifies the withdrawals associated with the exemption, and develops mitigation measures to offset future uses, exempt well users may withdraw water in quantities that have a significant impact on surface water flows. 15

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

8. Hydraulic Modeling Omission

The DEIS is inadequate fails to incorporate information and results from the hydraulic modeling (Yakima River Water Management Study, created by Ken Bovee of the U.S. Geological Survey) examining the relationship between flow and habitat parameters that was done as a component of this very study. As noted on the USGS website: "This study will develop an integrated water management/habitat response tool that will allow land managers to quantify the feasibility, effectiveness, and risks associated with various water management alternatives." How the Bureau could issue a DEIS without including the modeling results is entirely unclear. 16

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

9. Benefit-Costs

We support the Bureau's NED benefit-costs analysis associated with the joint alternatives (Section 2.7) but wonder to what extent the expenses associated with complicated institutional arrangements (such as described in Section 2.2.5.3, "Effects of Exchange on Yakima River Basin Water Rights") are incorporated into the estimates of costs provided to date. Also, the failure to assess the costs associated with the substantial mitigation scenarios (i.e., to prevent seepage of groundwater to Hanford or replacement of 3,900 acres of shrub-steppe habitat) leaves the reader unable to assess the actual costs 17

associated with the Black Rock and Wymer alternatives. In this respect the DEIS is inadequate. 17

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

Regarding cost of municipal water supply, it is clear that it would be much cheaper to simply purchase water rights for transfer to the cities requiring additional supply to meet future demand. This appears to be the contemplated solution under the "no action alternative," however the DEIS does not make this clear. 18

Regarding the recreation benefit analysis, the DEIS is deficient for failure to quantify site substitution for use at recreational sites outside the Yakima basin, and instead simply note that the recreation benefits may be overstated (p. 2-85). 19

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

10. Hydrology & Biology

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

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

While true, this statement ignores the fact that the Columbia River is limited by the same phenomena. Two alternatives propose transfer of water from the Columbia to the Yakima. Although this transfer would occur when minimum instream flow requirements for the Columbia are exceeded, this would merely exacerbate one problem to alleviate another. 20

The DEIS uses target flows established by NOAA Fisheries for the Federal Columbia River Power System's 2004 biological opinion. Not mentioned, is the fact that the 2004 biological opinion was the result of a federal court requirement to revise a 2000 biological opinion that the court deemed inadequate in addressing salmonid recovery. Target flows from the 2004 biological opinion should be considered moving targets in that the 2004 biological opinion has been challenged and remains in court. The DEIS is inadequate for its failure to consider potential changes to Columbia flow targets that may alter water availability for the Black Rock and Wymer Plus alternatives. 21

The requirements of the Endangered Species Act and the agencies charged with administering it are not adequately addressed in the DEIS. For example, the DEIS includes an attachment, Section IV, which reports and responds to comments of the USFWS, but contains no mention of solicitation of comments on anadromous fish issues from NOAA 22

Fisheries. In the realm of aquatic resources, status of anadromous fish stocks must receive priority in the Yakima basin. Lack of substantive solicitation of NOAA Fisheries review is magnified by the top priority listed by USFWS, potential loss shrub-steppe habitat. 22

The "hydrologic indicators" outlined in Tables 2-7 and 2-8 (No Action Alternative), Table 2-26 (Black Rock Alternative), Table 2-37 (Wymer Alternative), Table 2-46 (Wymer Plus Alternative) are presented in units of millions of acre-feet. A much more appropriate indicator of changes to hydrology would be presented in terms of flow. From a biological perspective, changes in velocity throughout the system would also be informative. The volumes presented are more of a commodity than a hydrologic indicator. Likewise, presenting "hydrographs" in terms of volume, rather than flow, makes biological analysis more difficult than necessary. These units for hydrologic indicators are repeated in the State Alternatives analysis (Chapter 5). These indicators might be more accurately termed "Irrigation Adequacy Indicators." 23

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

The hydrograph that is presented (Figures 2.2 – 2.7) definitively shows that none of the alternatives remotely approximates unregulated flow. Comparison of alternatives with mandated target volumes in no way indicates the benefits or detriments of the alternatives to biological communities. However, it is later stated (Section 4.10.2.3) that the Black Rock alternative results in the most "normative/unregulated" flow regime. 24

Given the severely altered hydrographs in the Yakima, additional withdrawal and storage, as presented in the Wymer alternative, appears to be a poor method by which to increase the health of fish populations. The reasons for the "flip-flop" are described but its effectiveness is not. Alternative flow management regimes should be examined to encourage spawning. The Joint Alternatives sections make several mentions of improvements to water delivery infrastructure including reregulating dams. These are not described but reregulating dams may have substantial positive effects on efforts to re-establish normative flows. Re-regulating dams may also reduce impacts to a variety of systems currently experienced under the flip-flop regime. 25 26

The report describes, in some detail, the necessity of unregulated flows for anadromous fish habitat (Section 4.8.1.3) but ignores the responsibility of agencies, and the public in general, to restore these flows and dependent resources. The No Action Alternative results in a number of Title VII target flows being met (Tables 5.6-7). This speaks to the questionable necessity of drastic infrastructure construction. It does not, however, speak to the necessity, to native salmonid recovery, of restoration of normative flows. 27

The statement that "fisheries habitat conditions have significantly changed through decades of development, both within the Yakima basin and downstream, that preclude achieving near historic anadromous fish populations through actions provided by the Joint Alternatives or any other suite of realistic actions (page 4-118)" is short-sighted and ignores current efforts to accomplish exactly the recovery that Reclamation claims unrealistic. And, indeed, when referencing the Yakima Subbasin Plan, the DEIS describes substantial potential increases in andadromous fish populations. 28

Ultimately, there is more treatment of fish habitat in the presentation of dismissed alternatives. This, however, amounts to mere mention of impacts to fish habitat. The assumption, in the analysis of Fisheries Benefits, that a fish closed to harvest has "little to no fishery use value" is wholly flawed and inappropriate to an analysis of fisheries impacts. The DEIS mentions that the Yakima is considered a "blue ribbon" trout stream. The fishermen that recognize this often practice catch-and-release fishing, whether harvest is allowed or not. **29**

The Bureau's report on fish habitat (Aquatic Ecosystem Evaluation for the Yakima Basin, USBR, 2008) starkly reports the declines in available anadromous salmonid habitat under the DEIS Alternatives. Loss in available habitat ranges from about 20% decrease to negligible increase, depending on species, life history species, reach and alternative. The unregulated condition routinely results in substantial increases in available habitat, quite often a 20%-40% increase in habitat, depending on species, life history stage, reach and alternative. In the case of subyearling bull trout (a federally listed threatened species) and coho the amount of available habitat nearly doubles in the unregulated condition. **30**

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

On page 4-152, the DEIS notes that bull trout typically spawn between September and November. However, the DEIS also makes reference to a study reporting that bull trout spawn between July 15 and September 15. This is a much earlier spawning period than typically applied to bull trout spawning. In the treatment of bull trout in the Affected Environment chapter, this referenced study is not mentioned. Reclamation should be clear about the local biology of this highly sensitive, ESA listed species and the effects of proposed actions on its life history. The Chelan PUD reports bull trout spawning in the Entiat to occur in mid- to late-September (Movement of Bull Trout Within the Mid-Columbia River and Tributaries, 2001-2004, BioAnalysts, Inc., 2004). **31**

The increased flows provided by the Increased Conservation Alternative (Section 5.8) suggest serious examination of this alternative during development of the Final EIS. This alternative has the advantage of a minimal construction footprint compared to the Joint Alternatives. As mentioned above, it is not clear in the DEIS if, and how, Title XII or the 1945 Consent Decree limit the Bureau's ability to pursue the Increased Conservation Alternative jointly. **32**

Washington's newly approved water quality standards apply a period of September 1 to May 15 for Char Spawning and Rearing in the Lower Yakima (WRIA 37), and Naches (WRIA 38) basins (Waters Requiring Supplemental Spawning and Incubation Protection For Salmonid Species, Publication Number 06-10-038, 2006). Char Spawning and Rearing is also a protected designated use in the Upper Yakima (WRIA 39) (Chapter 173-201A-602 (Table 602)). Over the course of several years, considerable professional and public comment went into development of the new water quality standards. **33**

Section 4.6.1.2 states that Washington has no water quality criteria for phosphorus. WAC 173-201A-230 establishes phosphorus criteria for lakes. Some of this language may be applicable to reservoirs in the Yakima basin. **34**

11. Wildlife Impacts

The DEIS does not provide adequate discussion of the value of Black Rock Valley as a wildlife corridor. 35

12. Anadromous Fish Impacts

The DEIS discussion of impacts on flow and salmon survival should incorporate information from several other studies, including Forward Looking Infrared (FLIR) surveys of surface water temperature, showing hyporheic influence, that have been conducted for the Yakima basin and the Yakima Watershed Salmonid Recovery Strategy, which identifies many of the parameters defined in the DEIS as limiting factors to salmonid recovery (flow, flashiness, sediment, temperature, hyporheic discontinuity). The DEIS includes details about the U.S. Fish and Wildlife Service (FWS) recommendations and the Bureau of Reclamations (BOR) responses. There is no such coverage of any concerns of NOAA Fisheries. An additional such an attachment seems necessary to fully document effects of alternatives on anadromous fish. 36

13. Recreation Impacts

The recreation impact analysis lacks adequate discussion of the impacts related to Black Rock and Wymer reservoir drawdown. The limited discussion of this important issue and is deficient for failure to include maps (which are available) that indicate exposed lands within the reservoirs that will deter recreational use. The suggestion that drawdown would provide a benefit to ATV and OHV use is absurd (p. 4-178). 37

There is also tremendous inconsistency in the treatment of this impact and impacts to wildlife and endangered species at the Black Rock site, where mitigation would involve creating corridors to protect what little habitat would be left. (See Section 4.11.2.6). 38

The DEIS comparison of Black Rock to other, nearby water bodies where there is minimal recreational use, indicates that the projected recreational benefit (based on 250,000 to 700,000 annual visits) is substantially over-stated (annual visits to other reservoirs and rivers in the Yakima basin not equate, in total, to 250,000 annual visits, se Table 4.36, p. 4-175). 39

14. State Alternatives Generally

SEPA regulations require the Alternatives section of an EIS to "devote sufficiently detailed analysis to each reasonable alternative to permit a comparative evaluation of the alternatives including the proposed action." WAC 197-11-400(5)(c)(v). Chapter 2, the State Alternatives section, fails to provide sufficiently detailed analysis. It is unclear how water savings were determined, how they will be paid for, and how they will be implemented. 40

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

The State Alternatives are also deficient for failure to analyze how water pricing could reduce demand and induce water conservation sufficient to solve water supply and instream flow problems in the Yakima basin. The DEIS should inform readers about the level of subsidy involved in delivery of Yakima basin water to irrigators, and the extent to which a change in pricing structures, imposition of water fees (particularly during drought years) or other similar market-based mechanisms would meet the goals of the study. **41**

15. Enhanced Water Conservation (Section 3.2)

(1) General Comments

The State Alternative, Enhanced Water Conservation (EWC), is vague, unsubstantiated, and/or based on too many assumptions. Alternatives in a SEPA analysis must be sufficiently defined so that the public and agency can base decisions upon informed deliberation. The EWC alternative does not provide the level of detail necessary for the reader to fully appreciate how the alternative offers solutions different than those of the storage alternatives. This lack of sufficient information violates SEPA regulations. WAC 197-11-400(3). **42**

Further, the EWC alternative fails to consider tools already in Ecology's portfolio that could have a dramatic impact on water conservation. These tools are enforcement of illegal water use and metering. The state should analyze the amount of water conservation to be realized through enforcement of existing laws. Moreover, lacking adequate metering data, the amount of conserved water as a result of the enhanced conservation measures will not be accurate. Accuracy of water resource data is important in any basin, but it is vital in the Yakima basin due to over appropriation and the adjudication of the basin. The fact that metering is not included in the study of alternatives speaks to the inadequacy of the overall analysis. **43**

(2) Specific Comments

Section 3.1.2 Summary of Alternative Results

- The summary claims the Enhanced Conservation Alternative will increase instream flows in the Yakima River by 40,000 acre-feet on average and would provide 20,000 acre-feet for proratable water right holders.
  - However, the analysis fails to explain how it determined these figures.
  - The sections that follow discuss the types of conservation projects and compares them to the No Action Alternative, but nowhere in the report is the analysis showing how implementing the Enhanced Conservation Alternative will increase instream flows by 40,000 acre-feet. **44**
- This cursory and insufficient analysis plagues this chapter from start to finish and points out the inefficacy of this document to meet SEPA requirements.

Section 3.2.1 Description

- The Plan states most of the water saved as a result of enhanced water conservation will involve nonconsumptive uses including seepage and return flows. Since only the consumptive portion of a water right can be transferred or reallocated within the Yakima Basin this alternative may actually increase stream depletion in certain reaches. The section notes, "the Yakima Project has some flexibility in its operation and can allow some redistribution of water **45**

within the basin." However, this statement is not further explained and as such it is unclear as to how valuable EWC will be to the overall basin. 45

Section 3.2.2 Enhanced Water Conservation Projects

- The estimated amount of "conserved" water as a result of the various enhanced conservation projects is presented without any discussion of how these totals were specifically determined. 46
- The accompanying technical document, *Technical Report on the Enhanced Water Conservation Alternative for the Yakima River Basin Water Storage Feasibility Study*, also does not provide any information on how these savings were calculated.
    - The Technical Report claims the water savings "were determined using information available form water conservation plans and experience of representatives from the local conservation districts."
    - However, no actual data is presented for the public to determine or analyze the assumptions and "experience" of the conservation districts.
    - Therefore, the results of the Enhanced Water Conservation Measures are too vague and unsubstantiated to have any value in a SEPA determination.
- Conserved water can best, and really only, be measured via technically sound metering devices. Source and service meters must be installed in order to correctly determine any water savings as a result of the water conservation projects.

Section 3.2.3 Comparison to the No Action Alternative

- The introduction to the State Alternatives notes, "This chapter describes the alternatives that Ecology is considering under its authority to evaluate both storage and nonstorage alternatives to *improve flows* in the Yakima River basin."
    - However, one option under Section 3.2.3 is to allow all the conserved water to be retained by the implementing entity for use as irrigation or municipal and industrial use. 47
    - Ecology must explain how this alternative would meet the goal of improving flows in the Yakima River basin.
- If Ecology is going to have an alternative that allows full retention of conserved water by the implementing entity it should also have an alternative that returns all of the saved water to the river for instream flow. 48
- Ecology assumes at least 67% of the funding for these projects will come from the State, yet the other option still allows for the implementing entity to retain 67% of the conserved water.
    - Since public money is being spent, Ecology should focus on achieving a greater public benefit 49
    - Another alternative should be included that keeps 67% of the conserved water for instream flow needs and the other third for implementing entity. 50
- The Enhanced Water Conservation Alternative assumes 67% of its funding will come from the State.
    - This assumption is unsupported by any budgetary analysis. As such it cannot be considered a valid assumption particularly when the State is perhaps facing a future of budget deficits. 51
    - Ecology offers no alternative to funding these conservation measures.

16. Market Mechanisms (Section 3.3)

As noted above, this proposal should be expanded to include information relating to the of subsidy that is afforded to water recipients in the Yakima basin and consider the efficacy of 52

regulatory pricing requirements, such as drought-related fees or other mechanisms to reduce water demand and induce water conservation. 52

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

17. Groundwater Storage (Section 3.4)

Although the description of the injection recharge alternative does address the need to insure the quality of the water injected into the aquifers, it fails to discuss the impacts of additional water treatment facilities on the basin as a whole. Active water treatment methods will increase the financial and energy related costs associated with this alternative. Without a quantification of these increased costs, Reclamation and Ecology cannot accurately weigh this alternative against the others. 53

Both the Surface Recharge with Passive Recovery and the Injection Recharge with Passive and Active Recovery methods discuss Potential Locations. However, the DEIS fails to identify specific locations for municipal aquifer storage and recovery or Surface Recharge with Passive Recovery. Instead the DEIS puts off the determination of locations until the alternative is selected. Without more specific information on the possible storage sites, the effects of this alternative are unquantifiable. 54

18. Mitigation

The discussion of mitigation requirements contained in Chapters 4 and 5 are vague and too generalized to meet the requirements of SEPA. See, e.g., Sections 4.3.2.6 (groundwater impacts), 4.6.2.6 (water quality); 4.7.2.6 (vegetation and wildlife); 4.8.2.7 (anadromous fish); 4.9.2.7 (resident fish); 4.11.2.6 (threatened and endangered species). 55

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

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

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

1. Scope of the review.

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

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

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

2. Executive Summary

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

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

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

56

57

entire dam abutment will be deformed and the dam compressed. This effect is not considered in the draft EIS. 57

- Reservoir induced seismicity ('RIS'). It is commonly observed that the filling of a reservoir can cause earthquakes. The mechanism is thought to be the reservoir head elevating pore pressure and/or lubricating the fault, or the stress perturbation due to the weight of the reservoir. These earthquakes will cause the same effects as natural earthquakes. The draft EIS completely neglects RIS. 58
- Landslides. The dam sites are prone to landslides because of the steep topography and the presence of weak layers in the bedrock. Earthquake ground shaking can reactivate old landslides, or trigger new ones in currently stable slopes. Also, the impounded water will saturate the slopes surrounding the reservoirs. The saturation can remobilize old landslides and cause new landslides in currently stable slopes.
- A landslide has been tentatively identified at the south abutment of the Wymer dam site, but the draft EIS dismisses its significance on the basis of a cursory inspection. Other existing landslides have been identified upslope from the proposed Black Rock reservoir. A landslide runout into a filled reservoir would displace the impounded water with severe consequences. 59

Unfortunately, the faults near the dam sites are poorly characterized. The fault slip rates, time between earthquakes, magnitude of potential earthquakes, and the strength and duration of shaking from potential earthquakes are not known. Landslide potential of the slopes around the reservoir sites is scarcely known. The extent and distribution of liquefiable soils is not known. 60

The preliminary studies (the PSHA study, the Black Rock report, and the Wymer report) recognized the lack of knowledge of the geologic hazards, and all called for further studies to better characterize the hazards. None of those studies has been conducted. 61

The draft EIS has the view that any earthquake related hazard, or any other geologic hazard, will be dealt with during dam design and construction. This is not reasonable – it is impossible to engineer the proposed dams to withstand a hazard when the nature and degree of the hazard are unknown. Characterization of the geologic hazards must occur during the Storage Study process. The draft EIS is inadequate because it does not address the seismic hazards and other geologic hazards in enough detail to judge the seismic safety of the proposed dams, or to make rational planning decisions. 62

3. Specific Comments

Section 2.2.2.1 "Black Rock Damsite Seismicity", Paragraphs 1 and 3

The seismic hazard analysis in the draft EIS comes from the PSHA study. The draft EIS claims the PSHA study "documents the preliminary characterization of the earthquake potential at Black Rock dam site." To characterizer the "earthquake potential" would be to characterize the likelihood of timing and magnitude of future earthquakes based on detailed studies of the timing and magnitude of past earthquakes on nearby 63

faults. Instead, the PSHA study uses sparse existing data to assume a time and space distribution of earthquakes on local and some distant faults, and calculates the likelihood over a period of time of a particular level of ground motion, the peak horizontal acceleration ('PHA') at the dam site. The PSHA study correctly points out that there are only "little or sparse data" to characterize recent earthquake activity (p. 5). 63

The PSHA results are assumption driven. For example, it is well known that the maximum earthquake a fault is capable of is a function of fault length (Wells and Coppersmith, 1994). The Black Rock Valley fault is under the right (south) abutment of the Black Rock dam. The PSHA study assigns a rupture length of 38 km to the Black Rock Valley fault, with a maximum magnitude of 6.7 (Table 2.2). However, the "Black Rock Valley fault" is actually part of the Rattlesnake Hills structure shown on a recent USGS fault map (see Figure 1), a fault and fold structure with a cumulative length of over 150 km (Lidke *et al.*, 2003). The PSHA study treats the Rattlesnake Hills structure as three separate fault segments, each with a certain maximum magnitude controlled by the segment length. However, there is little evidence to characterize the segmentation of the Rattlesnake Hills fault structure (PSHA study, p. 5). If the entire fault structure ruptured, a much larger earthquake would result, with a larger PHA. 64

The PSHA study emphasizes that it is "an initial Probabilistic Seismic Hazard Assessment … conducted for use in *appraisal-level* studies of the proposed Black Rock Dam." (p. 1) (emphasis added). The PHSA study correctly calls for further study on the age and characteristics of the Black Rock Valley fault under the right abutment of the dam (p. 18). These studies have not been performed. The generalized nature of the PSHA, based on incomplete characterization of the faults at issue, is not adequate. An adequate EIS must include up to date study results of the fault slip rate, average offset, and recurrence interval. 65

The PSHA study correctly calls for "more complete descriptions of ground motions parameters, including time histories" (p. 18-19). This is in recognition that simple peak amplitudes of ground motion are an inadequate basis for rational engineering and hazard evaluation decisions, and that the duration of the ground motions must be characterized. Such studies are not addressed in the draft EIS. Further, the PSHA study correctly points out that ground motions will be "greatly influenced" by rupture directivity and hanging wall effects (p. 19). Characterization of these factors has not been performed in the draft EIS. 66

The PSHA study correctly calls for studies of site response (the influence of near surface materials) on earthquake ground motions (p. 19). Site response has long been recognized at having a critical influence on earthquake ground motions (*e.g.*, Milne, 1898). Such studies have not been performed, and are not addressed in the draft EIS. 67

The PSHA study correctly calls for baseline studies of RIS (p. 19). Such studies have not been performed, and are not addressed in the draft EIS. We address RIS in our comments below. 68

The calls for more study of the fault are echoed in the 2004 Black Rock report. That report states "The location and geometry of the thrust fault in the right abutment are not well known. Additional investigations are needed to define geometry, slip rates, movement history, and earthquake potential. The investigations will likely require both drilling and trenching" (p. 24). Now, at the time of the draft EIS three and half years later, these necessary studies have not been performed. (Note that in the Black Rock report the fault under the right abutment is called the Horsethief Mountain thrust fault, while in the draft EIS it is called the Black Rock Valley fault.) 69

The PSHA study properly attempts to include the influence of very large earthquakes in the Cascadia subduction zone on the PHA at the Black Rock dam site. It should be acknowledged, however, that the attenuation functions used in the study (which are based on previously observed ground motions, mostly in California) are likely to be inadequate at the magnitude 8 to 9 range because of the lack of observations of earthquakes of those magnitudes (Youngs *et al.*, 1997). 70

Section 2.2.2.1 "Black Rock Damsite Seismicity", Paragraph 2

Liquefaction due to earthquake shaking is identified as a concern in the dam materials and foundation area. However, liquefaction is also a concern away from the dam; it has potential effects on ancillary structures such as pipelines, canals, and roadways. Unfortunately, the draft EIS does not identify the extent of potentially liquefiable soils. The EIS should include a detailed soil map with liquefaction potential estimates. This is particularly important because of the anticipated seepage from the reservoir – the seepage may saturate otherwise competent soils downgradient of the reservoir, increasing the liquefaction potential. 71

Section 2.2.2.1 "Black Rock Damsite Seismicity", Paragraphs 3 and 4

The fold on Horsethief Mountain is associated with the Black Rock Valley thrust fault that surfaces under the south abutment. During an earthquake on the Black Rock Valley fault, the fold grows via northward movement of the rock above the fault (*e.g.*, Suppe, 1985). Thus, during an earthquake, the entire south abutment of the dam will move an unknown amount to the north. (The amount of movement is unknown because the draft EIS has failed to characterize the history of slip per earthquake on the Black Rock Valley fault.) This will cause deformation of the dam with potentially serious consequences. A rational assessment of the dam's response to an earthquake on the Black Rock Valley fault requires an adequate characterization of the past earthquakes on the fault. Such a characterization is absent from the draft EIS. 72

Section 2.2.2.1 "Black Rock Damsite Seismicity", Paragraph 5

In summary, the draft EIS ignores all the caveats of the preliminary nature of the PSHA study, and the proponents have failed to perform any of the PSHA study's recommendations for additional work to more accurately characterize anticipated strong ground motions from potential future earthquakes. Merely asserting the dams will be designed to handle earthquake ground motions, without sufficient characterization of the causative faults, consideration of the abutment deformation, or extent of potential liquefaction, is inadequate. It is impossible to design and engineer the dams to withstand 73

earthquakes without an adequate understanding of the nature and degree of the earthquake hazards. 73

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

Section 2.2.2.2 "Wymer Damsite Seismicity"

No site-specific seismic hazard evaluation was performed for the Wymer dam site. The ground motion considerations are taken from the PSHA study performed for the Black Rock dam site, and much of the discussion in Section 2.2.2.2 was taken from Section 2.2.2.1. We express all the same concerns about the Wymer site as we do for the Black Rock site. 74

In regards to concerns of fault rupture within the project area, the draft EIS states "Based on the limited preliminary geologic characterization of the site, there is no evidence to indicate that a potentially active fault exists within the dam, dike, or reservoir area." However, "relatively little exploration has been conducted to date, and further investigations could conceivably find evidence of foundation faulting." A rational assessment of the merits of the dam requires more detailed knowledge on the presence of faults in and near the dam site. The draft EIS is inadequate in this respect. 75

A cursory examination of the USGS fault map (Figure 1) shows that the Umtanum Ridge – Gable Mountain Structure, a 200 km long fault and fold system, runs only a kilometer to the west of the dam site, just across Highway 821 (Lidke *et al.*, 2003). The PSHA study included this fault system in its assessment of the Black Rock Valley site PHA. The failure of the draft EIS here to note the proximity of this major fault to the Wymer dam site renders the draft EIS inadequate, and does not build confidence in the seismic hazard evaluation process. 76

The most common orientation of the faults and folds in the Yakima Fold Belt is east–west, but the Umtanum Ridge – Gable Mountain Structure strikes northwest–southeast near the Wymer dam site (Figure 1; Reidel *et al.*, 2003). This part of the fault structure may be associated with the Olympic-Wallowa lineament, an alignment of faults and folds that may represent a fundamental, crustal scale discontinuity (*e.g.*, Reidel *et al.*, 1994). The different orientation of the Umtanum Ridge – Gable Mountain Structure near the dam site, and its possible association with the Olympic-Wallowa lineament, suggests the fault near the dam site may respond to the regional stress differently than the faults near the Black Rock Valley site (*e.g.*, with different recurrence times or different size earthquakes). This suggests that an independent seismotectonic analysis of the Wymer dam site must be performed before the EIS can be considered adequate. 77

Section 2.2.2.3 "Wymer Dam Potential South Abutment Landslide"

The Wymer report describes the previous identification from air photos of a potential landslide covering the area of the south (left) abutment (p. 7). On the basis of a few hours-long visit to the site (Wymer report, Appendix A), a reconnaissance team decided that the "landslide does not appear to be a deep landslide" (Wymer report, Attachment 78

2). The rationale for this assessment is not given in either the draft EIS or in the Wymer report. The draft EIS concludes that a "limited amount of geologic investigations at the appraisal stage found no evidence of a large landslide" at the south abutment of the Wymer dam site, but that if one existed then the unstable material would be excavated away. 78

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

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

Note that landslides that are inactive under current conditions may become mobilized as the material becomes saturated by the impounded water, or may be mobilized by earthquake shaking. These considerations should be analyzed in this section of the draft EIS. 79

Section 4.3.2.3 "Black Rock Alternative – Long Term Impacts"

The draft EIS correctly points out that landslides are common in the Yakima fold belt (p. 4-37), and that old slides may become reactivated, and new slides form, as seepage from the reservoir infiltrates the surrounding hillsides and increases pore pressure. However, the draft EIS fails to point out that, additionally, old slides may become reactivated, and new slides form, under the influence of earthquake ground shaking. 80

The Black Rock report identified three large landslides on Horsethief Mountain (p. 21). Two of these landslides have runout zones extending into the proposed reservoir area. If a landslide occurred while the reservoir was full, it would displace water that would overtop the dam and possibly cause structural failure of the dam. For example, in 1963 a large landslide fell into the reservoir behind the Vaiont dam in the Italian Alps, causing a 100 m high wave that overtopped the dam, swept downstream, and killed 2600 people (the dam remained standing). The draft EIS fails to address this issue and so is inadequate. 81

Because of the concerns of landslides occurring due to seepage and earthquake shaking, and the potential catastrophic effects of a large landslide running into the reservoir, the EIS should contain detailed mapping of landslide potential of the surrounding hills, and a contingency plan to respond to a landslide into the reservoir. 82

Section 4.3.2.4 "Wymer Alternative – Long Term Impacts"

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

from the reservoir infiltrates the surrounding hillsides and increases pore pressure. However, the draft EIS fails to point out that, additionally, old slides may become reactivated, and new slides form, under the influence of earthquake ground shaking. 83

A potential landslide has been identified under the south abutment, and no convincing evidence has been presented in the draft EIS to contradict that identification. (See discussion of section 2.2.2.3 above.) If a landslide occurred while the reservoir was full, it would displace water that would overtop the dam and possibly cause structural failure of the dam. The draft EIS fails to address this issue and so is inadequate. 84

Because of the concerns of landslides occurring due to seepage and earthquake shaking, and the potential catastrophic effects of a large landslide running into the reservoir, the EIS should contain detailed mapping of landslide potential of the surrounding hills, and a contingency plan to respond to a landslide into the reservoir. 85

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

We express the same concerns about landslides into the Wymer reservoir. These are not considered in the inadequate draft EIS. 86

Reservoir Induced Seismicity

Reservoir induced seismicity ('RIS') is the triggering of earthquakes by the physical processes that accompany the filling of reservoirs. As of the mid-nineties there were over sixty well documented cases of RIS from around the world (USGS, 1996), including many earthquakes large enough to cause damage to nearby structures, and in at least two cases – Koyna, India, and Hsinfengkiang, China – the dams came close to failure (Allen, 1982). 87

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

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

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

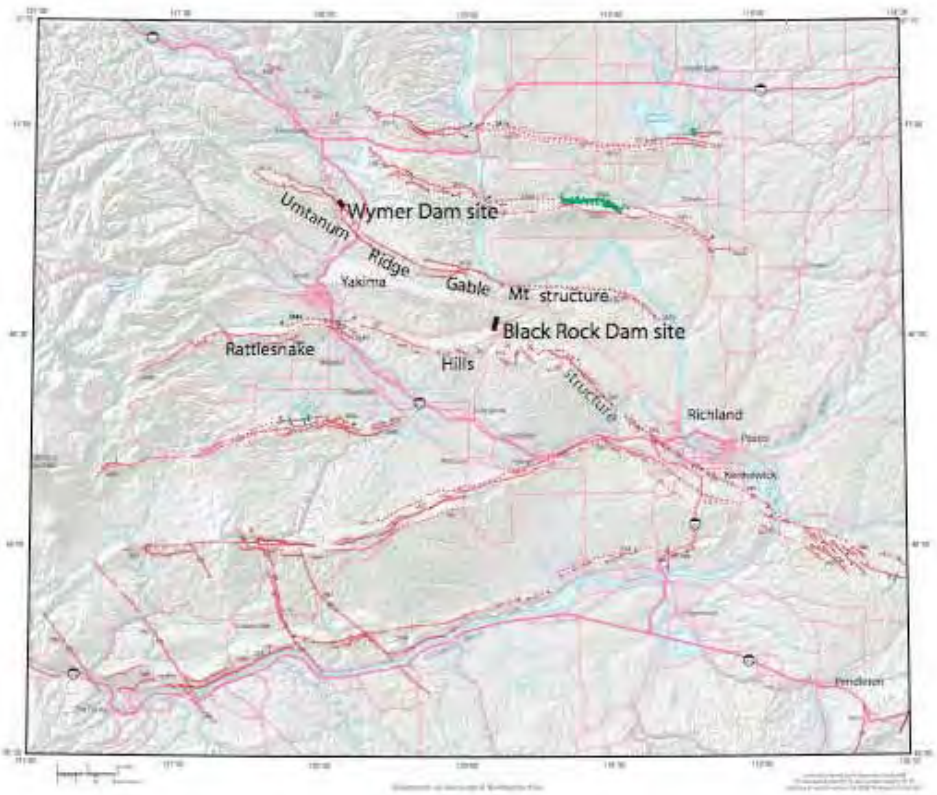


Figure 1. Faults and folds (red lines) in south-central Washington State. Note the proximity of major fault and fold structures to the proposed Black Rock and Wymer dam sites (indicated by black bars). Map is taken from Lidke, *et al.* (2003).

4. References

Allen, C. (1982), Reservoir-induced earthquakes and engineering policy, *California Geology* **35**, 143-147.

Bureau of Reclamation (2004a), *Probabilistic Seismic Hazard Assessment for Appraisal Studies of the Proposed Black Rock Dam*, Technical Memorandum No. D-8330-2004-14.

Bureau of Reclamation (2004b), *Appraisal Assessment of the Geology at a Potential Black Rock Damsite*, Technical Series No. TS-YSS-5.

Bureau of Reclamation (2007), *Yakima River Basin Storage Study Wymer Dam and Reservoir Appraisal Report*, Technical Series No. TS-YSS-16,

Lidke, D., S. Johnson, P. McCrory, S. Personius, A. Nelson, R. Dart, L.-A. Bradley, K. Haller, and M. Machetta (2003), *Map of Quaternary Faults and Folds in Washington State*, U.S.G.S. Open File Report OFR 03-428.

Milne, J. (1898), *Seismology*, 1st ed., London, Kegan Paul, Trench, Truber.

Reidel, S., B. Martin, and H. Petcovic (2003), Structure of the Yakima Fold Belt, central Washington, *in* Swanson, T., ed., *Western Cordillera and Adjacent Areas, Geologic Society of America Field Guide 4*, Boulder, Colorado, p. 277-288.

Reidel, S., N. Campbell, K. Fecht, and K. Lindsey (1994), Late Cenozoic structure and stratigraphy of south-central Washington, *in* Lasmanis, R., and Cheney, E., eds., *Regional geology of Washington State*, Washington Division of Geology and Earth Resources, p. 159-180.

Ritter D., R. Kochel, and J. Miller (2002), *Process Geomorphology*, 4th Edition. McGraw Hill, New York.

Suppe, J. (1985), *Principles of Structural Geology*, Prentice-Hall Inc., Englewood Cliffs, New Jersey, 537 pp.

USGS Auburn Project Review Team (1996), *Review of seismic-hazard issues associated with the Auburn Dam project, Sierra Nevada foothills, California*, U.S.G.S. Open File Report 96-0011.

Wells, D. and K. Coppersmith (1994), New empirical relationships among magnitude, rupture length, rupture width, rupture area, and surface displacement, *Seismological Society of America Bulletin* **84**, 974-1002.

Youngs, R., S.-J. Chiou, W. Silva, and J. Humphrey (1997), Strong ground motion attenuation relationships for subduction zone earthquakes, *Seismological Research Letters* **68**, 58-74.

Comment ORG-0008

Yakima Basin Storage Alliance

Comments on the Yakima River Basin Storage Feasibility EIS Draft 3/31/2008

YBSA wishes to thank the Washington State Department of Ecology and the US bureau of Reclamation for their work preparing this report. This report factually demonstrates the need for new storage in the Yakima River Basin. If we do not take action to develop more storage, then the future economic and environmental health of the Basin will be effectively dammed. This report documents several critical issues.

1. Yakima River Basin storage capacity is currently 30% of average annual yield, the lowest of any large irrigation project in the West.
2. The BOR has insufficient water to meet the needs of both fish and agriculture in most years.
3. There are 225,000 acres with interruptible water rights, limiting it value to the vagaries of snow pack and snow melt.
4. Washington state legislature has mandated more new storage.
5. Washington State DOE reports indicate snow pack will decrease significantly in future years due to climate change.
6. DOE has declared the need for additional storage.
7. Environmental objectives have increased the demand for storage (without increasing the supply).
8. Municipal demands have been increasing (and have not supplied more storage).

The study tells us 35 sites have been considered over the last 30 plus years. The best 6 sites were selected for further analysis. Those rejected did not meet the 3 criteria of the study. Please note the in-stream sites were rejected for environmental reasons. In stream storage is unacceptable in today's society, even though it is the cheapest storage.

The options are listed below with our comments:

1. Black Rock. "Reclamation has concluded that Black Rock is technically viable… and would meet the goals of the Storage Study."

2. Wymer Dam and Reservoir. Reclamation concluded '…this is better than the no-action alternative." The project de-normalizes the Yakima hydrograph and should therefore be rejected. The volume added amounts to no more than the proverbial "band-aid". **01**

3. Wymer Dam Plus Yakima River Pump Exchange. This option reduces the de-normalizing of option 2 at an additional cost of $2.9 Billion. **02**

4. Enhanced Water Conservation. Conservation has been actively pursued for the last 30 years and will continue as profit and technology allow. But the volume of water saved is minor compared to the combined needs for water. The best way to increase the value of conserved water is to STORE it.

5. Market –Based Reallocation of Water Resources. This option is already practiced in dry years. Again the volumes available pale next to the demands, and necessitate fallowing ground, which again drastically curtail economic growth. Another difficult issue here is that water rights have a significant public value and therefore complicate sales. **03**

6. Groundwater Storage. This is projected to provide only 1,900 ac-ft in drought years.

YBSA supports the only option which meets the needs of our environment and our economy. The components of Black Rock are proven and producing the desired results. They are the Umatilla pump exchange and the Banks Lake pumped storage reservoir. We cannot afford the second best option; we must protect our economy and our environment.

YBSA comments are outline below

1.P&G guidelines

2.Anadromous fish

3.Irrigation

4.Recreation

5.Regional Economic impacts

6.Economic Justification

7.Pump Generation

8.Construction costs

9.Contrasts in alternatives Operations

10.Comprehensive programs

11.Reservoir Seepage

12.Project Financing and Repayment

13.Future Values

14. Report to Congress

Principles and Guidelines

Reclamation and other federal water resource agencies are required to use the "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" (P&Gs). The P&Gs establishes four accounts "to facilitate evaluation and display of alternative plans" and requires that the alternative with the greatest net economic benefit consistent with protecting the Nations environment, the National Economic Development (NED) Plan, be selected unless the Secretary grants an exception.

The NED Plan is supposed to measure increases in the economic value in the national output of goods and services. In contrast is the Regional Economic Development (RED) account which is supposed to reflect changes in the distribution of regional activity that will result from a project. These regional economic impacts are commonly measured as regional employment, regional output of goods and services, and regional income. These regional economic impacts are intended to account for not only the direct impact on the primary affected sectors of the economy but also the secondary impacts that are generated by other sectors.

Regional economic impacts however, are not considered in economic justification. We understand the rationale for this is not to favor one area of the country over another area in the decision-making process of Federal water resource projects.

04

We believe application of the P&Gs and its implications on policies and processes of a Federal agency such as Reclamation severely constrains the agency in

constructively addressing solutions to water resource issues. When it comes to solutions to the water supply issues in the Yakima basin, the P&Gs and economic justification becomes just that --- a constraint which Reclamation knows full well cannot be overcome. This has been the case since the P&Gs were mandated in 1983 and will remain so unless appropriate action is taken to constructively reassess its value in Federal participation in solving regional water resource issues. With many regions facing major water resource issues it is imperative that Reclamation with a long history of capably assisting in solving water issues plays an active and constructive role. 04

Anadromous Fish

In the Pacific Northwest we are striving to preserve and improve our anadromous fishery. The Yakima basin presents a unique opportunity to take positive action in regard to water and habitat; the vital components for salmon and steelhead. Yet, the "measuring stick" for a water exchange of the magnitude of the Black Rock Alternative for anadromous fishery is based solely on the monetary value of the number of fish harvested. 05

We do not see such a "measuring stick" being applied to other salmon recovery and enhancement activities in the Yakima basin and the Pacific Northwest. Of course this would not be acceptable in the development of biological opinions, in sub-basin planning, nor in on-going court actions dealing with salmon recovery and the cultural values of salmon and steelhead to our Native Americans. In view of this, we believe it is completely inappropriate to attempt to monetarily value salmon and steelhead recovery and enhancement activities.

The true value of salmon and steelhead spawning and rearing areas such as the Yakima River basin cannot be captured by fish harvested or escapement figures. Once anadromous fish exit the Yakima basin survival is contingent solely on external conditions. What is missing is the production capability or "potential fish carrying capacity" of the Yakima basin attributable to water which the Storage Study has addressed and to recovered habitat which may require physical alternations, which the Storage Study has not, but should, address. 06

Carrying Capacity

We believe the BOR has failed to maximize the potential of Black Rock to restore Salmon in the Yakima, and urge the BOR to utilize Dr Jack Stanford's work to maximize the fish carrying capacity of the Yakima Basin. We know that it is very difficult to accurately forecast the number of returning spawners to a tributary, and therefore the measurement of carrying capacity of similar known reaches of comparable quality and magnitude maybe the best measure for evaluation. Keys 07

to Salmon recovery are increased water volume, access to more habitats in key reaches and access to old spawning grounds above the dams of the upper reservoirs. YBSA will work with Dr. Stanford to obtain carrying capacity numbers for Salmon restoration. So too should BOR. 07

If, in view of the foregoing, it is deemed necessary that a monetary value is assigned to the anadromous fishery one approach that might be considered is to base it on the cost of a "single purpose project" required to restore the flow regime of the Yakima and Naches Rivers to more closely resemble the natural (unregulated) hydrograph. This is commonly used with respect to developing a monetary value for municipal and industrial water supplies. However, a concern with this approach is that further storage development on Yakima basin main-stem and tributary rivers is not environmentally and biologically acceptable and thus would not represent a most likely single purpose alternative. 08

We further believe the desired goal of normalizing the hydrograph of the Yakima as been overlooked. It is the first criteria of the authorization act. Wymer storage site should be eliminated or assessed heavy penalties for violating the first principle, if not; Black Rock should be heavily favored for its contribution to normalization. OFF-CHANEL STORAGE IS MORE EXPENSIVE and that societal value must be quantified in your B/C analysis, otherwise damming Yakima Canyon is the cheapest and most logical alternative. 09

Black Rock has 3 other benefits that are not quantified in the BOR report but are monitored and valued as environmental imperatives for Salmon recovery. Pollution mitigation and water temperature reduction are greatly assisted by increasing the volume of upper mountain water that flow though the entire Yakima if Black Rock supplies the Roza and Sunnyside irrigation districts. In addition Black Rock offers the ability to eliminate the current 'Flip/Flop' on the Tieton River, which would then be available to be a more productive fishery. These values must also be quantified. We also request you include the climate change scenario which shows a 50% likely hood/yr of 1994 magnitude droughts on Salmon recovery too. 10 11 12

<u>Irrigation</u>

Irrigation benefits are measured as the difference in net farm income realized from a full water supply compared to a deficient supply. In the past, this has reflected the net farm income from dry-land production compared to irrigated production resulting in a significant difference, and irrigation benefit. However, when faced with periodic inadequate water supplies such in the Yakima basin, accounting for the probability of occurrence based on a historical period of 13

record, and then discounting these over a 100-year period of analysis, significantly reduce the irrigation benefits so that they account for only 8 percent of the total estimated benefits of the Black Rock Alternative. 13

This analysis considers only the net income realized by the farmer which supposedly measures the increase in the economic value in the national output of goods and services. No effort is made to look at the economic value of these agricultural products as they move through the agricultural processing sectors into the international export market. It is interesting to note that approximately 30 percent of the Yakima valley apple production enters the international market and is exported to Mexico, Canada, Taiwan, India, China, and other countries. We do not see how such export which positively affects our nation's trade balance is recognized by this "net farm income" analysis.

Further, we believe the economic impacts of deficient water supplies are not restricted solely to the year in which they occur as there is also a negative economic effect in intermediate years (see "Regional Economic Impacts" discussion). 14

What is discerning is that no consideration is given to "looking forward" with regard to the potential impacts of climate change on the irrigation water supply. With all of the current emphasis on climate change we believe that a "what if scenario(s)" is most important to display potential impacts on the adequacy of the water supply for irrigation and anadromous fishery. This is particularly germane in view of the Yakama Nation's "time immemorial" right to the flow necessary to maintain anadromous fish life in the river as indicated by the Adjudication Court. 15

Recreation

The recreation carrying capacity at a Black Rock reservoir is capped at 700,000 annual visits estimated to be reached by the 23rd year of operation. There is some information in the "Economics Technical Report for the Yakima River Basin" (pages 36 and 37) which very briefly discusses the basis for estimating carrying capacity. However, this does not explain some of the constraints such as the "boats at one time capacity" and "developed campsites" used in the analysis. Since carrying capacity directly affects the benefits we are interested to know how this number was developed. 16

Regional Economic Impacts

We believe the regional economic impacts are very important in the decision-making process as noted on page xviii of the Executive Summary which states in part:

> "…none of the alternatives developed in this feasibility study meet the requirements to be identified as the NED Alternative. The alternatives do, however, result in positive changes in regional income and regional employment, anadromous fish habitat improvements, and improved urban and community attributes as shown in the RED, EQ, and OSE accounts, respectively. Because of these positive changes, the alternatives are presented in this Draft PR/EIS, although no alternative has been identified as a "preferred alternative." A preferred alternative may be identified in the Final PR/EIS based on factors other than the economic standard. The reason for the selection will be explained in the Final PR/EIS".

Our understanding of regional economic impacts is that it includes the direct impact (measured as the gross farm income) and also the secondary impacts often referred to as "multiplier effects". Regional economic impacts are expressed in terms of number of jobs and in monetary terms of output and income. Section 4.14.1.4 (page 4-205 of the PR/EIS) indicates that the gross on-farm income from Yakima Project irrigated lands generates over 12,000 jobs, almost $400 million in labor income, and over $1 billion in output annually in the four-county study area.

Table 4.48 of the PR/EIS (page 4-213) shows that in a year like 1994, when the proration level is 27 percent an alternative which moves the proration level to 70 percent results in an additional 2,608 jobs, a $234 million increase in regional economic output, and an increase of $83 million in labor income. Several things seem to be occurring: first, the irrigation goal of the Storage Study is to provide a 70 percent proratable water supply in dry years and the regional economic activity which occurs between a full water supply and the 70 percent level is not measured; second, there is no accounting for the adverse economic impacts related to the unreliability of the water supply for permanent agricultural crops such as in securing financing and contracts for marketing of these crops; and third, regional economic impacts are not displayed in a manner similar to the benefits to allow a meaningful comparison with the expenditures incurred which generate the economic impacts.

17

18

19

The entire economic focus in the draft PR/EIS is on benefits for economic justification. The difference between benefits and regional economic impacts and the exclusion of the latter from the economic justification analysis is difficult to comprehend. With Reclamation policy requiring non-Federal cost sharing, regional economic impacts are most important to State and local agencies and entities. It is our view the draft PR/EIS is very deficient in this area.

20

Recreation

The recreation regional economic impacts shown in the draft PR/EIS represent expenditures from recreators living outside of the four-county region. The reason for this is explained as "…within-region recreators are assumed to spend the majority of their recreation expenditures within the region regardless of the alternatives under consideration, implying they would generate little by way of additional regional economic activity". For the Black Rock Alternative, annual nonlocal visitation estimates were estimated at 28 percent of the total annual visitation. Thus it appears that expenditures of local recreators associated with new slack-water recreation opportunities created by a Black Rock Alternative are not included in the regional economic impacts. We question this assumption. 21

YBSA made the effort to secure and finance an independent assessment of what the construction of a Black Rock reservoir could mean with respect to water oriented recreation opportunities and the potential for an at-site master planned development. The report prepared by the consultants is referenced in Section 6.1.1.2 (page 6-3) of the Draft PR/EIS with the indication that "…these potential revenue flows would be regional in scope and not the national economic benefits that Reclamation and other Federal studies are mandated to address for the economic justification of Federal water resource projects". However, there is no further reference of the results of this assessment in the Draft PR/EIS. 22

This document estimates the present worth value of the regional economic impacts as follows:

Expenditures incurred by recreationists	$1.280 billion
Expenditures incurred for the master planned development	
(residential, commercial, and resort)	$2.120 billion
Total	$3.400 billion

We do not see why this information is excluded from the regional economic development analysis. Based upon what has occurred in the vicinity of other Reclamation reservoirs in the Pacific Northwest this information reflects a future potential which should not be ignored. While there is no assurance at this time that such development will occur above the reservoir "footprint", there is no assurance that it will not occur. A case in point is the Suncadia development in the vicinity of Cle Elum Reservoir that not very long ago was "not on the horizon".

Pump-Generation

Every opportunity should be explored for inclusion of potential "revenue producing" measures at a Black Rock Project that would help to defray costs. To date, consideration has not been given to the construction of a pump-generator at Black Rock dam that would use the water stored in the reservoir released through a generator at the base of the dam for hydroelectric generation. This released water would then be pumped back to the reservoir and the cycle could be repeated as appropriate to coincide with high load/low load scenarios as well as in conjunction with wind power facilities. What would be required is a re-regulating impoundment in the vicinity of the dam for storage of the released water for short intervals and subsequent recycling back to Black Rock reservoir. This type of pump-generator operation has been in use at Oroville Dam in California for many years. Relicensing of the hydroelectric facilities at Oroville Dam is currently underway. **23**

As the Northwest increases investments in alternative energy, integration of these various sources need to be coordinated, and stored to maximize their values. That requires a battery. In Europe the wind and nuclear generators are tied to a grid which in which, when supplies exceed demand pumps water up fiords in Sweden and Finland and Norway. The higher the lift, the better it can store more energy. Black Rock offers that potential. **24**

We further believe that to preserve the Recreational values, we can use the diurnal rate differential to dampen the fluxuation of the water level in the Reservoir.

It is our intent to pursue discussions with others to determine the viability of this operation from both an engineering and financial perspective.

Construction Cost

The magnitude of "add-ons" to the estimated cost of in-field construction activities incurred by contractors for labor, materials, and equipment ("pay items") is overwhelming. These add-ons increase the estimated "pay items' from $2.250 billion to $4.500 billion. Of particular significance is the 35 percent noncontract cost of $1.200 billion. What we see occurring is an effort to be most liberal in estimating project costs yet on the other hand, most conservative in estimating project benefits (see "Economic Justification" discussion). **25**

With regard to the construction period which is used in developing the interest during construction cost, we suggest the projected 10-year construction period is influenced to a large extent by expectations of annual construction appropriations **26**

to Reclamation rather than the contractor(s) capability to construct the project. The result is increased costs which are used in the benefit-cost analysis. 26

YBSA believes that large projects can be best cost controlled by using "Design/Build" concept, whereby the builder receives the designs 80% completed so that they can best match current resources to the solution, saving time and money.

Contrasts in Alternative Operations

A comparative analysis of what each alternative will do and will not do with respect to providing flexibility in system operations and the capability for adaptive management in addressing the basin's anadromous fishery should be included in the Draft PR/EIS. 27

Comprehensive Program

There is the concern the accomplishments of restoring the flow regime of the Yakima and Naches Rivers to more closely resemble the natural (unregulated) hydrograph are not fully measured. This is because the Storage Study does not consider the potential productive capability of salmon and steelhead habitat in the major floodplains currently constrained by physical alterations. In addition, tributary habitat restoration and its correlation with the positive effects of main stem flow improvements in improving anadromous fishery production has not been considered. 28

A comprehensive approach to the water issues of the Yakima basin was put in place with the Yakima River Basin Water Enhancement Project activities initiated in the early 1980s. It was recognized the pieces necessary for a successful resolution of these issues are so intertwined that a comprehensive approach was necessary. Some of these pieces such as fish passage and protective facilities have been implemented. Other pieces such as the "Basin Conservation Program", the recent work of the Yakima Basin Fish and Wildlife Recovery Board, fish passage to spawning areas upstream of existing Yakima Project dams, and the Storage Study are ongoing. Title XII of the Act of October 31, 1994, recognizes the need for a comprehensive plan and provides authorities for actions such as tributary flow enhancement measures including the restoration of stream habitat.

Reservoir Seepage

We know about the seepage potential, but the BOR has failed to mention the mitigation possibilities. THIS MUST BE INVESTIGATED. This is too big a problem not to have aired and open to public comment. We also believe that the 29

solutions to this problem need to be discussed and understood by the public. We believe that intercepting the seepage, and using the "new return flows", can be a very significant benefit for the Tri-Cities municipal needs, or augmenting flows in the Hanford reach on the Columbia, the Horns Rapids reach of the Yakima, or even to agricultural, or commercial interests, while at the same time virtually eliminating the threat to the Hanford Reservation contaminants. YBSA will challenge the EIS if no public comment period is allowed for mitigation. 29

Project financing and repayment

The BOR failed to discuss how to pay for this project. YBSA will work with Washington State to develop a plan. YBSA will include a method to assess irrigation payments as well as debt structure from the various benefactors including power and recreation. The BOR should do like wise and assist the effort. YBSA has received the go-ahead from Washington State to have a "Four Corners" meeting to address the issues. Commissioner Johnson has been invited. 30

YBSA's stated goal is to maximize the benefits for all sectors. We adopted this goal after being advised by senior BOR officials, who stated that no large projects would be built without multiple paying partners, and resolving treaty rights. The BOR study must recognize and maximize the recreational, power and Salmon recovery benefits to achieve it's goals and have the tools to do it's job of managing water in the Northwest. We urge the BOR to include the Mitchel-Nelson report (Jan 2007) which analyzed the recreational development potential. THIS VALUE IS CRITIAL to recognize, in order to attract private capital for construction and operation. 31

Future Values

YBSA urges the BOR to use past values for benefits to assess LONG TERM TRENDS, and project those values into the future including land values, in a Future Value analysis, and compare that Future Values of the alternatives 50 and 100 years out so that all can compare the alternatives to the no-action alternative. 32

We further believe the BOR must recomputed its NPV analyses using a 3 year build time, to show the value to compressing the build time. We also request the BOR include the climate change scenario which shows a 50% likely hood/yr of 1994 magnitude droughts on economic values for the region. 33

Report to Congress

These pieces must be woven into a comprehensive plan and a legislative package developed so all of the interests of the Yakima basin are assured that the authorities and mechanisms for funding are in-place. This comprehensive plan 34

approach fully promotes the concept of federal-nonfederal cost sharing which is so necessary in addressing today's water resource issues. We urge you to take this into consideration in the preparation of a Final Storage Study PR/EIS.

34

Sincerely,

Charlie de La Chapelle,

Vice Chair, on behalf of the Yakima Basin Storage Alliance

3/31/08

Comment ORG-0009

From: "Rick Leaumont" <leaumont@owt.com>
To: <storagestudy@pn.usbr.gov>
Date: Fri, Mar 28, 2008 10:10 PM

LOWER COLUMBIA BASIN AUDUBON SOCIETY
9016 Sunset Trail
Pasco, Washington 99301

March 28, 2008

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

Dear Mr. Kaumheimer:

Introduction:

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. We have many concerns with the report and associated projects.

The report has been constructed as a draft plan, draft environmental impact statement and a feasibility study reviewing two major dam and reservoir projects and three state alternatives. The projects and alternatives have little in common except being found in the Yakima River basin. The report does not name a preferred alternative or indicate how a mix of the projects and alternatives will provide sufficient water for fish and agriculture. The reader is left to ponder whether the agency is considering going forward with all the projects and alternatives or a mix. The report falls short on comparing and contrasting these alternatives or how they would impact each other if a mix were selected.

01

The report attempts to do too much at one time and in the end, fails to adequately address how these projects and alternatives could accomplish the mission of providing water for fish, agriculture and urban areas in the right amount at the right time. The report fails to adequately address the impacts of these projects and alternatives on the environment and our cultural heritage. The report fails to adequately address the impacts of the Black Rock project on Hanford ground water. Serious geological questions remain unanswered. The Black Rock and

Wymer dam project's impact on regional electrical supplies has not been addressed. The Recreational report is flawed and grossly exaggerates the potential visitor usage.

We strongly recommend that the report be reclassified as a draft plan and feasibility study only. Additional information is needed on Hanford groundwater and geological concerns. More information is needed on the engineering details of the dams. On the ground surveys of wildlife, native plants and cultural resources need to be done. Simply stated the report does not meet the rigorous standards of the National Environmental Policy Act for Environmental Impact Statements. We realize this will be costly in terms of time, labor and printing but a comprehensive, in depth EIS utilizing all available data, subjected to intense peer and public review can save billions of dollars and avoid environmental catastrophes.

If you decide to continue viewing this report as a draft environmental impact statement, we insist that the report be submitted to a panel of independent experts in the various disciplines, such as the National Academy of Sciences, to review the report in detail and attempt to resolve these shortcomings, before writing the final report.

The remainder of my comments will focus on the Black Rock proposal.

Ground Water Impacts:

Large plumes of highly contaminated ground water lie beneath the Hanford Reservation, a constant unseen threat to the Columbia River.

For the most part, these contaminated ground waters are stable and contained deep underground. We must not allow highly toxic contaminates to be flushed into the Columbia River.

The Department of Energy is striving to monitor, remediate and shrink these plumes, but they need time. Our first line of defense is to reduce the natural and artificial recharge of Hanford ground water.

The proposed Black Rock dam would be within five miles of Hanford's western boundary. The dam would be 755 feet tall and well over a mile long in length, holding 1.3 million acre feet of water. The dam would overlook Dry and Cold creeks, intermittent stream courses that meander onto the Hanford Reservation.

The study predicts water would seep from the reservoir at the rate of 31 cfs and move onto the Hanford Reservation. The report indicates that this almost quadruples the ground water moving under Dry and Cold creeks. This does not sound like a lot of water, but it amounts to 30,000 acre feet per year - or the equivalent of an underground lake one foot deep covering almost 47 square miles

creeping under Hanford. Another underground lake of that dimension would be added every year, relentlessly building and pushing those contaminated pools closer and closer to the Columbia. The report also states in Table ES.6 that the total ground water seepage towards the Columbia River would be 57 cfs. The study does not indicate why only 31 cfs would flow under Hanford, I can only infer from this that there is the distinct possibility that the 31 cfs prediction could climb to 57 cfs or a 84% increase over the present prediction. 02

The study does not include detailed maps of the Black Rock project or Dry and Cold creek drainages. This is a serious deficiency which inhibits the public's ability to evaluate the proposal. 03

The increased ground water flows could easily mobilize the contaminated pools under Hanford and push them into the Columbia River initiating and environmental disaster that would be almost impossible to control or clean up. We can not allow this to happen.

The Department of Energy is currently studying the possible impacts of seepage from Black Rock on Hanford's ground water. The report will be completed sometime in 2008 and will be included in your Final Report. Your draft Environmental Impact Statement is fatally flawed by the failure to wait a few short months to include the Department of Energy's report in the draft EIS. The public must have the opportunity to make an informed review and comment on this vital issue. You are rushing to a decision without some of the most vital facts. 04

Seismicity / Geological Threat:

The Black Rock dam would lie in an area of high earthquake potential. The report is vague and difficult to understand as to the extent of the threat. The report states on page 2-9 "at a return period of 10,000 years, the estimated mean PHA is about 0.95g (acceleration of gravity), a level of ground shaking that might be associated with the occurrences of magnitude 6 to 7+ earthquakes..". I have no idea what that means. Is "6 to 7+" the Richter scale or some other form of measurement? How high is the potential frequency or magnitude of the earthquake threat? The report really does not give the reader any concrete idea of the threat from seismic activity. NEPA requires EIS's to be written in a manner understandable to the general public. Once again the report fails to meet the NEPA standards. 05

The dam would be constructed on the Black Rock fault and an additional thrust fault. The report provides only a very vague idea as to the exact location of these faults. I would hope this information is available and am disturbed that it has not been released to the public in this report. 06

The right abutment of the dam would rest on Horsethief Mountain. We are greatly concerned as to the fitness of Horsethief Mountain to function in this important role as the right hand foundation for a 755 foot high dam or its ability to safely hold back 1,300,000 acre feet of water. 07

The report states on page 4-37:

"Landslides are common in the Yakima Fold Belt and generally form on the over-steepened south limbs of the anticlines. Several ancient landslides have been identified on the Horsetheif Mountain anticline, which comprises the right abutment of the proposed Black Rock dam (Columbia Geotechnical Associates, 2004). The steeply dipping orientation and layering of the low-strength sediments and the presence of the Horsethief Mountain Thrust Fault along the southern edge of the reservoir valley present a potentially hazardous combination. Though the slide areas are currently stable, seepage from the reservoir into the presently unsaturated basalts and interbedded sediments would increase pore pressures within those materials and would likely reactivate some of those slides as well as initiate new landslides along the reservoir rim and dam abutments."

The Bureau of Reclamation's Appraisal Assessment of Geology at Black Rock Damsite, Technical Series No. TS-YSS-5 (December 2004) states on page 32:

"This high level of shaking leads to the potential of causing lower density embankment or foundation saturated soils to experience liquefaction, which is essentially a loss of strength that can result in large slope failures." 08

This statement should have been included in the EIS and been easily available to the public and not lost in a supporting document.

The above sited report provides photographs of Horsethief Mountain which indicate the location of some of the landslides, but the photos only vaguely indicate where the dam would abut the mountain. These photographs should have been included in the feasibility study report. The report does not provide a detailed diagram of the proposed dam. We are provided with a very small diagram of the intake structure at Priest Rapids Dam but no drawings of the dam are offered for our review. The report again is severely deficient in this respect. The report should provide detailed diagrams of the dam, and its relationship to Horsethief Mountain and the faults. These diagrams should provide views across the face of the dam, a cross section of the dam and an aerial view of the dam and Horsethief Mountain. 09

The above sited geology report also states on page 35 concerning the design of the dam:

"Large site investigation and materials testing programs will be needed to ensure the site conditions are well understood. Detailed analyses will be critical to

ensure a safe design is developed. In addition to these measures, such a design would need to be independently reviewed by an expert board of consultants."

The EIS does not indicate if the dam design was ever reviewed by an "expert board of consultants". We feel it is absolutely essential that this independent expert review be completed and included in a new draft EIS. Once again the draft EIS fails to include critical information. The EIS should be revised, expanded and reissued as a draft. **10**

Columbia River Water Withdrawal:

The report is confusing and inconsistent as to the volume of water to be withdrawn from the Columbia River. **11**

The draft EIS states on page 2-40:

"In years when the maximum water exchange occurs, Black Rock reservoir would release a total of about 600,000 acre feet annually."

Table 2.19 indicates the average water pumped into Black Rock at 640,693 acre feet annually, with a maximum of 1,077,510 acre feet. The table predicts the annual amounts that would be pumped over a 25 year period. Two of those years would pump over 1,000,000 acre feet, five of those years would pump between 730,000 and 1,000,000 acre feet and nine years the total would be between 18,000 and 730,000 acre feet annually.

The Bureau of Reclamation's Appraisal assessment of the Black Rock Alternative Facilities and Field Cost Estimates, Technical Series No. TS-YSS-2 states in Table 1, the water exchange in wet and average years at 810,400 acre feet and 662,000 acre feet in dry years.

Clearly, the maximum water exchange exceeds 600,000 acre feet. The report must be consistent in this vital respect. Once again the report does not meet the NEPA standard for an EIS.

Columbia River / Hanford Reach Impacts:

The report only vaguely alludes to the impacts of withdrawing water from the Columbia River above Priest Rapids dam. The Columbia's Hanford Reach lies just below Priest Rapids dam and above the confluence of the Yakima and Columbia Rivers. The Hanford Reach contains the very best spawning grounds on the main stem of the Columbia River and adequate water flows are absolutely critical to the successful spawning, rearing and passage of these fish. **12**

The Black Rock project would withdraw, on average 396,847 acre feet of water from the Columbia at Priest Rapids dam in September and October. This is 62%

of the average annual withdrawal according to Table 2.19. The project would divert this water from the Hanford Reach at the most critical time for spawning and exactly when flows are significantly declining. The report must provide detailed information as to the anticipated impact these withdrawals will have on the Reach. 12

The report should also acknowledge that three additional off channel storage reservoirs for Columbia River water above Priest Rapids are in the planning stage. What would the cumulative impact to the Hanford Reach be from all these projects? 13

Fish - False Attraction:

We have great concerns over the mixing of Columbia and Yakima River waters and the confusion it could cause migrating fish.

The report states Columbia River water entering the Yakima River from the project would range from .34% to 1.62% which is well under the 10% threshold laboratory experiments have indicated sockeye salmon can tolerate before discriminating between water sources. This is encouraging but we feel more testing should be done using Columbia and Yakima water on migrating fish native to these streams. 14

We recommend that feasibility studies be conducted to determine if Black Rock project waters from the Columbia Rivers could be diverted to create wetlands and completely avoid entering the Yakima River. These wetlands could be very beneficial to fish and wildlife and provide recreational opportunities. 15

Wildlife:

The wildlife section of the report quotes numerous studies but does not indicate if any on the ground wildlife and native plant surveys were done specifically for this project by Interior Department biologists. The report should be clear on this point and if these surveys were not done, they should be and the results published in a new revised draft EIS. 16

The project would disrupt wildlife migration between the Hanford Reach National Monument and Yakima Firing Center and extending on to the Cascades. Land should be acquired linking the Yakima Firing Center to the Hanford Reach National Monument along the Columbia River. These lands should be added to the Hanford Reach National Monument. A second wildlife corridor should be established along the Rattlesnake Hills to assist wildlife in their movement. 17

The reservoir as designed would be of minimal value to fish and wildlife. The Black Rock reservoir should be redesigned to include a number of dikes, gates and pumps to maintain shallow wetlands as the reservoir is drawn down during 18

the irrigation season. These wetlands would be beneficial to fish, wildlife and migratory birds. Maintaining these wetlands would enhance the scenic view as well as fishing and hunting opportunities. 18

Recreation:

The report foresees Black Rock Reservoir as a sportsman's paradise and outdoor recreation Mecca. The 8,640 acre lake and narrow band of shoreline that would be acquired are expected to attract boat and shore fishing, swimming, picnicking, water skiing, jet skiing, hiking, wildlife viewing, horseback riding and off road vehicles. The report estimates annual visitor days starting at 200,000 and quickly climbing to 700,000. We believe these projections are grossly exaggerated.

The report includes a recreational survey of existing lake and river recreational opportunities in the Yakima basin. These recreational opportunities are concentrated in the Cascade Mountains and have little in common with Black Reservoir which would be located in a treeless semi-arid area. The recreation report indicates the annual visitor count for the seven lakes and five rivers in the Yakima basin survey at only 108,012. It is hard to conceive how the construction of an 8,640 acre lake in an area with summer temperatures climbing to 110 degrees would attract seven times the current number of visitors in the study area. 19

The report foresees 245,000 annual fishing days per year. Black Rock, as designed, would be deep and have steep slopes and virtually no shallow wetlands so critical to fish. We believe the potential for developing an attractive fishery in the reservoir are very small. 20

The report forecasts 175,000 boat fishing visitor days and 175,000 water skiing and jet skiing visitor days. We believe the lake is far too small to support this number of boats, particularly when we take into consideration that the lake surface will shrink as the irrigation season progresses. The shrinking lake surface and steep slopes will also leave boat launches and docks high and dry. 21

The report and survey ignores other recreational facilities virtually on the doorstep of Black Rock such as the Hanford Reach, Lake Wallula, Priest Rapids Lake, Moses Lake, the Columbia National Wildlife Refuge, Scooteney Lake, Potholes reservoir and the many parks along the Lower Snake River. We already have an abundance of slake water reservoirs which are far from being over crowded. Desert Aire, a small vacation community located at Priest Rapids dam has struggled to survive for many years and has never attracted the visitors predicted for Black Rock. 22

Electrical Supply Impacts:

The draft EIS's Table 4.12 portrays the costs and volume of electrical power required to pump water into Black Rock reservoir. The electrical costs are

estimated to range from $33 to $93 million per year with an average of $50 million. The report does not indicate what price rate these estimates are based on. We requested this information and were unable to secure an answer. We fear the rate is a highly discounted bulk rate fare below that paid by residents, businesses and irrigators. Rate information is a critical component in determining the true costs of the pumping operation and must be available for public comment. **23**

The majority of the annual pumping will be done in September and October, when Columbia and Yakima River flows are declining. The table shows that on average 511 MW and 430 MW will be required in September and October respectively. How will this impact the supply of electricity available to other consumers? We must remember that the 396,847 acre feet of water pumped out of the Columbia during September and October to begin refilling Black Rock will not be available to generate electricity at Priest Rapids dam or the four other dams downriver. The market value of this foregone power generation should be computed in the actual cost of the project as well as the cost benefit ratio. **24**

How will the large consumption of power in September and October for pumping coupled with the associated lost power generation impact the supply of electricity? Will this require BPA to buy expensive power out of the area, driving up the rates paid by local consumers.

Table 4.12 shows the average annual power required to supply Black Rock at 132 MW. The table also gives the average monthly power required for each of the twelve months. The total average MW for the twelve months listed on the table is 1649 MW's. How can the sum of the monthly averages be so many times higher than the annual average? It is hard to understand how the table could list the annual average at 132 MW when the monthly average for September is 511 MW and 430 for October. Obviously the table is in error. The table provides critical information and should be corrected and included in a new draft EIS and submitted to public review. **25**

Cultural Impacts:

We are concerned that sufficient research and field study has not been done on historic properties and Native American sacred sites. Table ES.6 in the draft EIS states under Historic Properties and Indian Sacred Sites indicates that the number of properties and sites is "unknown". This is unacceptable. The presence of Sacred Sites can and rightly should bring a multi billion dollar project to a screaming stop. The question of impacts to historic and sacred sites must be answered and provided in the draft EIS. Once again critical information is missing and a new draft EIS must be done and submitted for public review. **26**

Inadequacy of EIS:

It should be noted that the Bureau of Reclamation's Yakima River Basin

Reservoir and River Recreation Survey Report of Findings, Technical Series No TS-YSS-15 describes the Yakima River basin as encompassing Benton, Franklin,Yakima and Kittitas counties. It should be noted that Franklin County is east of the Columbia River and not in the Yakima Basin. Figure 4.11 on page 4-60 of the draft EIS portrays a map of the Yakima basin. The Figure erroneously places the Horn Rapids Irrigation Pump on the Columbia River and not its true location on the Yakima River. These are insignificant errors but they dampen our faith in the accuracy of the reports. **27**

In view of the lack of information, pending reports and conflicting information contained in the study, we strongly recommend that the report be reviewed by an independent body of experts such as the National Academy of Science and a new draft EIS be developed and submitted for public review. **28**

Conclusion:

We recommend that the Black Rock project be dropped from further consideration.

The cost / benefit ratio of .16 to 1 is totally unacceptable and renders the project financially unsound. We believe that when costs of foregone power generation due to water diversions, scaling back recreational benefits projections to a reasonable level and the costs of attempting to prevent ground water incursion onto the Hanford Reservation are figured into the equation the cost / benefit ratio will drop far below the present .16 to 1. **29**

We believe the impacts to migratory fish using the Hanford Reach alone make this project unacceptable.

Most importantly we believe the geological conditions at Black Rock coupled with the problem of ground water incursion on Hanford render the project unsafe. We do not believe these conditions can be fixed or mitigated. You can not fix a fault line and we are dealing with two fault lines on this project. The threat of major earthquakes is high. Horsethief Mountain, the critical right abutment of the dam is very unstable and prone to liquefaction which means we could completely loose Horsethief Mountain during an earthquake releasing the entire reservoir in a massive wave across Hanford. The threat of 30,000 or more acre feet of ground water per year pushing, building and forcing contaminated ground water under Hanford into the Columbia River is also unacceptable.

In spite of all this, if the decision is made to pursue the Black Rock project we recommend the following:

1. The current draft EIS is unacceptable, it must be redone and reissued to the public for comment.

2. Convene a group of third party, disinterested experts, such as the National Academy of Science to thoroughly peer review the draft EIS.

3. State and federal legislation must be passed granting a water right to fish for the 440,000 acre feet of water the project supposedly will leave in the Yakima River for fish. The water right should be held in trust by the US Fish & Wildlife Service, US Marine Fisheries Service and Washington Department of Fish & Wildlife.

4. Establish wetlands to prevent the mixture of Columbia & Yakima River waters entering the Yakima River.

5. Establish dikes, flood gates and pumps to maintain shallow wetlands in the reservoir as irrigation draws down the reservoir water level.

6. Fully mitigate impacts to the Hanford Reach by increasing Columbia River flows to compensate for water diverted to Black Rock.

Alternatives:

What would we propose doing to manage water in the Yakima basin if the Black Rock project were dropped?

First of all the objective of Black Rock is not to expand irrigation in the lower Yakima valley but to increase Yakima River flows and provide a minimum of 70% of the water commitments in dry years - which have been found to be around 6 out of every 25 years. **30**

We recommend studying the possibility of diverting water out of the Yakima River during the high spring runoff into artificially constructed wetlands along the Yakima River. Allow these waters to gradually seep into the aquifer, storing them as ground water, far from Hanford. These waters could then be tapped in dry years by pumps managed by the Bureau of Reclamation. Based on past history we would have 19 out of every 25 years to build up our ground water supply and then only tap it in dry years by carefully managed wells.

The wetlands created by these diversions would be extremely valuable to fish and wildlife and provide recreational opportunities far superior to those envisioned at Black Rock.

This alternative would be far cheaper to construct and use only a fraction of the electrical power Black Rock would require.

We also believe an insurance or subsidy system should be in place to compensate Yakima valley farmers growing annual crops thus enabling them to let their fields lay fallow during drought years while concentrating the available water on **31**

permanent crops such as orchards and vineyards.

We also recommend pursuing water conservation and refitting irrigation systems to use the available water as effectively as possible. **32**

We believe these measures could provide the water needed by fish, wildlife, agriculture and urban communities in the right amount at the right time.

Thank you for this opportunity to comment on these reports. We appreciate the hard work you and your staff have done over many months to produce the report.

Sincerely,

Richard J. Leaumont
Chair
Conservation Committee

CC: jtrumbo@tricityherald.com

Comment ORG-0010

VANCOUVER AUDUBON SOCIETY
P.O. Box 1966 Vancouver, WA 98668-1966
www.vancouveraudubon.org

308 NE 124th Avenue
Vancouver, WA 98684
March 28, 2008

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

Dear Mr. Kaumhelmer:

The Vancouver Audubon Society, along with our sister Audubon chapters in Washington, are concerned about the proposed Black Rock Reservoir. Our concern is for the wildlife and the fish in the area.

The Black Rock Reservoir would block movement of wildlife between the National Hanford Monument and the Yakima Firing Range. Providing migrating corridors for wildlife is greatly important to allow for genetic mixing and keeping wildlife populations strong. Cutting off a migration corridor is likely to lead to the eventual decline of wildlife populations. **01**

The salmon may be at greater risk. Additional water should not be pumped from the Columbia in dry years. The Hanford Reach fall Chinook salmon is a valuable stock as it represents the only mainstem spawning Chinook left in the Columbia Basin. Any possibility of dewatering the redds of the fall Chinook would jeopardize that population. In addition, salmon migration depends on chemical cues in the water from their natal streams. If water from one river is transferred to another, it could confuse the returning adults, causing them to migrate up the wrong stream. **02** **03**

Additional water cannot be produced. It can only be shoved from area to another. Or prevented form flowing downstream in one season (winter and spring) to be released to flow downstream in another season (summer and fall). There is only so much water available in the Columbia. A lot of demands are placed on the Columbia and its tributaries: hydropower, transportation, irrigation, and providing for fish. We may be at the point that the Columbia cannot provide for any more water use without jeopardizing another use. Fish are likely to be the greatest loser if the Columbia becomes over-allocated. If we are facing

04

greater droughts as a result of global warming, we must encourage conservation, not encourage greater use. The question of whether or not the farmers in the Yakima Basin are using water in the most efficient manner must be addressed before even considering using more Columbia River water, either directly or indirectly. The Vancouver Audubon Society opposes the building of the Black Water Reservoir.

Thank you for the opportunity to comment on this proposal.

Sincerely,

Gretchen Starke
Conservation Chair,
Vancouver Audubon Society

Comment ORG-0011

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

To whom it may concern: I am writing on behalf of Columbia Riverkeeper to oppose the proposed Black Rock Dam because of its enormous environmental and economic impacts. We do not believe the DEIS adequately evaluated the impacts of the proposed project and our concerns are reflected in the comments submitted by the Center for Environmental Law and Policy which are incorporated here by reference. The Columbia River and the area that would be impacted by the proposed reservoir simply cannot withstand the additional impacts that would be created by this misguided project. **01**

Sincerely,

Brent Foster

Executive Director

Columbia Riverkeeper

724 Oak Street

Hood River, OR 97031

(541) 380-1334

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

Comment ORG-0012

From: "Kevin & Deb Ryan" <kevdryan@comcast.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 3:52 PM
Subject: The Proposed Black Rock Dam

Ladies and Gentlemen: I am the Conservation Vice-president for the Washington State Council of the Federation of Fly Fishers. The Federation is a national organization representing tens of thousands of conservation minded sportsmen. Our state Council represents more than 750 active and concerned members throughout this state.

On behalf of these members, I wish to convey our opposition to the Black Rock Dam proposal and express common cause with those organizations and individual who oppose this economic and environmental folly. **01**

At a cost of $6.7 billion to build (this is probably underestimated as usual) and millions to operate, it is calculated to return 16 cents for every dollar spent. Until food costs more than six times what it costs now, all other costs remaining constant, it will be madness to build such an edifice to benefit agriculture. The general public would have to cover the losses because the Yakima agricultural interests are wisely unwilling to do so.

Further the dam would have to be built in an area full of basalt faults placing it in high risk of damage from earthquakes. You can imagine the consequent disaster without any florid imagery from me.

Finally, consider that underground leakage through the basalt layer would raise the water table level in the Hanford Nuclear Facility area, helping to speed the plume of contaminated ground water toward the Columbia.

Considering all the unsavory possibilities, no responsible public body would countenance such a project without requiring a multi-gazillion dollar bond from Yakima farmers before proceeding. Further, all public officials involved in approving such a venture must forfeit their positions and any emolument therefrom should disaster ensue from earthquake, contamination, or financial failure and hope that a Portia may deliver them from the consequences of their folly.

Kevin Ryan
Conservation VP
WSCFFF

Comment ORG-0013

YAKIMA BASIN WATER RESOURCES AGENCY

2301 Fruitvale Blvd.
Yakima, Washington 98902
Phone: 509.574.2650 Fax: 509.574.2651
www.co.yakima.wa.us/ybwra/

March 27, 2008

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

RE: Hearing Comments, Draft Planning Report/Environmental Impact Statement, Yakima River Basin Water Storage Feasibility Study.

Dear Mr. Kaumheimer:

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

It is our concern that the legal restrictions on the goals and objectives of this study were critically flawed from the start. This severely limited the alternatives of the study, precluding an optimum alternative. These restrictions should be rectified prior to completing the study. 01

Individual entities represented on the board will provide separate comments depending upon a variety of perspectives. Reclamation needs to consider all comments and resolve the shortcomings in the completion of the planning process.

Sincerely,

Richard Dieker

Richard Dieker, Chair
Yakima Basin Water Resources Agency

cc: Gerald Kelso, Area Manager, USBR
Derek Sandison, Regional Director, CRO, WDOE

G YBWRA Storage Study USBR 032708 final

Comment ORG-0014

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. **01**

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

CC: jbriggs@elltel.net

Comment IND-0001

From: "Forbes Mercy" <forbes.mercy@wabroadband.com>
To: <storagestudy@pn.usbr.gov>
Date: Sat, Feb 2, 2008 2:06 PM
Subject: Pro Black Rock

I'm not a farmer nor do I count in any industry used for economic models for this project. I don't personally benefit from the Reservoir in any way. I am however a life long resident of Yakima (with few exceptions) and I have followed the Black Rock project. More than that I follow the Bureau of Reclamation web site frequently, as a bit of a computer geek I watch the inflow versus out-flow of water within our reservoir system every year and have learned the cycles for water usage.

01

In the spring an excessive amount of water is discharged into our five reservoirs, particularly in the Rimrock watershed. Out-flow is increased in the spring wasting huge amounts of water in order to keep reservoirs from overflowing, that is in a banner year. This year, for instance, we will see flooding and huge pass-through of water, enough to fill many Black Rock reservoirs. A good year of snow does not mean a great year for farmers; if too much melts too early we lose the "sixth" reservoir which is by far the most massive, the snow pack. We also know that in the next few years we will enter another drought just like every other cycle and without the carryover our reservoirs will be lower and lower each year until we have to throttle usage, Black Rock reduces that chance. Government loves redundancy because the public count on consistency, Black Rock gives us that consistency.

While I'm sure science questions the location based on the absorption rate of a reservoir on a desert floor, I had wondered why you don't look in the hills for more storage space but I guess the environmentalists care more about the trees than the desert. Therefore when the numbers don't look so promising because of desert condition losses you have to weigh that with your options available, zilch. Storing water is very similar to building power generation, the need will grow and the supply has to match it. This project also adds the Columbia as a source for our irrigation needs with its excess flow; a new source is always a good backup.

Without belaboring this letter let me make my point, we have arid land with rich soil and some good sized hills to serve as two to three walls of a big lake in several places. We run low enough on water every 7-10 years to have to ration and therefore lose crops which are used efficiently to feed the world. We have an Indian Nation we can't ignore who has requirements that are good for all of us. Even if they aren't our first priorities; fish runs are also good for the food supply and the economy. Your .16 cent return on investment is just some made up number likely slanted by people with an agenda. Meanwhile we spend more than this project costs blowing up other countries every month just to

save oil which ironically is a source of power just like this would be. While there are plenty of pork barrel projects out there this isn't one of them, it addresses a need in infrastructure for a growing region that produces positive cash flow for the government in a myriad of various industries from airplanes to apples.

01

In conclusion, I've always felt the government's primary role is protection and infrastructure, everything else is a perk when we can afford it. If we can't feed, provide water or power for our own citizens someone dropped the ball on their primary assignment. Your agency became the trendsetter for responsible infrastructure growth that matched the needs of population in the 1930's. Agencies sometimes get lazy to their primary mandate, this is your opportunity to continue that mandate with one more big project that benefits so many more Americans than just this region. I encourage you to approve Black Rock.

Thank you,

Forbes Mercy

Yakima, WA

Comment IND-0002

From: <cokercarol@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Feb 3, 2008 4:10 PM
Subject: Water Storage comments

Thank you for the opportunity to comment on the water storage study for the Yakima River basin.

01

The Black Rock reservoir proposal makes no sense for a number of reasons.

It would be enormously expensive. Dividing the estimated cost of the project by the number of farm acres potentially opened up to agriculture results in a figure much higher than any possible return.

Some people are touting this project because of a precieved profit in land development. Taxpayers should not be footing the bill for profiteering by real estate developers.

Large reservoirs have been advocated as a benefit to the general public for recreation as well as for water storage, but the reality has always been that the cross-purposes of water storage usage and recreation do not mesh well.

The land that would be innundated by a reservoir has value and that value would be destroyed. Eastern Washington shrub steppe is disappearing at a fast rate, and the result is endangerment of a precious ecological system, with likely extinction of some plants and animals.

Above ground storage is inefficient due to seepage and evaporation.

For these and other reason, I oppose the building of more large reservoirs.

Carol Coker
4515 Sinai Dr
Pasco WA 99301

509-542-1972

Comment IND-0003

From: "John A. Estep" <John.Estep@EstepSoftware.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Feb 4, 2008 5:56 AM
Subject: Black Rock Proposal

Dear Sirs:

The Black Rock dam proposal is a highly imaginative scheme for separating the taxpayers from their hard-earned dollars. Evidently the people leading the charge on this absurd proposal fail to understand that it is gravity that makes such water storage projects feasible. No one has told them that for gravity to do its job, the snow melt and rain must originate at an elevation higher than the dam. The idea of paying for electricity to pump water up hill to fill a dam would be most amusing were it not for the possibility that countless bureaucrats will see this as their opportunity to create an empire and so shove it down the taxpayer's throats. 01

If the backers of this plan really feel that this is a good idea, they will finance it completely through voluntary investments from those people who expect to benefit from the scheme. The fact that their first act is to try to take the money by force from the taxpayers is an explicit admission on their part that the scheme is not economically viable.

It should be the recommendation of the government that all proponents of this idiotic scheme be required, at their own expense, to take an elementary school science class. Only then will they learn the gravity of this situation.

Sincerely,
John A. Estep
Yakima, WA

Comment IND-0004

From: <LStansel@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Feb 4, 2008 12:59 PM
Subject: Existing Storage

I keep wondering how many acres of increased water storage could be gained by dredging the existing storage lakes. In 100 years there must be huge amounts of silt that has settled into them. When the water levels are low it would
seem feasible to haul it out. Has anyone done a feasibility study to see how much increased storage could be obtained? It has to be less costly than many of the other proposals. 01

What is the surface area of current resevoirs on the Yakima and Naches Rivers when they are full? Hopefully, someone will take a serious look at this
proposal.

Sincerely,
Lois Stansel

Comment IND-0005

From: Gary Travis <gmtravi@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Feb 3, 2008 10:24 AM
Subject: Black Rock Comment

Good Day,
I am a resident of Virginia, however I have ties to the NW. I support the creation of Black Rock Resevoir on the basis that it will provide an economic boon for the inland northwest, as well as provide for the continued production of foodstuffs for our country in the event of severe drought conditions. Couple this with the obvious benefits to the endangered fish runs of the northwest, I fail to see how this proposal could be turned down. One only needs to look to the SW of the country to see how vital proper water management is to the continued success of regional economies and ecosystems.
I find it compelling that we as a nation are considering spending vast sums of money to remove much needed hydro-electric capability along the Snake river in the name of fish, we would not consider spending money on this project which will provide great benefit to both man and fish.
Very Respectfully,
Gary Travis
9063 Falcon Glen Ct.
Bristow, VA 20136

01

Comment IND-0006

From: Mike Harves <mharves@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Feb 5, 2008 8:14 PM
Subject: Black Rock

Dear Colleagues,
Given the recent findings about the effects of climate change in the Western part of the US and the likelihood of worsening drought, it seems to be imperative to support some kind of increased storage for the Yakima Valley.

01

I am a member of the Watershed Planning Council for the Yakima Basin and a biology instructor at Yakima Valley Community College and have lived in the Valley for 30 years. I know how important fish, agriculture, and jobs are to Yakima and the Basin. Climate change is real and here to stay, increased storage is the logical source and Blackrock is the best of those choices.

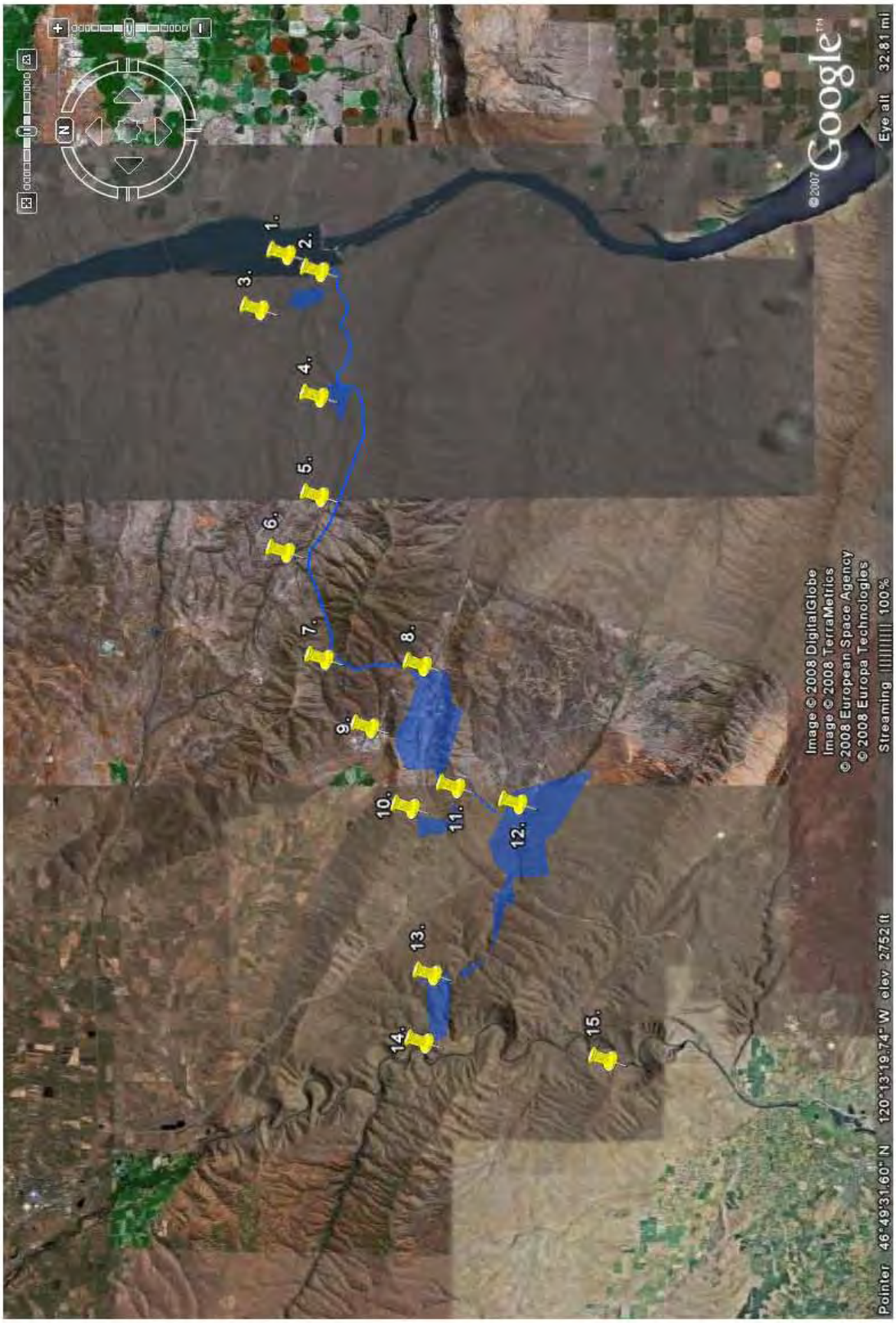
Thanks.
Mike
Mike Harves
8588 Tieton Dr.
Yakima WA 98908
509-965-4261
mharves@charter.net

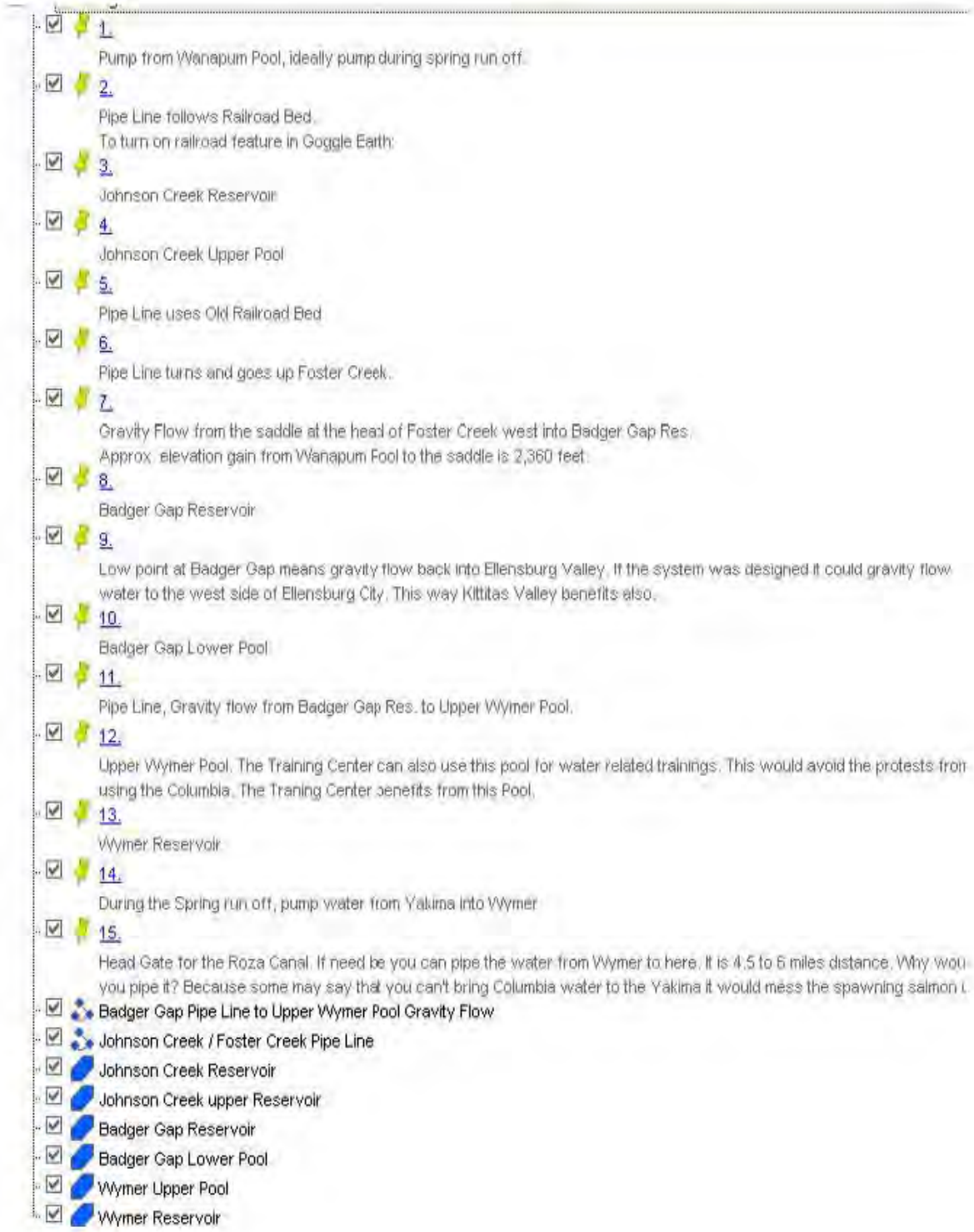
Comment IND-0007

>>> <Cuzar@aol.com> 02/04/2008 4:52:22 PM >>>

Hi Kim, here is that kmz file. The 2 Badger Pools and the 2 Wymer Pools would total about 800,000 acre feet. The people who might benefit would be the Kittitas Valley, the Training Center and the Roza District. 01

Kim, you can reach me at 833-8025. Thank you for your time. Ron M.


1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
©2007 Google™
Eye alt 32.81 mi
Image © 2008 DigitalGlobe
Image © 2008 TerraMetrics
© 2008 European Space Agency
© 2008 Europa Technologies
Streaming 100%
Pointer 46°49'31.60" N 120°13'19.74" W elev 2752 ft


1.
Pump from Wanapum Pool, ideally pump during spring run off.
2.
Pipe Line follows Railroad Bed.
To turn on railroad feature in Goggle Earth:
3.
Johnson Creek Reservoir
4.
Johnson Creek Upper Pool
5.
Pipe Line uses Old Railroad Bed
6.
Pipe Line turns and goes up Foster Creek.
7.
Gravity Flow from the saddle at the head of Foster Creek west into Badger Gap Res.
Approx. elevation gain from Wanapum Pool to the saddle is 2,360 feet.
8.
Badger Gap Reservoir
9.
Low point at Badger Gap means gravity flow back into Ellensburg Valley. If the system was designed it could gravity flow water to the west side of Ellensburg City. This way Kittitas Valley benefits also.
10.
Badger Gap Lower Pool
11.
Pipe Line, Gravity flow from Badger Gap Res. to Upper Wymer Pool.
12.
Upper Wymer Pool. The Training Center can also use this pool for water related trainings. This would avoid the protests from using the Columbia. The Traning Center benefits from this Pool.
13.
Wymer Reservoir
14.
During the Spring run off, pump water from Yakima into Wymer
15.
Head Gate for the Roza Canal. If need be you can pipe the water from Wymer to here. It is 4.5 to 6 miles distance. Why wou you pipe it? Because some may say that you can't bring Columbia water to the Yakima it would mess the spawning salmon
Badger Gap Pipe Line to Upper Wymer Pool Gravity Flow
Johnson Creek / Foster Creek Pipe Line
Johnson Creek Reservoir
Johnson Creek upper Reservoir
Badger Gap Reservoir
Badger Gap Lower Pool
Wymer Upper Pool
Wymer Reservoir

Comment IND-0008

From: "Darlene" <drdahlin@bentonrea.com>
To: <storagestudy@pn.usbr.gov>
Date: Thu, Feb 7, 2008 2:03 AM
Subject: My opinion..... Darlene Dahlin

Hi. This is the qmail-send program at spectreII.bentonrea.com.
I'm afraid I wasn't able to deliver your message to the following addresses.
This is a permanent error; I've given up. Sorry it didn't work out.

<storagestudy@pn.usbr.gov/pn/>:
Sorry, I couldn't find any host named pn.usbr.gov/pn/. (#5.1.2)

--- Below this line is a copy of the message.

Return-Path: <drdahlin@bentonrea.com>
Received: (qmail 58422 invoked from network); 6 Feb 2008 21:53:37 -0000
Received: from sunnyside2-112.bentonrea.com (HELO dell2350) ([216.7.36.112])
(envelope-sender <drdahlin@bentonrea.com>)
by spectreII.bentonrea.com (qmail-ldap-1.03) with SMTP
for <storagestudy@pn.usbr.gov/pn/>; 6 Feb 2008 21:53:36 -0000
From: "Darlene" <drdahlin@bentonrea.com>
To: <storagestudy@pn.usbr.gov/pn/>
Subject: My opinion by Darlene Dahlin
Date: Wed, 6 Feb 2008 13:46:46 -0800
Message-ID: <BAEALGFDKKEFHPPNAGDMMEEHEHAA.drdahlin@bentonrea.com>
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit
X-Priority: 3 (Normal)
X-MSMail-Priority: Normal
X-Mailer: Microsoft Outlook IMO, Build 9.0.2416 (9.0.2910.0)
Importance: Normal
X-MimeOLE: Produced By Microsoft MimeOLE V6.00.2900.3198

I am a friend of the BlackRock project and live about as close to the proposed site as you can get. Whether or not it survives the scutiny will be interesting to watch. **01**

I know what it is like to have great ideas and I have done well with developing some of my ideas in my life. I have made a suggestion to people within the Blackrock project but it is falling on deaf ears, I guess. After looking at the opinion page of the Yakima Herald 2/3/2008 I am once again inspired to share my idea with you.

This is one heck of a piece of concrete! I feel like the project has many advantages and maybe some disadvantages but what about making it something that people from everywhere would want to see? Why not make the east end of the dam the largest mural in the world? Toppenish is filled with wonderful

murals sprinkled throughout their town and I am sure it is a draw for people and the indian culture is definitely a great part of these murals and an integral part of this project. I am sure this would be very interesting to them. They have touted that this project would be a boon to the economy and develop into golf courses, new homes and even a small community with stores, etc. Look at the picture and imagine it in beautiful murals (or mural) that we could all be proud of. 01

Sincerely,

Darlene Dahlin

Comment IND-0009

PRS-1.10

Bob Whitney
308 N 21 Ave
Yakima WA 98902

February 8, 2008

David Kaumheimer
Environmental Programs Manager
Bureau of Reclamation
Upper Columbia Area Office
1917 March Rd
Yakima WA 98901-2058

and

Derek Sandison
Regional Director, SEPA
Washington State Department of Ecology
Central Region Office
15 W Yakima Ave, Suite 200
Yakima WA 98902-3401

Reference: Black Rock Water Storage

Gentlemen:

The Black Rock project is very much like many of the most significant undertakings in the history of this nation. History may judge us harshly unless we proceed at least until we find that there are engineering reasons or other absolutes that continued pursuit would not be sensible., At the present time the cost/benefit judgment is detrimental to the project, but that may not be one bit accurate.

01

Page Two of a Letter to David Kaumheimer and Derek Sandison

01

We face ever-tighter water needs in the future but so long as the Columbia River flows we seemingly have a major solution for this area. I am not an engineer and do not understand the judgments made on the cost analyses, but among many other things, this country in the past:

Built post roads under the Articles of Confederation and the early Congresses
Granted huge tracts of land to railroads and forests to schools
Gave Oklahoma and many other tracts to homesteaders
Invested in massive flood controls required by the Mississippi
Brought electricity to rural America
Dammed many more rivers, including the Columbia, for power and water
Committed to the Columbia Basin reclamation project for irrigation and power

Look at this country! Look at the benefits of everything from sending Lewis and Clark west, to the purchase of Alaska, all of the above, and so many other undertakings. It is time to look again at the cost/benefits that you have been through. It may be that all of the above would have penciled out fine if they had undergone today's review processes, but assuredly none of them would pencil out at anywhere near the value they have become to this country. If Black Rock does not project tremendous return on value in utilizing water otherwise lost to the sea, the evaluation is at fault. It is not revealing the true value of having water available to our children and their children as America goes forth into our future.

This is not an appeal to find a way. It is an appeal to judge this proposal from lessons of history, from the present availability and future value of increasingly scarce water, and from multiple future needs. We Can't Not Do It!

Sincerely,

cc: The Honorable Doc Hastings
Representative in Congress

Comment IND-0010

From: "Scott P. Holman" <forbin_407@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Feb 12, 2008 1:03 AM
Subject: Comments Regarding Yakima River Basin Water Storage Feasibility Study

01

The Yakima River Basin does not have enough water to meet the needs of all the users in the basin, when the needs of fish are included. This is obvious from the decline of fish stocks in the Yakima River. Sufficient water for all agricultural users is not always available, resulting in economic losses during dry years. Population growth in the Yakima River Basin will increase pressure on fish stocks and agriculture unless more water can be made available somehow.

The only alternative in the Yakima River Basin Storage Feasibility Study which allows for increasing the amount of water available for use in the basin is the Black Rock Dam option. By making Columbia River water available to users in the Yakima River Basin, stream flows in the Yakima River can be maintained at levels significantly higher than currently possible. This is essential if water temperatures in the reach between Prosser and the mouth of the Yakima River are to be lowered, an critical element in improving fish stocks.

The Black Rock Dam reservoir also offers the potential for use as an energy storage facility, in that wind generated electricity could be used (when available,) for pumping water into the reservoir. This energy could be recaptured when releases from the reservoir are made.

Further population growth in the Yakima River Basin is likely to be curtailed if additional sources of water are not made available. Calculating the cost of prohibiting further development is impossible, but it is certain that it would be substantial.

Comment IND-0011

February 9, 2008
3030 Thrall Road
Ellensburg, WA 98926

Re: The Proposed Black Rock Dam

01

As an 85 year old citizen of this Nation, 62 years citizen of Kittitas County, Washington, I well remember controversy, pros and cons, created by the needs and desires to build the great dams that are the life blood of our western states.

Our Nation was in a deep depression, yet men and women of foresight prevailed. Coulee Dam and others were built and today we are still reaping the benefits of their foresight.

After following the studies, pro and con, for the Black Rock Dam for the past two years, I believe this proposal is the best put forth.

I believe the pluses outweigh the minuses, the irrigators will have their sure supply of water, wildlife and recreational projects will thrive. Thousands of people will be affected for the better and the profit returns will be much greater than anticipated by this last study.

I believe if our government can fund two very unpopular wars, "as they say" to help people of these nations, it should damn well fund this project to help the people of our great basin, Washington state and our country in general.

Viewing the global weather situation, prudent people should start thinking of water storage and conservation. My hope is to see your name and support behind this great and beneficial project.

Sincerely,

Joseph Lowatchie
1-509-962-3033

Comment IND-0012

From: "Jim Dwinell" <jim.dwinell.b7s2@statefarm.com>
To: <storagestudy@pn.usbr.gov>
Date: Fri, Feb 22, 2008 9:37 PM
Subject: Black Rock Reservoir - Yakima

Please be advised that I am strongly supportive of the project known as Black Rock Reservoir in Yakima. This effort will solve so many problems, both current and future. Most that are hard to calculate with dollars now. Problems that ARE coming and that will be MUCH MORE EXPENSIVE to resolve down the road than they are to prevent now. I know you are aware of these. Please have the courage to anticipate what's coming so that our grandchildren can proclaim as genius the people that made this project a reality.

Thank you, Jim Dwinell, 3800 Fruitvale Blvd. Yakima, WA 98902

01

Comment IND-0013

From: "Diane Smestad" <dianesmestad@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Sat, Feb 2, 2008 10:02 AM
Subject: Black Rock

Under continueing operating costs

If Black Rock were to be approved with recreational opportunities provided.

This lake would become a draw for tourists to the region and if there were to be land set aside for a state or county RV and Recreation Park, as well as a bike path and swim beaches around the lake, the amount of revenue from recreation would be substantial. The one thing the Yakima Valley does not have to offer its residents and tourists is a lake close to the city.

Diane Smestad

01

Comment IND-0014

From: Tom Utterback <utterbacktom@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Sat, Feb 2, 2008 10:27 AM
Subject: Black Rock Reservoir Proposal

Sirs:
I don't care how much lipstick one tries to slap on this pig, it's still a multi-billion dollar squealing, oinking, pig. 01
Regardless of Sid Morrison's rhetoric (BTW- I though Republicans were supposed to be fiscally responsible. Guess that got dropped a long time ago): This valley has plenty of water for the original settlers' ancestors, the communities and the reservation. What it does NOT have is sufficient water for all the johnny-come-lately's who are junior water rights developers looking to exploit land that can't afford the development. Furthermore, with climate change looming, even those who were already here are going to have to shift from water-intensive agriculture (like apples) to water-thrifty agriculture (vineyards) and water-saving irrigation techniques like drip irrigation, dryland farming, etc.
Black Rock isn't going to solve anything but it will take huge amounts of money out of the middle-class tax-paying public (already burdened by Bush's Iraqi war, etc) and funnel it into the pockets of a few farmers who are well-connected politically, and a few recreationists who are happy to have the public subsidize their fishing and boating,etc.
NO THANKS.
-Tom Utterback
220 N 42nd Ave
Yakima, WA 98908
(509) 573-3309

Comment IND-0015

From: Oly Olsen <olyolsen@bentonrea.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Feb 25, 2008 9:59 AM
Subject: Back Rock

To whom it may concern,

01

My brother and I first started farming with the purchase of an orchard in 1972. The first water short year, we experienced, was in 1973. That was followed by more shortages, 1977, then 1979, were more than water short they were serious. The year of 1994 was a disaster. We experienced extensive damage to our crops. In fact, we were forced to move water from one field to the next merely to protect our trees, hops and vines.

I have used the analogy of an employee who works all week and on Friday picks up his paycheck as being different to what we had to do. We worked all week and then went to the bank and pulled money from our savings and used that money just to keep our jobs. Working all year, for no money, or worse at a serious deficit is no fun. It is worse than no fun when you lose your farm.

One might say that the water, in our basin, is over booked, if we were in the airline business. Not only is it over booked, as it is, there are new players coming to the table. To satisfy the current stake-holders now and to make sure there are ample supplies of water, for new interests, we desperately need new storage. Black Rock fits the bill because water to fill the reservoir is taken at a time of high river flows. No one will get hurt by this "taking". In fact, everyone will benefit when that water is released at a time when the rivers are low.

I live by the Prosser Dam. The Bureau folks have told me that they like to run the water over the dam at least at 600 cfm. In serious drought years that level is dropped to 400 cfm or less. Thank God they do that because without that action junior water right districts, like the Roza, would dry up. the Roza Irrigation District may be junior but the crops grown there are of very high value.

The farmers need Black Rock. That is a given but what about the municipalities, tourism, recreation and others? Please help us.

Comment IND-0016

From: "Stephen Bohnemeyer" <bohne2005@gmail.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Feb 26, 2008 10:40 AM
Subject: Black Rock Dam Project

I am writing to express my feelings about the Black Rock Dam project. It is clear that this project is too expensive, the site is too unstable and there is no economic payback for the taxpayers of Washington. Why do we keep spending badly needed tax dollars to keep flogging this dead issue? **01**

I urge you to stop all further discussion on this project.

Stephen Bohnemeyer

Comment IND-0017

From: <DClark5526@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Feb 26, 2008 6:37 AM
Subject: (no subject)

Black Rock Reservoir Project:

We are very disappointed about the study released on the Black Rock reservoir. We feel a lot of things were not considered in the study that greatly would have effected the outcome. You need to look at the whole picture before deciding the fate of the Black Rock project. 01

My husband and I, my mom, brother and his wife own 3 homes and 60 acres at the 15-mile marker on Hwy 24. We have lived here for 26 years. We are very much in favor of the Black Rock reservoir being built.

1) We would much rather pay for water coming from the Black Rock reservoir than have to pay the ridiculously high Pacific Power bill to irrigate our alfalfa crop. We pay a yearly $700 user fee whether we use the irrigation water or not! When we are irrigating, we pay approximately $1200 monthly. You can hardly raise hay with those charges.

2) The value of our land and the surrounding Moxee area would greatly increase. We live right across from the 5,000-cow, million-gallon lagoon, Devrie dairy. (We fought hard to keep this out of the area!) This has brought everyone's land value down considerably. The Black Rock project would increase our land value.

3) New construction. The Moxee area has had a boon in new home building. The Black Rock Project would dramatically increase new construction all the way out Hwy 24 to Black Rock. Also, new home sites would probably be created around the reservoir and beautiful homes constructed.

4) Recreation and Fishing. People would not have to travel out of the area to Rimrock, Chelan, O'Sullivan, Roosevelt, etc. to do their fishing and water recreations. We would have fishing in the Yakima area! Along with this comes tourism from the surrounding towns.

5) Jobs. The Black Rock Project would create many jobs for a long time.

6) Tourism. As I stated above, fishing and water recreation would bring a multitude of tourism from around the surrounding areas which would be great for our Yakima Valley area and the wine industry.

Millions of taxpayer money has been spent studying this project for years. Lets get off the fence and "Get it Built". Yakima Valley need a project like

this!!!

Thank You,

Don and Carolyn Clark
15195 Hwy 24
Moxee, WA 98936

Comment IND-0018

From: <jfgilman@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Feb 26, 2008 9:57 AM
Subject: Black Rock Dam

U.S. Bureau of Recamation?? [via email to storage@pn.usbr.gov]
1917 Marsh Road
Yakima, WA 98901-2058

Re:? Black Rock Dam

To Whom It May Concern:

As a native of the Yakima Valley and the Columbia Basin and, thus, a direct beneficiary of irrigated agricultural economics, I feel that I have a valuable perspective to share with you regarding the proposed Black Rock Dam.?

While the benefits of?the existing?projects are great, I think that we failed to take into account the true costs of irrigation.? Apart from the huge capital and M&O cost of Black Rock, we need to take into account the further destruction of the native habitat of the area.? Again, my perspective stems from my deep appreciation of what remains of the shrinking shrub-steppe and its vulnerable wildlife and flora.? We don't know what we have and to dedicate another vast stretch of the Yakima Valley to a sterile reservoir at the costs that the Bureau have estimated would be a mistake. **01**

I am not one who proposes any fundamental changes in the basis of the agricultural economy of my native counties.? However, I do propose that we finally allow ourselves to look beyond building more high impact capital projects and, instead, begin to get serious about conservation and truly effective desert irrigation techniques.? We don't need more expensive dams and reservoirs and, Lord, we don't need more water skiing ponds.? We need a sensible approach to preserving the valuable agricultural lands that we have.? Not more, but better application of engineering and technology.

Thank you for your attention.

Sincerely,

Jena F. Gilman
1480 SW 10th Street
North Bend, WA 98045
425.831.8744

Born Yakima 1952
Graduated Moses Lake H.S. 1971

Comment IND-0019

From: "deidre" <linkdal@televar.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Feb 26, 2008 7:02 AM
Subject: Black Rock comments

To Whom It May Concern,

I wish to comment on the proposed Black Rock dam project. No. It is a complete sentence. I am opposed to a plan that is too costly, will not really help fish (this would be the invisable fish, the ones that are not actually there; better to spend some money and figure a way to get the fish around the Grand Coulee Dam), will cause more pollution from radioactive waste at the Hanford Nuc site and finally is sited on earthquake fault. Except for the fish issue any one of the above mentioned problems should have put spending millions for more study on hold, but NOOO, people continue to plunge on with a flawed idea.
Thank you for the opportunity to comment. 01

Regards,

Deidre Link
560 Hawk Haven Rd.
Cle Elum WA 98922

Comment IND-0020

From: <Patar55800@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Feb 26, 2008 2:57 PM
Subject: Comment

I assume that the open houses and hearings are limited to?

01

1. No Action Alternative
2. Black Rock Alternative
3. Wymer Dam and Reservoir Alternative
4. Wymer Dam Plus Yakima River Pump Exchange Alternative

I am wondering if any consideration can be given to Jack Stanford's idea of a direct pipeline from the pool behind Wanapum Dam. Water would be pumped into a tunnel and open canal that would drop the water into the Roza and Sunnyside canals. That plan was in the Yakima Herald Republic on November 20, 2007.

I would hope that Mr Stanford would be available to attend one of the hearings scheduled.

Pat Reynolds
2910 W Yakima Ave
Yakima, WA 98902

Comment IND-0021

From: "Wayne Ude" <ude@whidbey.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Feb 26, 2008 9:00 AM
Subject: Stop playing around with the Black Rock dam silliness

Dear Reclamation staff:

It's time to stop wasting money on the Black Rock dam project. You have the evidence: the project will not be economically worth doing, there's a real threat of underground contamination from Hanford, the geology indicates instability. How much evidence do you need to stop a bad project? **01**

Yours,

Wayne Ude
Clinton, Washington

Comment IND-0022

From: Richard Artley <dartley@connectwireless.us>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Feb 27, 2008 6:17 PM
Subject: The Black Rock Dam Proposal is Insane!

Feb 27, 2008

Gerald and Derek Kelso and Mr. Sandison

Dear Kelso and Mr. Sandison,

I am a retired US Forest Service employee and a NEPA expert.
The alternatives suggested fail to consider more environmentally and economically reasonable alternatives to new dams that respond to the Purpose & Need.
BPA has screwed up the Columbia /Snake system enough. Your agency MUST stay out of it unless you want court action.

01

Sincerely,

Mr. Richard Artley
415 NE 2nd St
Grangeville, ID 83530-2257

Comment IND-0023

From: Lorna Emerich <lorna@my180.net>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Feb 27, 2008 7:17 PM
Subject: Please Abandon the Black Rock Dam Proposal

Feb 27, 2008

Gerald and Derek Kelso and Mr. Sandison

Dear Kelso and Mr. Sandison,

Thank you for the opportunity to comment on the Yakima River Basin Water Storage Feasibility Study/Draft Planning Report and Environmental Impact Statement (draft study). 01

We don't need to waste tax dollars on this project. Plus we should NOT destroy the land. Instead, we must SERIOUSLY implement growth management. There is only so much water. The arid west is not meant to have so many people--and that's that!

You should really think about encouraging composting toilets somehow. I'm really not that radical. Just PRACTICAL!!

Thanks. PLEASE don't waste tax dollars on this project.

Sincerely,

Ms. Lorna Emerich
7710 E 18th Ave
Spokane, WA 99212-3045

Comment IND-0024

Alexandra Amonette
1939 Marshall Ave.
Richland, WA 99354

March 16, 2008

U.S.Bureau of Reclamation
Pacific Northwest Region
Upper Columbia Area Office, Attn: Dave Kaumheimer
1917 Marsh Road
Yakima, WA 98901-2058
(509) 575-5848 x370

RE: BLACK ROCK RESERVOIR PROPOSAL

Dear Mr. Kaumheimer:

I oppose the Black Rock Reservoir Project.

As noted by regional geological experts, the proposed project lies atop faults. These faults have the potential to move and cause earthquakes, jeapordizing the stability of the dam. If the dam fails, the nuclear wastes from Hanford could go into the Columbia River. Also, water could drain away if the reservoir is in contact with the permeable zones (aquifers) that could provide a conduit for reservoir water to infiltrate the local rock. Both scenarios would have catastrophic and tragic consequences. 01

Your report leaves too many questions unanswered and provides insufficient factual information to meet the high standards of an Environmental Impact Statement and should be viewed as no more than a feasibility study. I strongly recommend that the Bureau of Reclamation and Department of Ecology drop Black Rock from further consideration and find another site for a reservoir that is not fraught with all these uncertainties.

Thank you.

Sincerely,

Alex Amonette

Alexandra Amonette
BA, Geology, MS Chemistry
Richland, WA

Comment IND-0025

Black Rock Reservoir Public Comment 3/3/2008

The use of the proposed Black Rock Reservoir for water storage and recreational use would not be of beneficial use for the Hanford Reach area. While great support for this has come out of the Yakima Valley, the Yakima Valley is not the only area that this proposal would affect. The US Bureau of Reclamation has conducted at least one study of the effects of Dam Overtopping via the Grand Coulee Dam. This researcher intends to submit a Freedom of Information Act request for this study[1]. For this definitely might have far reaching consequences for this project. There were several examples of studies of the use of a concrete face on the dam; which is what this researcher was concerned with[2]. This helps answer the nature of the question that was asked during the open forum; would an earthen and rock dam of this size hold? It seems that USBR employed engineers may already have addressed this issue; both in this study done by Ms Frizell and within the text of the Yakima River Water Basin Feasibility Study. 01

A second area of concern is that the Rattlesnake Hills are located over an anticline. Miocene Epoch Basalt flows underlie the geology of this area of Washington State. These inclines are folded upwards. Survey of literature for the geological features of the Pasco Basin serves to highlight this issue. Basalt is overlain by the Ringgold Formation, which is composed of closely packed particles. This is overlain by debris left by the Spokane Floods and Glacial Lake Missoula. This is composed of loose gravel and loess soil[3]. Last of all is top geological layer that is termed the Touchet Formation. This layer is found in irregular patches throughout the Pasco Basin. The ridges of most concern for this proposed project would include the Ahtanum and Rattlesnake Ridges. Both of which are part of the Rattlesnake Hills. The Hanford Reach is located south of the Columbia River and East of the Yakima Valley. The Rattlesnake Hills divide these two synclinal valleys. For this is an example of where an anticline transitions into a syncline; therefore increasing the likelihood of ground water seepage to increase[4]; as was noted in the available literature[5]. This researchers concern is for what is located with is the Hanford Reach. The Hanford Reach sits on that which is presently left from the old Manhattan Projects' Hanford site. On this site are buried radioactive byproducts of the Cold War era Hanford Project[6]. Present day technology is being used to glassify this combination of liquid storage in tanks. A second area of concern can also include construction materials that would date from this era. The elevation of the Black Rock reservoir will be higher that this area of cleanup[7]. So the concern is that possible groundwater seepage would raise the water table of this area. This could conceivably cross contaminate the Columbia River Watershed immediately below the area of the Hanford Reach. Review of published hazardous waste literature and the US Bureau of Reclamation's own literature would seem to support this conjecture. 02

Last of all, the Black Rock Dam Project should have included input from the US Department of Energy, US Fish and Wildlife Service and the Washington Department of Ecology. This researcher spoke with only someone from the Department of Ecology. This researcher has past experience in laying out sampling strategies and monitoring environmental projects. The Washington Department of Ecology was helpful in the area of finding highlighted areas of suspect plumes. So the final question that will be asked is 03

03

if monitoring wells could be located in the Western end of the Hanford Reach in the Fitzner/Eberhardt Arid Lands Ecology Reserve Unit.

Michael J. Luzzo, MS-IT - Safety, CSHO
Richland Washington

---

[1] Ms. Debby Nelson (Administrative Officer; telephone number 509-633-9518) of the US Bureau of Reclamation and Grand Coulee Dam stated the following. A letter must be submitted to the Project Manager for this. The address for the Grand Coulee Dam Project Manager is

David Murillo, Power Manager
Grand Coulee Power Office
PO Box 620
Grand Coulee, Washington
99133-0620

[2] Refer to Ms. Kathy Frizell; Hydraulic Engineer US Bureau of Reclamation.
http://www.usbr.gov/pmts/hydraulics_labkfrizell/index.html
[3] Alt David D and Donald W. Hyndman Roadside Geology of Washington, 1994, pp. 169-176, Mountain Press Publishing Company, Missoula Montana
[4] US Department of Interior, US Bureau of Reclamation and Washington State Department of Ecology, Yakima River Water Storage Feasibility Study, pp. 4-32 – 4-33, January 2008
[5] US Department of Interior, Yakima River Water Storage Feasibility Study, Modeling for Cold Creek, Page 4-37
[6] Washington Department of Ecology, Ecology Publication # 08-05-001, Cleaning Hanford's' Groundwater or www.ecy.wa.gov/programs/nwp and Alt Roadside Geology of Washington pp. 196-197
[7] Executive Summary Black Rock Storage Enhancement Initiative Potential T & E Impacts, Black Rock Reservoir Progress Report for Benton County Sustainable Development October 21, 2002

Literature Reviewed; But Not Cited

Sullivan F. P., Environmental Law Handbook, pp. 128-141, 179-180, 2003, 17nth Edition, Government Institutes, Rockville Maryland

Areas reviewed included RCRA, Subtitle C, Hazardous Waste Management Program, RCRA Subtitle I, Underground Storage Tanks (Exclusions), Clean Water Act and the Atomic Energy Act of 1954

Leonard, Jack E. and Gary D. Robinson, Managing Hazardous Materials, 2002, pp. 357-398, and 579-600, Institute of Hazardous Waste Management, Rockville Maryland

Literature was reviewed for hazardous materials management procedures. These included Managing Water Discharges and Radioactive Materials

Comment IND-0026

March 26, 2008

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

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

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

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

GENERAL STATEMENTS

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

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

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

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

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

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

ITEMIZED COMMENTS AND QUESTIONS

1. The writers of the report have it right in not assigning much value to transfers such as job creation, recreation, the multiplier effect of local expenditures or increases in local land value when calculating the stream of future project benefits. These economic events would happen wherever money is spent. Local proponents of the project who stand to gain economic or political advantage if Black Rock is constructed and money is spent locally, find the concept of "transfers" difficult to accept. Nevertheless, it is sensible and in accord with accepted national benefit/cost calculation practice.

2. It is not rational to even attempt to satisfy "water supply demands in all years" (p.XV and elsewhere) when water prices range from zero to nominal. For irrigators on federal projects, the largest extractive users in the basin, prices do not approach a level that could repay the total public investment, much less compensate the losers when most or all of the water is extracted

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

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

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

4. Considerations other than costs and benefits may come into play. Strategies or projects with the qualities noted here are surely more desirable than those that lack the qualities. Black Rock totally fails all the desirable qualities listed below and on other criteria as well. More desirable projects:
   a) are flexible to match climatic variability and reduce costs;
   b) work with, rather than against natural forces to reduce environmental impacts and operation costs;
   c) can be available to make an impact in the near term;
   d) impose the lowest up-front and on-going costs both locally and out of the area; and
   e) maintain future options to allow change in light of altered priorities, new information and changed conditions.

5. The "No Action Alternative" section in this study seems to be so named more for psychological impact than for accuracy. It would be more accurately labeled a "No Major Surface Storage Alternative". Conservation, pipelines and, reregulation reservoirs certainly are actions and they surely would have a favorable impact on any attempt to actually resolve the periodic demand/supply water imbalance in the basin. These very non-storage strategies and projects deserve much more attention.

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

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

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

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

01

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

02

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

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

8. It is not clear to me at what point in time, official permission will be granted for, an interbasin transfer of water. Perhaps official permission can be avoided or maybe a transfer permit is subsumed under some other permit. I do not see it on the list of required permits included in the SEPA FACT SHEET. Is it included in the Hydraulic Project Approval permit to be signed by the Department of Fish and Wildlife? **03**

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

9. Salmon and steelhead move upstream following the scent of their natal stream. In the EIS a single study is cited concerning false attraction for salmon (p.4-164). This seems totally inadequate. First, the cited study was done under laboratory conditions where water mixtures could be controlled. Such precise control is not reality in a river. Second it dealt only with sockeye salmon. There are no sockeye in the Yakima River at this time but they are in the Columbia River. Other salmon species also use the Columbia River and susceptibility to false attraction well may differ among the species. Finally, the wording is not crystal clear but it appears that in the study, even at a mixture including less than10% of their home water some fish were falsely attracted. **04**

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

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

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

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

04

10. The report (p. 4-48) says the Black Rock project would, by a small amount, negatively impact power production at Priest Rapids Dam. I assume Grant County PUD might have a different calculation of their losses and can make a good case for reimbursement. It is not clear how much that reimbursement would be nor how it would be calculated.

05

11. All the water for the Black Rock Reservoir must be pumped far uphill whether the water flows in the Yakima basin canals, is consumed in or around the reservoir, leaks out, or is evaporated. There is no escape. It will be costly. Under the best of circumstances, all alone, the costs for pumping an acre-foot of water will be greater than the current highest price paid for an acre foot of irrigation water in the entire basin. It is likely to be two or three times as high and could be much more.

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

06

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

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

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

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

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

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

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

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

07
08

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

09
10

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

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

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

Comment IND-0027

From: "Jack.Stanford" <jack.stanford@flbs.umt.edu>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 4:15 PM
Subject: comment on EIS

Comment on Yakima River Basin Water Storage Feasibility Study

by Jack A. Stanford

I was asked to review this document by Mel Wagner, Yakima, in the context of my previous work on the river. I directed the Reaches Project" that is referred to in the draft EIS. My research clearly showed that recovery of the salmon and steelhead runs would be problematic without providing substantial "new" water in the Yakima Basin. Conservation actions, while laudable and necessary on their own merits, cannot supply the additional water needed to achieve "normative" conditions needed to substantially promote target fish populations and restore a healthy river-flood plain ecosystem.

The main problem is that the EIS evaluates alternatives to enhance water availability in the Yakima in a constrained way, at least for the so called "joint" alternatives. The BoR concluded that water could not be pumped from the Columbia River during the irrigation months (July and August) in the Yakima owing to agreements that were formulated to maintain flows for outmigrating salmon in the Columbia. These agreements clearly exist, but I and others have noted that volumes of water pumped to the Yakima to replace irrigation water in Roza and Sunnyside are very small compared to the average flow of the Columbia River, indeed, they would not even be measurable on average and wet years and negligible on dry years. Even more significantly, the flow agreements on the Columbia, as I understand them, apply to fish outmigrating from the Snake River, so a pump/siphon exchange at or above Priest Rapids that takes a package of water in summer that is replaced above McNary is of no consequence to those fish because the water is replaced by outflow from the Yakima above the Snake River confluence. The analysis therefore should not have been limited by pumping restrictions during the outmigration period, which of course coincides with the irrigation season. The constraint of not pumping irrigation water in July and August obviously requires storage in a massively expensive reservoir that probably is not needed if pumping could be done during these months.

01

02

Thus, the EIS was seriously flawed from the outset. Given the fact that the authors of the report were constrained to a flawed design, the analysis reported in the EIS is reasonable. I

acknowledge that of the alternatives that were compared to the no-action baseline, the Black Rock plan is the better one. I emphasize, however, that Black Rock would be vastly less expensive if a reservoir is not needed, as I believe is the case.

I note three rather weak areas in the analysis however.

First, it was concluded on the basis of a USGS model that the Black Rock flows would not reduce high summer temperatures. I could not get the key report that describes the model that was used for this analysis as it is a draft USGS report (that in itself is a flaw). But, I seriously doubt that substantially higher summer flows that would be possible with Roza and Sunnyside not diverting from the Yakima, would not reduce summer temperatures toward normative conditions for salmon and steelhead juveniles. I say this because of the massive potential in the Yakima for higher flows to restore floodplain function by moving substantially greater volumes of water through the alluvial aquifers of the river, especially in the Kittitas and Wapato reaches. This should reduce the summer temperatures; however, I do not know if this process was included in the USGS model. I did not model flow-temperature relations on the Yakima in the Reaches study, but aquifer discharge into the river, where it was functional, was clearly summer cool and winter warm. Also, working with others, I have modeled thermal flux in relation to flow on other Columbia River tributaries with a state-of-the-art simulator and we concluded that in-stream temperatures are entirely coupled to river-aquifer interactions.

03

Secondly, it is unclear how changes in rearing habitat for target fishes were determined. Shallow-water, off-channel rearing habitat is a key bottleneck for salmon and steelhead production in the Yakima based on my Reaches study. Any analysis of flow enhancement in an EIS context must include a careful analysis and modeling of river to flood plain coupling that creates rearing habitat. The best way to do this is by using remote sensing tools: multi-spectral imagery to determine aerial habitat at different flows linked to a DEM from lidar imagery. Some of these data exist but apparently have not been synthesized.

04

Finally, I think the estimates of improved salmon and steelhead production under enhanced flows are too low. They seem to be based on a combination of spawning and outmigration flow considerations. Historically the Yakima was the salmon factory of the Columbia owing to extremely good river-flood plain-tributary connectivity. No flow enhancement project can be evaluated solely on main channel flow-productivity relations. It has to be done in context of improved connectivity, including restoration actions are interactive with flow enhancement. Small dams, revetments and other obstructions that sever connectivity

05

have to be removed so that the enhanced flows can enter the flood plains and facilitate movement of spawners into new spawning habitats and juveniles into the restored fringe habitats that we now know are essential to salmon productivity. Any conventional estimate of how enhanced flows in the Yakima may relate to fish populations will be, by definition, conservative. This is particularly true if harvest of spawners is allowed and if hatchery stocks intermingle with wild fish in any way. The only way to really know how the fish will respond is to restore flows and eliminate obstructions throughout the system. **05**

The bottom line is that restoration of the Yakima River has to go beyond where this EIS has gone. Unfortunately, the current analysis was initiated with the wrong parameters about augmentation timing, and it uses information that lacks a state-of-the-art ecosystem context. Restoration of the Yakima must include the much needed augmentation of flows along with a critical focus on restoring floodplain connectivity and function. **06**

Jack A. Stanford
Jessie M. Bierman Professor of Ecology and Director
Flathead Lake Biological Station
The University of Montana
Polson, Mt. 59860
406-982-3301 ext 236
www.umt.edu/flbs

Comment IND-0028

From: Kenneth E. Lewis <klew@bentonrea.com>
Date: Mon Mar 31, 2008 4:53:28 PM US/Pacific
To: kmmccartney@pn.usbr.gov
Subject: Black Rock reservoir discussion

Dear K. McCartney:

Enclosed please find my letter in discussion of the Black Rock project, which I am emailing on 3/31/08 to qualify in your deliberations. I am sending also a typed copy of a letter by Art > Isherwood which he mailed to the Yakima Herald, which printed it in "Letters to the Editor" on 3/23/08. I have never met him but called him after reading his letter, because I had begun to think, as he does, that the ongoing studies are not adequately addressing the vision -- the reality-- of the future, the big real, and happening future.

I have received permission from Mr. Isherwood to send you this copy of his letter.

To the Bureau of Reclamation – This is to express support for Black Rock reservoir, and for Sid Morrison and others who have adequately addressed every issue to arise as negative context, and have rather fully developed positive reasons for construction. Further, this is to extol the visions portrayed by Art Isherwood in a letter to the Yakima Herald on 3/23/08. His experience in development of major water provisions for the American West is possibly unmatched by other living humans. He should be sought out and interviewed by decision-making authorities.

I'm a former government hydrologist, and hydraulic design engineer with the U.S. Engineer Corps in Walla Walla, now farming on Yakima Valley junior water-rights land. More importantly, now in my eighth decade, I, like Mr. Isherwood, have developed some perspective on time. That perspective leads to understanding of the real meaning of Black Rock reservoir. And that perspective denies the assertions of " environmentalists" like Rick Leaumont (of the Audubon Society), who says (but without detail) the project " costs too much".

One prominent issue is being addressed by government scientists who happily report remarkable success in stopping and destroying the flow of strontium to the Columbia. Control of other harmful elements will, hopefully, follow. The credit and the onus are both theirs, as they must keep the impact from spreading from Hanford to across the state, as all studies continue.

And yes, as Mr. Morrison suggests, the true benefits of Black Rock might well include recreation – perhaps even a state park (as opposed to real estate development)– but, as he emphasizes, are first found primarily in saving the existing infrastructure from the increasingly huge and utterly devastating economic losses (real, recent, and more to come) due to droughts, ignored by the Bureau of Reclamation in its emphasis on a small national effect. 01 02

Secondly, Back Rock is the *first and only idea* to allow restoration of salmon migration as a blending of old and new, or of blending the wilderness largesse with the inevitable human development. This leads to the clinching theme of Mr. Isherwood: 03

Isherwood says that the costs of Black Rock, as of Grand Coulee, the Los Angeles Waterway, and similar projects will be forgotten - - swallowed by the future.

He's so right! Call it swallowed by inflation, if arithmetic rules. Consider:

The Tri Cities at the confluence of the Yakima and Columbia are emulating development of other great cities of the West. It's all happening. I've lived for over eight decades, and just twice that (16-plus decades -- 2 lives) takes us back to the mid 1840's - - before the Civil War, before the California gold rush, before all but a very few of the wagon trains, before any West Coast cities, scarcely 40 years after Lewis & Clark. And look at it now, from Los Angeles north to San Francisco Bay areas, and on to Portland, Seattle and the greater Puget Sound, and Vancouver.

And it's still happening now, like it or not - - Megalopolis! – so we must do it the best we can, blending old and new. Salmon beautifully saved. At no remembered cost.

I've hiked the mid and south Cascades of Washington, traversed the eastern and northern passes of the Olympics, explored the Pioneer Mountains of

Idaho, and camped the summer of 1947 on the Nushagak Peninsula of Alaska - - but it's time now to appreciate not only the natural beauty, but the gardens of man as well, and our arts and architectures. If there's a bit of garbage here & there, recycle it, and behold the salmon in our midst.

Copy of letter sent by Art Isherwood to "Letters to the Editor" of the Yakima Herald, and published 3/23/08:

To the editor - - I worked for the Bureau of Reclamation for38 years; retiring as chief administrative officer of Grand Coulee Dam and I support Black Rock. When Grand Coulee Dam was authorized, Spokane newspapers found no justification for construction. Big question "Who will buy the electricity, jackrabbits" Grand Coulee has been expanded and is designed for future expansion. What would the West be like without Grand Coulee?

I also worked on the California Aqueduct, taking water 600 miles to Los Angeles. Those against said this project involved too many impossible tasks. Four pumping stations. Pumps at Bakersfield lifted water approximately 2000 feet. One pumping station had penstocks going through the San Andreas Fault. Approximately 30 miles of canal were subject to settlement of 5 to 7 feet requiring flooding for months to consolidate soil. Unheard of delivered water cost of $31 per acre-foot; when Roza water was costing between $8 and $10 for 3 acre-feet.

Neither Grand Coulee Dam nor the California Aqueduct could have been built using existing Bureau criteria for Black Rock. It is time to take a futuristic view of the total long range benefits of Black Rock. **04**

ART ISHERWOOD
Yakima

Comment IND-0029

Wednesday, March 12, 2008

Bureau of Reclamation
Mr. David Kaumheimer
Environmental Program Manager
1917 Marsh Road
Yakima, Wash. 98901-2058

Dear Mr. Kaumheimer:

Thank you for a copy of and an opportunity to comment on your recent report entitled "Draft Planning Report/Environmental Impact Statement, Yakima River Basin Water Storage Feasibility Study." I suspect I am like most who received it who are simultaneously impressed with its breadth while finding their limited expertise leaves them relying upon it mainly as a learning document rather than something they feel comfortable making a point-by-point critique.

So, in general, I will say I find it exceedingly well done and I want to pass along my congratulations and thanks to you at your staff at Reclamation; the staff Department of Ecology and all others who aided in its preparation. I am on firm record as opposed to the Black Rock components covered by this study, and in the past have voiced suspicions that Reclamation would bias the study to justify this project so the Bureau could return to the glory days of dam building. I was wrong to have that suspicion and I have apologized for that attitude and apologize again after reviewing this exceptional document. It is very professional and very objective. I fail to see how anyone can fault it in any meaningful way, although I note the irony that some are now asserting bias by Reclamation *against* Black Rock! You must thinking of the adage: "You can't please all the folks all the time."

I do note the Black Rock advocacy group, the Yakima Basin Storage Alliance (hereafter referred to as "Alliance"), continues to question the study and has called for the folks in the Yakima Valley to rise up in protest. In sum, the Alliance has essentially called for diminishing the factual and scientific review because the cause is perceived by its member as no where on that basis and instead is turning the issue into a political cause, or a lobbying campaign. The *Yakima Herald-Republic* (2/3/2008) has likewise called for strong public comment in favor of Black Rock. While the Alliance bills itself as a "grassroots" organization composed of thousands of folks, the spokesmen and leaders are composed almost entirely of the business, agricultural and political elites of the Valley.

Since the Alliance has chosen that course, I tailor my remarks accordingly. I am not sure what the estimated cost of the Black Rock component is because every time I check, the figure has gone up again. It is like standing in the checkout line at the grocery after selecting the family's food for the month...every

01

1

time I look up, the register has gone higher. But that analogy fails because at least as groceries in grocery basket remain constant in value and the food remains nutritious. With Black Rock, the value decreases every time I turn my head and the product seems more dubious than before, perhaps even unhealthy. In any event, the last figure I saw for Black Rock was $6.7 billion. It will surely grow higher.

Regardless of the amount to be paid by this nation's taxpayers, the Alliance claims the gush of water is vitally needed for municipal growth, agriculture, sustain fish, recreation, resorts, and so forth.

Except for the fish component which I shall discuss later, **I submit that the very exact arguments for more water supplies made by the Alliance can be made by hundreds of communities in the American West. It is abundantly obvious that if the Yakima Valley can stage a coup and get $6.7 billion for its growth and enrichment, all those other communities can make a strong case for billions of dollars for more water. That being the case, and if there is to be a policy by the federal government to created massive water enhancement projects similar those developed in the mid decades of the 20th Century, it needs to be articulated and approved by Congress. It should not be done on an ad hoc, leap-frog basis depending on who has the most political clout and best lobbying team. What, in the name of common sense and fairness, can be said to the folks in the Southwest facing a more severe water shortage with more certainty and sooner than those in the Yakima Valley can ever dream?**

That is not to say that there was not considerable "politicking" which brought about the great dam building projects built in the American West in the last century. There certainly were considerable politics. But that historic unseemly, power-grabbing process should not be replicated and be allowed to over ride orderly, scientific methodology if for no other reason that the best places to build dams have been taken and the best water has already been claimed. Perhaps the best advocate for dam building on the Columbia was the late Rufus Woods, the legendary publisher of the *Wenatchee Daily World.* His is biography of Woods ("Rufus Wood, the Columbian River & the Building of Modern Washington"), author Robert E. Ficken notes that in Woods' long campaign to build the Grand Coulee Dam he centered his advocacy almost exclusively because of its huge capacity to generate hydroelectricity. It was the broad regional benefit of electrifying the rural farms and homes and to power industry in the cities that was the key selling point. This was the way Woods envisioned gathering good will and votes from the broadest base for Grand Coulee. Capturing the water for irrigation or municipal uses was downplayed simply because such benefits accrued only in the vicinity of the dam itself. As Woods reasoned it, how could one get the vote from a Congressman from, say, New York to vote to spend millions to provide water to produce crops more abundantly and cheaply than his own famers in New York who were competing

with Washington farmers? One could not, Woods concluded, so it was best to ignore or downplay the issue.

Woods met with great success by tailoring his pitch carefully. The Black Rock proposal, as political issue, turns tactics on its head and asked for vast water for consumption for the Yakima Valley as its nearly sole objective while claiming a small return on hydroelectricity and benefits for fish (more on those issues in a bit). What of preverbal the New York farmer of yesteryear? Yes, he is still there, but so are innumerable farmers and cities throughout the American West crying for more water and letting their representatives in Congress know. Black Rock does not even pretend to provide other regional benefits which made other dams attractive for federal funding, such as hydroelectric power, transportation and flood control which might be useful to those outside the Valley. If Black Rock is successful in getting funded and built, the political will, money and available water for any other irrigation projects along Columbia will disappear. Without a national policy, other communities will take note, and commence their own "me too" campaign for more water. It is just amazing to me that the Alliance and other advocates can put on the blinders and soldier on with this almost entirely self-possessed proposal without fairly considering the wide-range consequences.

I should hasten now to note the Alliance does claim broader benefits within the Yakima Basin beyond just the Yakima Valley itself. It evens claims that 70 per cent of our water allocation here in the Kittitas Valley where I live will be guaranteed. How they can promise that, as a non-profit advocacy organization, I am unsure. It will be only when (and if) the proposal is approved and funded will the proper authorities are able to make such assurances. As proposed, the only thing which is certain about Black Rock is that it will put a gush of water into the Yakima Valley for growth and economic purposes.

Repeatedly, the Alliance says the best ancillary benefit for Black Rock is that it will make it possible to leave more water in the Yakima River for migrating fish. Again, nothing is certain in that regard until some authority beyond the promises of the Alliance agrees, but we call all agree saving our beleaguered salmon and steelhead would be a profound benefit.

These dynamic fish going up stream—leaping, swimming—are symbols of the Pacific Northwest. Their fate evokes strong emotions. Their decline began almost at once with the arrival of the white settlers, and the blame for that is passed around almost universally. The dams blocked their path to their spawning grounds; the farms and ranchers ruined the spawning grounds; the fishermen took too many fish; fertilizers and pesticides ruined their waters; introduced species took their food. The list goes on. The tenuous fate of the Pacific Northwest salmon and steelhead is an American tragedy unfolding before our eyes.

That said, our efforts to reverse those factors have been weak at best. The dams, farmers, ranchers, fishermen, and competing fish species are still with us. Efforts to mitigate these effects are too often misguided, based on ignorance, often don't work, and sometimes were actually harmful. We should all be reminded that the proponents of The Dalles dam 50 years ago believed that the dam would actually help the migrating salmon because it would flood Celilo Falls and make it easier for the fish to swim up river!

We have been told fish hatcheries were the key to saving the fish only to learn that the hatcheries eventually produce an inferior type of fish compared the wild-run fish. The fish ladders haven't worked fully as we hoped. The evidence is clear that we know how to impede and destroy the migrating fish, and we get an F grade for that. But our efforts in correcting that failing mark might earn us a C for trying with some success, but probably an I for "incomplete" would be a better grade.

The lesson here to be very careful in evaluating the benefits of Black Rock with regard to fish. The law of unintended consequences pops up all too often as we struggle to save our fish. Would the water from Black Rock be too warm or trigger the wrong migrating instincts for the fish? Would the quality of the water be good enough? Would the water drained through cities and farms from Black Rock contain pesticides and fertilizers making it unfit for fish? More water in the Yakima River for migrating fish looks good at first glance, but a much-needed unbiased assessment should to be conducted.

02

03

04

While still on the subject of fish, $6.7 billion allocated for fish alone could go a very long way in funding their survival if we cared to spend that much and assuming we can ever get our science and effort going in the right direction. That amount could be paid to buy-out fishermen; buy spawning grounds, all sorts of things. Nobody is talking about $6.7 billion solely for fish; only $6.7 for Black Rock with fish tagging along (maybe) as a beneficiary. Which leads me to my own belief about the entire argument of tying the fish to Black Rock is a cynical Trojan Horse. The Black Rock issue seems to me to obviously unsalable on its face. Hence, that is the reason we hear the repeated arguments tying it to the survival of the iconic and beloved migrating salmon and steelhead. In fact, it is hard to believe most members of the Alliance believe helping fish is any where near central to their objective. Advocating for fish is simply verbal gift packaging to get the water they covet. I have never heard anyone from the Alliance note that the construction of dams have harmed the migrating fish and perhaps some of dams should be taken down. Instead, we hear the strange and seemingly counterintuitive argument that yet another dam must be constructed to save the fish whose migration has been damaged by dams. I would be astounded by all measure if the Black Rock issue fails to be realized if any of the Alliance key members continue working hard and providing funds for projects to save the fish. Once they lose their water, they will forget about the fish, I'm sure.

I would now like to comment on some of the so-called "studies" and assumptions put forth by the Alliance. The various "studies" commissioned by the Alliance invariably projects a rosy outcome if Black Rock becomes a reality. It is beyond my expertise to evaluate each one of them, but I must say the conclusions are so often fantastic and seemingly improbable, a **serious, third party and objective evaluation** needs to be applied to everything the Alliance has put forth.

I was amazed to read he Alliance's belief that billions of gallons could be pumped out of the Columbia River for Black Rock yet it would actually result in a net gain in power. This so-called "study" has been largely discredited, but we need to return to it for a minute because by seriously advancing this scheme, the Alliance has demonstrated it will go to desperate, even inaccurate, lengths to advance the cause of Black Rock. It sounds something like the old myth of a "perpetual motion" machine my high school physics teacher debunked so many years ago. Or, as my father admonished with the cliché "There ain't no such thing as a free lunch." Pumping billions of gallons of water uphill to will result in a net loss in energy regardless of clever arguments about associated wind power, recaptured hydro power as it the water flows out, and other shell-game analyses.

In previous communications, I have said I think the Black Rock area is so bleak it seems an unlikely candidate for conversion into a virtual Garden of Eden as the Alliance would have us believe the reservoir becomes a reality. I can think of quite a number of placid, warm pools of water behind dams in Eastern Washington which do not come any where close to the vision the Alliance sings for Black Rock. Most of them seem to bleak areas with waterlines with rise and fall on the whim of water needs, contrary to the wishes of those living on the shoreline or using the reservoir for recreation. Anyone can pull out a simple highway map and note the proposed Black Rock reservoir will be sandwiched between a site set aside for intensive military training and another site where nuclear waste is stored. There is some belief that the very creation of the Black Rock reservoir will cause the contaminated nuclear waste at the U.S. Department of Energy Hanford Site to slosh around where it is not wanted. Is this really a "destination" site for those looking for relaxation at a resort or to build an expensive home?

As the Alliance members wax on about the benefits of Black Rock, it just seems to me they lose sight of the fact all the nation's taxpayers asked to pay quite a lot of money for this project and, with amazing myopia, they fail to recognize that what is a benefit to the Alliance members, might be of no benefit to the general public. Is it really a national benefit that our tax dollars go build a resort and a place for big waterfront homes for the wealthy to play and live? The emergence of the wine industry in the Yakima Valley is a credit to those industrious people who planted the vineyards in the last decades, and I enjoy a glass of Yakima Valley wine as much as anyone. Quality hops have been grown in the Valley for decades to flavor beer, and I'm sure I've hoisted a mug of beer

05

kissed by Yakima Valley hops. However, millions of people are opposed to alcohol beverage for religious and/or health reasons. Why should these people be impressed crops grown exclusively to produce crops for alcohol consumption will be aided by the use of their tax dollars to build Black Rock? Also the Alliance fails utterly to understand that folks in Portland, Maine, or Key West, Florida, or any number of towns and cities across this great country couldn't care less that towns in the Yakima Valley cannot grow as they desire unless federal taxes are used to bring more water to them. Do those communities anxiously watching their source of water disappear as Lake Powell and Lake Mead dry up care much that Prosser or Sunnyside can't prosper to their hearts desire without a new water source? Hardly.

The advocates for Black Rock seem to be resorting to hyperbole, even hysterics, as a diversion to blunt their critics. The 2/3/2008 editorial in the *Herald-Republic* succinctly captures that turn of events. Many of the Alliance's "studies" depend on some amazing and clearly questionable assumptions, but the newspaper nonetheless has in the past relied on those results and assumed them as valid. Like the Alliance, the newspaper pooh-poohs the 16 cents benefit for $1 earned ratio found in the draft EIS. "We're not sure what this cents-per-dollar benefit ratio has to do with anything anyway," the newspaper says. "If a badly needed, and long overdue, reservoir helps anchor the area's basic economy, that would seem its paramount benefit." The *Yakima-Herald,* like many members of the Alliance, are businesses and business people. These current business interests will benefit by the flood of new water coming into the Yakima Valley, either directly or indirectly, if Black Rock were to become a reality. Dare I ask: If they had before them a business plan which promised 16 per cent on each dollar they invested, and could only improve if some fairy-tale assumptions became a reality, would they put their money in it? No, of course not. But it is OK for the nation's taxpayers to buy into such a venture. As it has in the past, the newspaper moans that the last reservoir constructed to benefit the Yakima Basin was in 1933, during the hey-day years of dam construction in the last century, but which for all practical purposes stopped in 1966 with the completion of the Glen Canyon Dam. Was there ever a promise to continue with those water projects, especially after the best dam building sites had already been claimed and built and the water allocated? No, of course not. This claim that the Yakima Basin was somehow uniquely abandoned in creating new water supplies is just very odd and not substantiated.

Finally, asontinishingly, the newspaper creates a hysterical scenario occurs if Black Rock is not approved. Fruit trees would die, vineyards withered, buildings boarded up. The newspaper paints a disaster of Katrina proportions, compelling the nation to action at last.

Well, no. Folks would just have to continue to live with the water they have, or less if droughts and global warming mandate that. They will adjust; painfully and incrementally perhaps, but they will adjust. Yakima Valley may not

grow and may shrink. There will be no resorts, and those hoping to get rich won't have their dreams realized. But life will go on. Maybe, just maybe, they will look to some of the alternatives suggested, including more storage which is more modest and less costly. The Alliance could regain some credibility if it put as much effort and money into studying and advocating conservation as it has to push Black Rock. Black Rock has always been "Plan A" for the Alliance and its allies and have never seemed willing to compromise to a "Plan B." Maybe now is the time.

In conclusion, I acknowledge I may have overstated my concerns and I may have made some errors. Such is the case when issues such as these are reduced to political campaigns. If the Alliance will apologize for their overstatements and errors, I will apologize for mine.

Thank you for reading this. As imperfect as it may be, at least my presentation was prepared entirely with my own resources. If the Black Rock issue is shelved as I urge, perhaps the Alliance can scale back its activities to more reasonable efforts and cease holding out the tin cup to hard-pressed local governments for donations. Lowered expectations and compromise are now in order, I think, not any more questionable "studies" or political campaigns.

Sincerely,

Kurt Sharar
390 Cattail Road
Ellensburg, Wash. 98926

Phone/Fax: (509) 925-7216
Email: jkshar2@fairpoint.net

7

Comment IND-0030

NOTE: *The following email is one of 183 identical or nearly identical emails.*

From: Julie Alaimo <julie.alaimo@metrokc.gov>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Feb 27, 2008 10:45 AM
Subject: Please Abandon the Black Rock Dam Proposal

Feb 27, 2008

Gerald and Derek Kelso and Mr. Sandison

Dear Kelso and Mr. Sandison,

Thank you for the opportunity to comment on the Yakima River Basin Water Storage Feasibility Study/Draft Planning Report and Environmental Impact Statement (draft study).
The joint federal-state portion of the study improperly assumes that the only way to meet future water needs for people and fish is to build a new surface storage dam. The joint federal-state alternatives fail to consider more environmentally and economically viable

alternatives to new dams, including water conservation and efficiency,

more robust water markets, aquifer recharge, or a combination thereof.

The State of Washington, on the other hand, does take a look at these non-structural water management alternatives. The final draft of the study should provide a full analysis of these alternatives to new dams, and they should be considered as joint federal-state alternatives rather than as state alternatives only. Anything less will delay and confuse implementation of smarter water management policies in the Yakima River basin. **01**
One thing is clear from the draft study: the proposed Black Rock dam should be removed from further consideration. The $6.7 billion proposed dam would drain resources from more sensible and efficient tools to improve water management and fish and wildlife habitat. On top of that, the leaky reservoir would likely cause radioactive groundwater underneath the Hanford nuclear reservation to reach the Columbia River, contaminating the river and the water supply for downstream communities. The Black Rock proposal should be abandoned now. There is no need to spend any additional taxpayer dollars studying this risky and expensive proposal. **02**
Again, thank you for this opportunity to comment on the draft study.

Sincerely,

Ms. Julie Alaimo
8515 13th Ave NW
Seattle, WA 98117-3402

Comment IND-0031

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

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

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

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

01

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

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

Sincerely,
Llyn Doremus
4017 Willowbrook Lane
Bellingham, WA 98229

Comment IND-0032

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

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

Re: Yakima Storage Study, Draft Environmental Impact Statement

Dear Mr. Kaumheimer:

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

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

1. I am concerned about the Black Rock dam being built on a fault in an earthquake zone with a history of seismic activity and landslides, indicating that this dam certainly could fail! 01

2. I am concerned that water seepage from the enormous Black Rock reservoir could increase groundwater flow under Hanford and could flush highly contaminated plumes of groundwater into the Columbia 02

over →

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

Sincerely,

Name: Bonnie Dunham Date: 3/28/08

Address: 45420 S. 206th PR SE, Kennewick, WA 99337

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

River — not to mention the catastrophic disaster to Hanford, the Columbia River and the communities if the dam itself were to fail! 02

3. I am concerned about taking a huge amount of water out of the Columbia River (esp. in Sept. & Oct.) and the impact of that on fish and wildlife, especially in the sensitive Hanford Reach area. 03

4. I am concerned about Columbia River water making its way into the Yakima River and confusing its (Yakima) identity to fish. 04

5. I am concerned the Black Rock project blocks the natural wildlife migration corridor between the Hanford Reach National Monument and the Yakima Firing Center with links to the Cascades. 05

6. I am concerned that the recreational benefits of Black Rock (700,000 visits annually) are grossly exaggerated. We already have numerous recreation sites in this region. 06

7. I am concerned about the cost: $4.5 billion!! Add to that $50 million annually in electricity! Where will all the power come from?? We know who will pay the bill — federal taxpayers. 07

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

Comment IND-0033

U.S. Bureau of Reclamation
1917 Marsh Road
Yakima, WA 98901-2058
March 26, 2008

COMMENTS ON THE YAKIMA STORAGE STUDY
DRAFT ENVIRONMENTAL IMPACT STATEMENT

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

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

01

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

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

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

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

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

01

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

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

Duane W. Faletti

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

Comment IND-0034

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

This looks like a no brainer, the Black Rock dam is a loser.
There was a time we thought dams could anything but this has gotten totally off the track.
Let's put the public money somewhere else.
Sincerely,
Lila Shaw Girvin

01

Comment IND-0035

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

I agree that the Black Rock dam would create damages that far exceed the benefits. This is not a good idea nor a good investment. **01**
Sincerely
George W. Girvin MD

Comment IND-0036

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

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

Re: Yakima Storage Study, Draft Environmental Impact Statement

Dear Mr. Kaumheimer:

The purpose of this letter is to voice my concerns regarding the Draft EIS for the Yakima Storage Study. In my opinion this Environmental Impact Statement is fatally flawed without the DOE report. The geology of the area where this enormous damn is to be built is unstable. The dam is to be build on two different faults. In addition one side of the damn will be held by a mountain prone to landslides and at risk for seismic activity. **01**

Another significant reason not to build this dam is the risk of contamination of the Columbia River due to groundwater seepage from the bottom of the Black Rock reservoir which will head straight to the Hanford Nuclear Reservation sending toxic and adioactive materials into the Columbia. This reason alone should stop this proposed project! **02**

This report is filled with inaccuracies, it is not accurate enough to be considered and EIS. Those backing this project say it will help the fish in the areas watershed. This is untrue. Water would be taken from the area at exactly the time the fish need it to spawn. **03**
The recreational benefits sited in the report are grossly exaggerated. **04**

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

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

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

Comment IND-0037

From: "Cecelia Hickel" <cecelia.hickel@verizon.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 5:09 PM
Subject: Black Rock Dam Public Comment Submission

Dear David Kaumheimer,

I am a strong supporter for the proposed Black Rock Dam.

I am a Benton City resident and home owner since 1986. Benton City will be directly effected by the Black Rock Dam if it is built. My reasons for support are as follows:

The river has always been a polluted river from agriculture and dairy wastes. The state has always been lax about prevention of dunping into the river and as a result, our drinking water quality in this city has not been of the highest quality.

Recent cancer studies show that agricultural nitrates from fertilizers are primary contributors to the increase in female cancers. In other words, polluted drinking water from agricultural processes is a primary factor for causing cancer in women from environmental sources, not genetics. Was this a known factor for a nuclear source, the whole state would be in an uproar. But since we depend on economics from agriculture, it becomes just a blurb in the news.

Bottom line, the people who drink and depend on their life's water supply from the Yakima River need and deserve clean water. The water quality of the Yakima as a drinking water supply to my knowledge is not very well known process posted publicly. I think we may have a water source problem. The taste changes throughout the year. We replace water heaters every 2-3 years. Coffee pots fail constantly, fixtures plug up, hose sprayers last a short while, etc. It is more than "hard water". The reservoir will replenish the water supply by keeping more water in the Yakima and thus not concentrating contaminates as it draws down in heavy use times or summer months.

More water will improve the river enough to allow salmon to return. The money we now spend for so many years has been mostly unsuccessful overall. Poor return on the investment. If money is taken from the fish recovery account and pay for the electric load the pumping upstream will cost, that is very fair. Dollar for dollar there should be no increase in the electric bill, and the salmon recovery will be better served giving salmon a natural spawning ground, the fish need the Yakima reclaimed as their territory. Where else will they spawn naturally?

The cost for the project is 5 years of fish recovery funds. If it works, then those annual payments from all our monthly bills can go instead to the dam costs and our utility bills can come down. It seems to me that a repayment can be made over a short time and we can have our fish and eat it too. The fish will restore themselves IF they have the Yakima River to do so. This is a grand idea. The best I have seen yet. Bold and progressive and smart.

Tri-Citians do not have a lake to visit. We need a lake for water skiers. We

can build and design fish habitats for sport fishing such as Walleye. The water will not effect native fish. Camps for kids can be established.

A wind farm can be built to offset electricity costs and power the pumps.

The land below the dam can be used for biomass feedstock testing by the universities, school programs of all ages, and build/re-build wildlife habitats with grasses such as switchgrass and other native grasses that are a carbon sink. The land can get water from the excess off the dam to support studies the universities need for growing to support biofuels.

Solar can be used to power parks.

The whole theme of the project can be about biodiversity, conservation, learning to balance nature, green projects, alternative fuels and enjoying the outdoors with many activities.

More water available for the Red Mountain vineyards will improve the Benton City, West Richland, Prossor and Tri-City economies be allowing for the entire small appellation to be used instead of only a portion. This brings greater success to all the wine industries.

More vineyards , more grape marc as a feedstock for a planned biofuels refinery.

My questions about the impact are as follows:

The shoreline along the Yakima will change. There should be an impact on bridges, homes on the shoreline and such, especially at flood stages. While I can not calculate this increase, I thought it a good question to ask. Benton City has long thought it an idea to create a park on the river coming into town, yet it foods there enough to raise concerns. That shape curve has bypassed its own river bed before in very high waters. While nothing stops these floods, this could mean new bridges. Benton City needs a new bridge anyway, seriously, for two reasons. (1) When we last had bad floods, that bridge was closed a month from high water. (2) The existing bridge comes directly off the freeway which is fine, but the road to the wineries by passes the town. There is no crossing from the wineries to the downtown area so the wine tours completely miss the town. If Benton City had a second bridge crossing in another location it would not flood out and the downtown would be connected. We could use two bridges except at high water stages perhaps. **01**

There should be several homes in the lower lands to be considered.

While the concern for an earthquake may be real, I doubt very seriously, and frankly it is very hard to imagine that any amount of water could impact the Hanford water table with highly toxic waste. That is even more remote than the earthquake notion.

I do have questions and concerns about migration paths of wildlife. Somehow they will need safe passage.

I found many technical flaws in the logic of using Hanford nuclear waste as

a reason for not building a conservation dam. These arguments should be abandoned.

The ground water flow towards Hanford may be a concern but I believe that is that if the water is used for plant studies and perhaps manmade streams, it can be managed just as any other downstream water from a dam.

In conclusion, every effort should be made to ensure this dam is built. I also think that the budget for this project needs a real scrutiny to lean it out and make it more conservative. It is an awful lot of money for pumps, engineering and pouring concrete. A large scale nuclear plant can cost that much and uses most likely close to the same amount of concrete. It is a good comparison question as to which uses more.

Final note, some years ago in Texas they built an enormous dam for conservation. My dad hauled gravel for concrete to it for 9 years. What is the estimated time frame for building this dam?

Cecelia Hickel

Cecelia Hickel
PO Box 609
Benton City, WA 99320
cecelia.hickel@verizon.net
Telephone PST (509) 588-2650

Comment IND-0038

From: "Higginbotham, Fred G NWW" <Fred.G.Higginbotham@usace.army.mil>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 4:58 PM
Subject: Black Rock-Yakima River Basin Water Storage Feasibility Study COMMENTS

Dear BOR;

I'd like to make a few comments and ask questions about the feasibility study mentioned above, with reference to an article on Black Rock that appeared in the Sunday edition of the Tri-City Herald. I apologize for not being able to refer to specific parts of the study but I misplaced my copies of the CD's and only found them yesterday.

Irrigation: Although I wasn't able to read the whole document, a cursory review of references made about irrigation revealed no mention of current techniques or recent improvements in technology that might be used in conjunction with additional water storage, whether in Black Rock or elsewhere. I believe there is some potential to spend some of the money slated for Black Rock on improving the current (and I am guessing, somewhat wasteful) use of water from the Yakima Basin. The area could probably conserve a lot by replacing ditches with pipes, lining ditches with impervious material such as gunite, concrete or vinyl liner; and better, more efficient irrigation systems (I'm not sure what is out there but I bet it's better than flood irrigation and leaking ditches. The government could spend WAY less money I bet if they subsidized better irrigation techniques instead of building this reservoir. **01**

Recreation: Plain and simple, any reference to recreation and Black Rock reservoir that is used in the same sentence borders on ridiculous. Where is the water going to come from to irrigate the lawns, trees, and bushes? Or supply the hotel (s) and resorts with potable water? If anyone says or said "from the reservoir", I'd like to know what happened to the 'irrigation and fish management' part of this project. It seems ludicrous to build the project for farmers and fish, and then let some land speculator and developer cash in on this project that will be partially funded by the U.S. public!! I haven't heard much about the attractiveness of a reservoir shoreline that fluctuates up to 1/4 mile in some years and how that attribute alone would probably not attract ANY recreationists (or their money) to the area. **02**

Fish: I must apologize again for not making time to find and read this whole document. However, I did skim this edition, read previous related documents, AND attended one public meeting in Yakima last year. But I STILL haven't seen anything written about the possibility of adult salmon and steelhead coming up the Columbia and being confused by water that has been pumped from Priest Rapids forebay over to Black Rock, used in irrigation, and then runs back into the Yakima River. If any research has been conducted on the effects on returning adult salmonid straying caused by water introduced into the fishes natal stream, it needs to be referred to and quoted. If there is no such research, you should do some of your own or get someone from the region to do it for you. This project has the potential to do MAJOR harm to fish returning to the Yakima AND the Columbia above the mouth of the Yakima if they are confused by the 'smell' of the water. **03**

Money: The following math is based mostly on estimates and guesses, other than the figures found in the March 30 edition of the Tri-City Herald.

Total cost of Black Rock, including operation and maintenance for 20 years: $6.7 BILLION.

-Estimate 300 farms, ranches, and orchards (1 owner each, family included) that use water from the Roza Irrigation District
-Estimate 2000 employees for all of these agricultural businesses

You could divide $4.5 billion between all of these people to (1) buy water rights, (2) cash them out ((3) or let them keep running their farms BUT use the money to improve irrigation techniques and find less intrusive, and questionable, water storage projects, and STILL come out money ahead because you wouldn't spend the $2.2 BILLION on maintenance and operations. AND, you might avoid a catastrophe for the recovery of salmon in the Yakima Basin. The total for each of these 2,300 people would be >>>>> $1,956,521.73!!! Ask around and I bet you'll get more takers than you'd think. Even if there were twice as many people involved, they would each get$978,260.86. You could throw in an extra $100,000,000 to give each of them an even $1 million each and STILL come out ahead.

Thank you for allowing everyone to comment on this project. Good luck and I hope someone comes up with a better idea.

Fred G. Higginbotham
Fishery Biologist
A US Government Agency
(509) 967-0168

fred.g.higginbotham@usace.army.mil

Comment IND-0039

From: "Robert and Elizabeth Lathrop" <rathburne@harbornet.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 4:29 PM
Subject: Regarding the proposed Black Rock Dam

To all who will be reviewing the Black Rock Dam proposal :

Every action has a reaction. So it has been with the dam building on the Columbia River. At the time they were constructed the benefits seemed overwhelming, but with advances and emphasis on science, an understanding of the damage is growing.

Not only would it be a mistake to repeat this outdated technology, this particular site has unique problems.

(1) The cost to me and my grand and great grandchildren, would be ridiculously lopsided- 16 cents benefit out of every dollar invested. The recreational lake that would be created would not begin to return dollars to make up for that.

01

(2) An earthquake fault zone under the site makes this a particularly risky proposal.

02

(3) A very real scenario is that this large water reservoir would directly speed up flow of radioactive contaminants into the Columbia River. At the very least, construction would interfere with clean-up efforts there.

Global warming and world wide water problems are spurring research and technology on water storage, agricultural techniques, water reuse, and water conservation. Simpler, less expensive solutions must be tried before we jump into the next stage of water use in eastern Washington. We live in western Washington, but part of the bill would be ours, and since we were part of the generation that built the first dams, we have an obligation to speak out against this latest proposal.

Sincerely yours,
Liz and Bob Lathrop
9119 71st Ave. NW
Gig Harbor, WA 98332

Comment IND-0040

Mar. 31. 2008 3:44PM No. 900 P. 1

FAX To: DAVE KAUMHEIMER
509-454-5650, 1p.

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 OPPOSE THE CONSTRUCTION OF THE BLACK ROCK DAM. I URGE YOU TO FIND SOUND ALTERNATIVES TO CONSTRUCTION OF NEW DAMS IN WASHINGTON. AS HAS BEEN OUTLINED PROBLEMS WITH THE BLACK ROCK DAM INCLUDE ① SITING ON A THRUST FAULT IN AN EARTHQUAKE ZONE; ② DANGEROUS SEEPAGE & SATURATION ISSUES THROUGH GROUNDWATER AT HANFORD NUCLEAR RESERVATION; ③ REQUIRING MORE ENERGY THAN CAN BE JUSTIFIED; ④ NO FURTHER WATER AVAILABLE FROM COLUMBIA & ITS TRIBUTARIES TO FILL THIS RESERVOIR; ⑤ REAL ESTATE INDUSTRY'S BENEFITS CANNOT BE JUSTIFIED BY *HABITAT LOSS FOR SOME OF THE SHRUB STEPP'S ENDANGERED, THREATENED, & HIGHLY IMPERIELED SPECIES. PLEASE CONTINUE TO SEEK & USE BENEFICIAL SOLUTIONS TO WATER ISSUES.

01

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: ANNE & JACK MIDDLETON Date: 3-28-07

Address: 12694 JOSH WILSON RD. MOUNT VERNON, WA 98273

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

Comment IND-0041

From: Arthur Miller <milleronskagit@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 1:57 PM
Subject: Black Rock Boondoggle

I was born within a stone's throw of the Roza Project boundary in a farm house without running water (1936). I grew up on a farm in the Sunnyside District. My father and brother farmed in the Roza. I believe there is no better way for youth to grow up than on a working farm. It was the quintessential American way of life.

However, our society has changed. Less that 2% our population still live and work on farms. Just because someone says, "My family has farmed on the Roza for four generations" (Tom Carpenter, YBSA), is no justification for the rest of the taxpayer to pay an outrageous cost to supply the Roza with supplemental water.

Every land owner on the Roza knew, at the time purchase, of the junior nature of their water rights and the possibility of interuption of water delivery. In the past two to three years, I have driven over a considerable portion of the Roza. I see virtually no row crops. It appears that the entire Roza is planted to perennial crops. Most notably orchards, grapes and hops.

If one plants these crops with an uncertian and interuptable water supply, then one cannot come crying to others when the inevitable happens. They cannot ask or expect others to bail them out by paying an exorbitant price for supplemental water. It was clearly foreseeable low water years would occur.

Using $5,000,000,000 as an estimated cost for the Black Rock Project, the cost exceeds $10,000 per acre for the approximately 500,000 acres of irrigated land in the **ENTIRE** Yakima drainage. This is for ***supplemental*** water for land that is already under irrigation. It is my understanding that the Bureau uses a guideline of 3 to 5 thousand dollars per acre as a maximun cost to bring new land under irrigation. Just this analysis alone should have been sufficient to quash any expenditure for studying the Project.

According to an early statement by one of the organizers of the Yakima Basin Storage Alliance(Charlie de La Chapelle), originally their proposal was to provide supplemental water for only the Roza Project. At an estimated 73,000 acres in the Roza, this would be about $68,500 per acre. There are approximately 300 families farming the Roza. For a lot less money, the entire

Roza could be bought and just closed down. Shutting off the water to the Roza would free up the water for many of the benefits touted by the supporters of Black Rock.

In our Northwest society we have had no problem walking away from billions of dollars of investment in other non economical projects that have affected more families. For example, the closing of several aluminum plants, stopping the construction of four nuclear power plants and demollishing a recently refurbished, operating nuclear plant.

As part of the original study, the Bureau reported the the Bumping Lake alternative would meet the water requirements of 70%. It would cost less than $400,000,000. Less than one tenth of the Black Rock alternative! However that alternative was dropped. I was there and heard the rational for dropping the Bumping alternative. Quite frankly, it was all political and had little to do with solving the water issues in the Yakima Valley.

01

By itself, the threat to the ground water under the Hanford Nuclear reservation and the possibility of additional contamination to the Columbia River should have been a show stopper before spending $18,000,000 of taxpayer's money studying a dead loser project.

I commend the Bureau staff, especially Kim McCartney, for doing an outstanding job and maintaining neutrality in a clearly politically motivated atmosphere.

Arthur Miller

PO Box 1452

Richland, WA 99352

Comment IND-0042

From: "Elaine Packard" <espackard@msn.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 4:28 PM
Subject: Black Rock Dam

Register a strong opposition to this proposed dam from me. **01**

Elaine Packard

Comment IND-0043

From: "Peter Rimbos" <primbos@comcast.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 8:37 AM
Subject: BLACK ROCK DAM--PUBLIC COMMENTS

Sir/Madam,

Please consider these my public comments on The proposed $6.7 billion Black Rock Dam. I believe the dam is bad for taxpayers. The benefit-to-cost ratio is 16 cents on the dollar. We pay 84 cents on the dollar. As planned, the dam would be built on fractured basalts in an area at high risk for major earthquakes. I believe this risk is too great. Finally, expected leakage from the dam could raise groundwater levels at the Hanford Nuclear Reservation. This would adversely impact clean-up efforts at one of our nation's most contaminated sites. We should not worsen the problem at Hanford. Thank you.

01

Peter Rimbos
19711 241st Ave SE
Maple Valley, WA 98038
primbos@comcast.net

Comment IND-0044

From: "Richard and Suzanne Rivers" <rsrivers@comcast.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 4:03 PM
Subject: Black Rock Dam

I think the proposed expenditure for the Black Rock Dam near the Hanford nuclear waste dump is at least a terrible waste of money, and at worst could be a disaster for the Columbia River. By raising and moving ground water through the contaminated Hanford Reservation, it would flush radioactive material into the Columbia. At six and a half billion dollars to build and fifty million annually to operate, it will join with the lower four dams on the Snake as a colossal tax-payer boondoggle. Stop this madness please! 01

Richard J Rivers MD

3110 N Sheridan Ct

Spokane WA 99205

509-326-0224

Comment IND-0045

From: mike sebring <mlsebring@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 9:31 AM
Subject: Black Rock Dam NO!

Hello,
As I learn about this project, I have to wonder who is going to benefit? I don't see any clear winners here.

There is not just one reason why the dam should not be built. There are many. 01
1. There is no way we should be adding any more risk to Hanford. This is plain crazy - the Hanford clean up is terribly behind schedule and budget, so there isn't' even a shadow of an argument that it can handle even a slight problem. Which brings me to the next point:
2. This is an unstable area. A recipe for disastator, and at the very least, but also adds to the cost:
3. - HIGH maintainenance costs.
- The project, at .16 to the dollar, is economically ridiculous.
- None of the irrigationdistricts in the Yakima basin have accepted the operation andmaintenance costs of the Black Rock Dam.
4. Not that there needs to be any more evidence of the folly of this project, but there will undoubtedly have an ecological impact, especially, but not limited to the Columbia River.

This is a bad idea.
Please stop wasting time and money on it.

Thanks,
mike sebring

Comment IND-0046

Received in U.S. Bureau of Reclamation
U C A O
MAR 31 2008
Yakima, Washington

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

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

Re: Yakima Storage Study, Draft Environmental Impact Statement

Dear Mr. Kaumheimer:

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

The EIS is incomplete because it is missing ~~the~~ a study of effects of increased ground water flows at the Hanford nuclear reservation. 01

The stated benefits for recreation are not credible. There are under utilized Columbia river reservoares nearby that offer superior recreational opportunities compared to those possible with a Black Rock lake. 02

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: Fred Simonen Date: March 27, 2008

Address: 2303 Carriage Ave Richland, WA 99354

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

Comment IND-0047

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.

Landslides have occurred on Horsethief Mountain. There is a concern of seepage from the proposed Black Rock reservoir into the basalts which would reactivate old slides and begin new ones. There are two faults under the proposed reservoir. With any earthquake there can be slope failure! What other consequences are there from earthquakes and water seepage? Why hasn't the independent review of the dam structure been done? 01

With the underground contamination at the Hanford site, the water leakage from the dam is to be of utmost concern. There can never be 100% assurance after the Hanford cleanup. 02

Why is there such a push to get this built when there are all these life threatening concerns?

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: Christine Simonen Date: 3/27/2008

Address: 2303 Carriage Ave., Richland, WA 99354

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

Comment IND-0048

RECLAMATION
Managing Water in the West

U C A MAR 31 2008 Yakima, Washington

COMMENT FORM

Yakima River Basin Water Storage Feasibility Study Draft PR/EIS

Name (please print legibly):	Cheryl Smith
Organization:	self
Mailing Address:	1926 Hetrick
City, State, and Zip Code:	Richland WA 99354
Telephone: NA	**E-mail:** NA

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:

I look at this project a encouraging people to use more water. I have lived in the Columbia Basin for almost 30 years and all I see is more & more of the natural landscape being cultivated. Providing more water storage just means more water to use.

01

(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

Comment IND-0049

From: Brian Stadelman <stadelmanbrian@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 9:32 PM
Subject: Black Rock

To whom it may concern,

I do not support construction of the Black Rock Resevoir due to the following reasons: 01

1. The construction cost far out weigh the benefits.

2. The cost to continually pump water will be astronomical.

3. Research has proven salmon need cooler water. Any water sitting in the resevoir will warm quickly as it sit is the heat of the 100 degree sun. Alge and other foreign materials will then be flushed into the Columbia.

Thank you,

Brian Stadelman

Comment IND-0050

Ted Strong
302 Division Street
Grandview, WA. 98930
(509) 882-0339 phone
(509) 882-0345 fax

March 31, 2008

U.S. Department of the Interior
Bureau of Reclamation
Environmental Programs Manager
Upper Columbia Area Office
1917 Marsh Road
Yakima, WA 98901-2058

My name is Ted Strong, an enrolled member of the Confederated Tribes and Bands of the Yakama Nation. I have no official position with nor do I maintain to speak in behalf of the tribe. My comments are mine only as an individual tribal member. I presently own and manage an energy and natural resources consulting company located in Grandview, Washington. For ten years I previously served as Executive Director of the Columbia River Inter Tribal Fish Commission located in Portland, Oregon. It has professional and technical responsibility for assisting the Yakama, Umatilla, Nez Perce and Warm Springs preserve and implement their treaty fishing rights on the Columbia River and at all of the usual and accustomed fishing stations. This fishery responsibility extended from the headwaters of the Columbia, throughout the Columbia Basin and out to the Pacific Ocean.

I am writing today in support of the Black Rock Reservoir.

As an enrolled member of the Yakama Nation, I have worked fastidiously to assure the implementation of the fishing rights the tribe has reserved under the Treaty of 1855.

Because of population explosion since the signing of the treaty we have 50 times more people relying on the limited water supply for consumptive needs. The municipalities are all growing and the demand for water continues unabated.

We have an agrarian economy that supports hundreds of thousands in the three county area of the immediate Yakima Basin. The planted crops need water that is guaranteed by federal statutes and no new water storage has occurred to assure that water delivery since the 1930's.

The Yakima Basin like other areas of the northwest have experienced 100 year droughts in cycles closer to 10 years and the results have proven to be economically and environmentally devastating. The Yakima River is over appropriated and in the hot summer months when salmon need cool and fast flowing in stream water for migration the river is a mere trickle that is heated above the 65 degree temperatures lethal for salmon. None of the alternatives studied by the Bureau of Reclamation have the capacity to deal with catastrophic droughts. Only Black Rock has stored water that can assist in offsetting the devastation to fish and wildlife and agriculture.

The historic water shortages have caused the need for the infamous 'flip-flop' that has been ruinous for some tributaries of the Yakima River and has caused the decline of salmon and other fish and wildlife habitat. The 'flip-flop' was to be a temporary fix and instead due to inaction has been permanent. The temporary fixes have become the norm and the BOR has no plans that can replace the 'flip-flop'. The temporary nature of this quick fix was known to have adverse affects on the Yakima River system if kept in place too long. The 'flip-flop' has been in place for several decades and has been a cause of environmental harm but nobody is addressing this problem.

The Yakama Nation has idle lands that are owned by both the tribe and by individual tribal members that cannot be farmed or leased because of insufficient water supply. Water is not available from the current regime imposed on the Yakima River to provide irrigation for the reservation as served by the Wapato Irrigation Project. A normative river flow would allow greater amounts of water to serve the tribe and its members and improve their collective and individual economies with greater income. The tribe has a Land Enterprise and needs every drop of water to successfully farm its lands. The individual tribal members need water delivery to assure the leasing of their lands for family income. The Yakama Nation is on record supporting the historic attempts to improve water storage. The tribal economy is in dire need of diversification. It suffers from lack of agriculture development on a large scale that could bring appreciable income to the tribe yet has some of the most productive lands in Washington State. The tribe often will forego the aggressive farming practices in order to demonstrate environmental loyalty. This causes the tribe to lose out on both accounts because the environmental practices are piecemeal and do little to help the Yakima River get back to the 700,000 salmon it once produced. The agriculture economy of the Yakama Nation should be capable of yielding tens or hundreds of millions of dollars. Instead the tribe ekes out a bare existence with its farming.

If the Black Rock Reservoir were to be constructed it would allow the closure of the Sunnyside and Roza irrigation diversions. The irrigators at the urging of the Yakima Basin Storage Alliance have moved toward a position of cooperating on this closure. This is unprecedented. In the past, the Yakama Nation and the irrigators have fought bitterly over water and will do so in the future if a water supply solution like Black Rock fails to materialize. The money spent on litigation will be in the millions of dollars but is pale in comparison to the acrimony and disharmony that will ensue over water fights. At a time when these processes could have created venues for diplomacy the Bureau has erred in its policy of going it alone and reflecting the attitudes of the current Administration. I have not witnessed any tribal leaders being invited or being funded for participation in this water storage study. A negligible contract was offered by the Bureau to the tribal staff to come sit in as 'observers' of the process. This low level involvement fails to honor the government-to-government policy established by the Yakama Tribal Council and former Administrations. The result could mean an end to the tenuous cooperation and collaboration YBSA was able to place into effect between the tribe and the irrigators. Several years ago the Chairman of the Yakama Tribal Council and the Chairman of the Roads, Irrigation & Land Committee at least met face-to-face with the irrigators, county commissioners, U.S. Representative Doc Hastings , representatives of Senator Murray and Cantwell and the Washington State Governor's office to discuss water and salmon as reserved by the treaty of 1855. In recent years low-level staff from the water resources program has attended without authority to speak for the tribe but have been instrumental in conveying what they have termed anticipated positions. The process has been reckless with regard to involving appropriate and commensurate officials with authority to speak for the tribe. It has been the YBSA process not the Bureau of Reclamation process that allowed the irrigators to discuss transferring their water rights to the Columbia and leaving approximately 700,000 acre feet of water in the Yakima River, primarily for the benefit of salmon and irrigation water for the Yakama Nation. The tribe will

01

never receive any offer from anyone of substance that offers 700,000 acre feet of water for fish and wildlife. It is to the credit of the magnitude of benefits emanating from Black Rock that such things could be put on the table for discussion.

Now, water storage is needed more than any other time in our history and the federal government should not sit idly on its hands while the natural reservoirs called snow packs grow smaller and melt faster and sooner causing spring runoff that drains the water from the mountains too fast. This phenomenon results in too high water volumes in the Yakima River too early and leaves only a trickle of water in the Yakima River when the upstream migrating salmon need it most. The lack of water creates poor migration corridors, inhospitable water temperatures, high probability of pathogens that can wipe out salmon populations quickly,

The most important need of all for the Yakama Nation is water for sustainable ecosystems to support existing salmon runs and the reintroduction of those salmon species extirpated in our recent history by declining water and habitat. Historically, the Yakima River supported an average of 700,000 salmon comprised in least four species plus steelhead. Today, that number is less than 40,000 salmon and steelhead. It is reprehensible to think that the Yakama tribal members cannot be assured of a progressive and responsible water supply program to support the reintroduction of salmon, steelhead and other fish and wildlife which is guaranteed by our treaty of 1855. The federal government has a trust responsibility to see to the meaningful implementation of fish and water protection measures that provides substance to the treaty promises. I am appalled by certain non-tribal staff professionals who write opinions about salmon management that become the policy positions of the tribe. Our policy position should be to get back 700,000 salmon and steelhead not remnant runs that barely meet the Endangered Species Act threshold. The limitations should not be money or programs. The plans of the tribe currently rely on paper water and thus we only model and produce paper salmon. Our salmon feasts are excellent barometers of success when it comes to our salmon. First salmon feasts are too often an exercise in futility and humility. We find ourselves raging at each other and lamenting the poor salmon but don't take the bold steps to fight for their water, habitat and reintroduction. We shrink when our staff tell us that we can't ask for billions of dollars for our salmon.

The Yakima watershed has been in decline since 1855 and the federal government has been deficient in reversing the damages. The rich biology of the Yakima River can be described as bankrupt. In turn, the strength and beauty of the Yakama culture is imperiled. Without life in the Yakima River system to support the fish and wildlife, the tribal way of life is reduced to a remnant of what it was at treaty making time. There are no spring or summer chinook runs which the tribal members can harvest. There is no longer any sockeye salmon for the tribal members. The coho salmon are very slowly being reintroduced and will fail to repopulate if there is no a guaranteed supply of cool, clean and fast-flowing water in the Yakima River. Make no mistake we have grandiose plans and studies costing hundreds of thousands of dollars. We just have no water and habitat for salmon. One of our venerable leaders of the past said, "One day in the future we will have more biologists than salmon."

The Yakama Nation has a Yakima River Basin Watershed Plan for salmon and due to the inevitability of poor water have failed to seek the production of anywhere near the 700,000 salmon and steelhead that should be the tribe's goal as stipulated by treaty provisions. It is a breach of promise that the federal, state and tribal governments are committing by not creating a normative river regime in the Yakima River. Yet, the Yakima River is recognized as one of the premier ecosystems in the entire U.S. for salmon rearing. The governing bodies do an injustice to the treaty promises and the salmon by limiting their water management goals and programmatic actions to political expediencies. It would seem simple to implement a natural river option if the political will were strongly in place. It is only a natural river that is going to enable the Yakama Nation to someday see even 100,000 salmon flourishing in the Yakima River and its tribal members fishing at their usual and accustomed fishing stations. Nothing in our past water management has come close to bringing about a remote semblance of our salmon runs. A few years ago we had one good spring Chinook run but it was attributed to good environmental conditions and had nothing to do with human practices. The only option studied by the Bureau that

helps get the Yakima River back to being a natural flowing river is the Black Rock. By closing irrigation diversions at Roza and Sunnyside water would be allowed to rejuvenate the Yakima River especially below Union Gap all the way to Prosser. This is area neglected for many years and the least hospitable for salmon.

Some have expressed fear of salmon becoming disoriented in their journey to their natal streams at spawning time due to Columbia River water being dumped into the Yakima River under the Black Rock alternative. This is baseless concern. The Columbia River water would be transferred directly into the irrigation delivery systems and used to irrigate the croplands. The efficiency of the system would allow the water to slowly seep back into the ground and acquire Yakima River characteristics before being returned to the Yakima River. The idea that salmon would be subjected to false attraction from the Columbia River need not be a concern.

There are serious questions and concerns raised about the water seepage from Black Rock. Of concern is the image of water rushing into the underground areas where radioactive wastes are stored on the Hanford Reservation and pushing the wastes into the Columbia creating widespread contamination. The study should address this concern in a scientific manner bringing the most modern technology and engineering to bear upon this concern. Early examination strongly suggests that the seepage would gravitate toward the Horn Rapids area not creating a raging river flooding the radioactive waste storage areas of Hanford . Further, very little exploration of pumping of the seepage water has been documented. It is entirely possible that the estimated 3% water seepage, which is standard on any dam built by the BOR, could be pumped down to insignificant amounts and actually used for other irrigation purposes, leaving a mere trickle of water that could be easily absorbed into the soil. The BOR has allowed irrational fears to drive the public to hysteria rather than allow an informed and reasoned approach to this perceived problem materialize.

02

The high cost of the project has been exclaimed by many in the public. It is entirely possible that the BOR could put the building of Black Rock out to private builders who are experienced in large scale projects. The BOR has never built any storage facility the size of Black Rock. Some design engineers have suggested they could reduce the cost by one third if they had the option to do a design-build on Black Rock. They maintain they could build Black Rock on budget and on time. This has not been thoroughly studied.

03

Over hundreds of years the non-tribal economy has been built at the sacrifice of salmon. The cultural icons of the Yakama Nation have literally paid with their lives while the federal and state governments have spent many times more than the estimated $6 billion it might cost to construct Black Rock to insure the non-tribal economies thrived. The Yakama Nation need never be bowed and go hat in hand to any government seeking money for the successful reintroduction of their Creator given salmon and their habitat. By acquiescing to the shrill voices expounding the cost to give water and its sacred life back to the Yakima River and all our non-human brothers and sisters the tribe will suffer the indignation of no spring Chinook for its first food feasts. The tribe will make its tribal members live in the past by memory only of days when they fished by net at Tuptut and others ancestral grounds. The tribe will never realize the full economic benefits of its several hundred thousand acres of agricultural lands and its tribal members will be relegated to another generation of waiting for the fulfillment of the federal government’s promise to uphold its solemn trust duty to secure the treaty promises of salmon and water, among other promises.

The Yakama Nation should have had a seat at the policy level planning for the best possible future that

04

could be attained for the Yakima River. Early on in this study process the Yakama Nation requested a little more than $1 million from the BOR in order to conduct its own cultural study and engineering review. They received no favorable response. Instead, the lack of an inclusive public involvement process left the most valuable tribal wisdom out of the decision making. No professional and/or technical staff can ever substitute for the timeless knowledge of the fishers, hunters, root diggers and berry pickers who have the obligation of feeding families and those who gather in our longhouses and shaker churches during feasts, memorials, funerals, name-givings and other holy events. Some of these people even get elected to a position on the tribal council and could have spoken for the ones who live by nature's laws but have no language and voice to speak for themselves.

The Black Rock Reservoir may not be the perfect solution to our water shortage but it is one of the best to come along in more than 70 years of apathy and dereliction. A no action alternative is a great disservice to humanity and our plant, animal, bird and fish brothers and sisters.

Comment IND-0051

From: <FStruck@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 2:58 PM
Subject: Black Rock Dam- don't approve it

Not only is the proposed dam a drain on taxpayers, but also those who are expected to benefit will not take responsibility for costs. 01

It would likely have negative effect on the Hanford clean up and could be a hazard if the leaks at Hanford aren't fixed.

Yakima county isn't even limiting wells now and that means they have enough water- why do this.

We need to stop diverting water from our rivers- the water is limited and we need to live within limits.

Comment IND-0052

From: Mary Taylor <thetaylorranch@msn.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 7:28 AM
Subject: Black Rock Remarks

The construction of this proposed dam is wrong. It's way too expensive.

It's supposed to be about irrigation, but there is nothing a farmer could raise that would pay for that water.
Then it was supposed to be about recreation. But, miles of mud flat created every year by drawing the water down is not a recreation draw.
Then it was supposed to be about saving salmon. If everyone was so interested in saving salmon, why is there a legal fishing season on them! It's not about saving salmon either.
Then, it's supposed to "cure global warming". Now I'm not a scientist, but this is extremely far fetched.

There is not a single reason that this dam should be constructed and dig so deeply into the tax payer's pockets. I won't go into all the geology problems, you know those. Enough said.

I will talk, again, about my family's mineral rights. We have asked repeatedly about them, and to date, not a thing has been said. To cover those mineral rights with water could possibly be a major disaster to my family. We own a rather large share of them in the Black Rock Valley. We have not waited until the last minute to ask, we've been asking right along, and have yet to be given any kind of answer. Our place is a multi generational ranch. We are VERY VERY MUCH AGAINST this project.

01

YBSA will tell you they intend to pump water from the Columbia all year long. Yet, come to find out, they are forbidden from pumping in the 2 hottest months of the year. So you're still going to have the miles of drawdown that I spoke of above. I really don't see miles of mud flats being a big tourist draw!

YBSA speaks of million dollar homes and gold courses. Excuse me but a LOT of this land is privately owned! If people were interested in selling, there would be for sale signs out. Oh we're old "this is for the greater good". I don't see how sinking that much money and expecting more every year to the amount it would take for cost and maintance can be called "the greater good". This state cannot afford it.

It's time for all this to stop. It's time for reality to sink in. This project is a loser and always has been. Stop spending taxpayer money on it and go find a realistic solution. This is not it. Don't listen to YBSA's hype. A retired congressmen, used car salesmen, a hop farmer with a measly 10 acres, are not qualified to give an opinion on a proposed project such as this. They are not scientists, they are not geologists. They are just wanting their name attached to something big. This is nothing more than an ego trip for them. They do not have the right to spend taxpayers money in such massive amounts not to mention commit generations yet unborn to having that over their heads for maintance and upkeep! Stick with the facts. The facts do not support this project. In fact, the facts shoot this project down as the loser

Time to stop living in la la land and be realistic. This project cannot be built.

Mr. Mrs Lynn A. Taylor
23063 State Route 24
Moxee, WA 98936

Comment IND-0053

From: Ken and Jocelyn Weeks <kjweeks@embarqmail.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 31, 2008 12:52 PM
Subject: Black Rock dam

Greetings: please abandon this ill advised and economically unsupportable plan for the Black Rock Dam...it would seem that the Bureau of Reclamation has run out of rational big dam sites some time ago...this idea makes no sense on any grounds.
1. it is a real looser for taxpayers. with from your own anaysis a benefit to cost ration of 16 cents on the dollar...great agri-business gets the water and taxpayers get the shaft.
2. The dam would be built on fractured Basalts(!!) in a area of high earthquake risk....this is not good thinking.
3.Leakage from the dam could raise groundwater (of course it will) at Hanford Nuclear Reservation, eventually I would think this radioactive plume would reach the Columbia river and poison the river for all. All of this for agri-business in the Yakima basin? For those businesses that have lowered the water table by unsustainable practices and now want us to bail them out....with a amazingly expensive boondoggle....this is nuts. in a nutshell.

01

02

Sincerely, Ken Weeks
4 luftfeld road
Lyle, WA

Comment IND-0054

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. **01**

      - 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. **02**

   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. **03**

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. **04**

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. **05**

- 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. **06**

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? **07**

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? **08**

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

Comment IND-0055

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 (earthquakes, 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.

01

02

03

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: Roger C. Gruenewald, MSW, ACSW 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.

Comment IND-0056

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 exspense 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.

01

02

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.

Comment IND-0057

1078 King Dr.
West Richland, WA 99353
March 30, 1908

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

Dear Mr. Kaumheimer:

I 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.

01

02

03

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

Thank you.

Sincerely,
Nathan E. Ballou

Comment IND-0058

Received in Mailroom
U C A O APR 01 2008 Y F O
Yakima, Washington

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. 01

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. 02

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 03

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.

Comment IND-0059

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.

01

Thankyou

Kip Dieringer
514 South First St
Dayton WA
99328

Comment IND-0060

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.

01

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

Comment IND-0061

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.

01

Sincerely,

Julie Titone

Pullman, WA

Comment IND-0062

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. 01

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

aljohay@ aol.com

Comment IND-0063

From: Daniel Hawley <sweepboat@cox.net>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Feb 27, 2008 11:46 AM
Subject: Black Rock Dam

Feb 27, 2008

Gerald and Derek Kelso and Mr. Sandison

Dear Kelso and Mr. Sandison,

I wish to comment on the Yakima River Basin Water Storage Feasibility Study/Draft Planning Report and Environmental Impact Statement. The statement fails to consider that there are more environmentally and economically viable alternatives to new dams. Water conservation and efficiency should be considered. 01

The draft study makes clear that the proposed Black Rock dam should be abandoned. It is overly expensive, economically inviable, and a potential environmental disaster.

Sincerely,

Mr. Daniel Hawley
PO Box 49
Ketchum, ID 83340-0049

Comment IND-0064

From: <klarichcj@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 24, 2008 12:41 PM
Subject: Testimony on EIS

Attention: Mr. David Kaumheimer

Attached is my response to the Draft Planning Report/Environmental Impact Statement for the Yakima River Basin Water Storage Feasibility Study.

Purpose of and Need for Action
The Black Rock Project

The purpose of the Storage Study funded by Congress and the State of Washington is to evaluate plans that would create additional water storage for the Yakima River Basin. The need for the Study is based on the finite existing water supply and limited storage capability of the Yakima River Basin.

The Bureau of Reclamation (BOR) stated when they started the Storage Study, "the Federal Government will not pay for the complete Black Rock project". State, local, and private funds will have to help pay for the Black Rock project. With that policy in mind why did the Storage Study only look at the National Economic Development (NED) benefits and draw the conclusion the NED benefits amount to only 16 cents on the dollar. The true benefit package should include both State and Local benefits if the Federal Government requires local participation in the cost? **01**

Was the process used to scare the public by saying the project was not cost effective? The Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G) present four accounts for the evaluation and display to compare storage alternatives. These accounts are National Economic Development (NED), Regional Economic Development (RED), Environmental Quality (EQ) and Other Social Effects (OSE).

The RED examines how the regional and local economies are affected by the alternatives. It measures employment, industry output, construction expenditures, farm income, and recreational spending and focuses on economic impacts to the local region.

The EQ evaluated water resources, fish, vegetation, water quality, threatened and endangered species, and land use.

The OSE examines social effects of environmental justice, recreation, and public health.

The RED, EQ, and OSE were buried in the Storage Study and were not mentioned or taken into consideration when the Bureau announced the benefits was only 16 cents on the dollar. **02**

Why did the BOR announce the results of their evaluation only on the National Economic Development NED without mentioning the local and regional benefits? The local and regional (RED) benefits would exceed the ratio of $1.00 benefit for each $1.00 of cost without taking into account the EQ and OSE evaluations. **03**

Why spend the money on a study and not recommend the only alternative that meets the criteria set by Congress???

The Storage Study Needs to Consider the Following Prior to Calculating the Cost/Benefit Ratio

Fish

The Storage Study does not include the value of Salmon Recovery benefits by the Black Rock Project even though hundreds of millions of dollars are spent in the northwest annually to restore salmon! With additional water and more habitat the Yakima River will become a "fish factory". Only with additional water for instream flow can we restore the salmon runs. **04**

Yakama Nation

With additional water, Treaty Rights can be met. Salmon, as a traditional part of the Yakama's culture and subsistence, will be available. The Supplementary Hatchery can be expanded. The social effects of the Black Rock project are enormous.

Climate Change

The Storage Study does not include impacts related to climate change. Additional storage (Black Rock) will be needed to meet the water supply demands due to climate change. With an increased winter runoff due to winter precipitation as rain rather than snow and a decrease in snowpack, which historically provides more than 50% of our needed water supply, climate change will leave us with drought conditions every few years. **05**

Agriculture

The Storage Study does not include all the benefits related to agriculture! The value is applied based upon the years when proratable irrigation districts would receive less than 70% of their water supply and only to net farm income. The losses based upon reduction of agriculture jobs, purchases of supplies and equipment, manufacturing of needed supplies for harvesting and shipping locally, nationally, and exports were not given a value to our region or State. **06**

Recreation

The Storage Study did not include recreation construction impacts around a large body of water. The value of building-out around the lake, including resort development was omitted from the evaluation even though a recreation study by a consulting firm showed a large impact. A destination resort with all the amenities developed over the next 50 to 100 years will provide a huge benefit to the region and the State. **07**

Energy

The Storage Study did not include all the hydropower benefits that can be developed. Power generation from return flow to the Columbia River could generate needed power to assist in the alternate power generation requirements and future needs for additional power that will occur due to climate change. **08**

Jobs

The Storage Study did not include all the jobs lost that occur when there is a drop in farm production. Higher unemployment occurs. Purchases are reduced and construction jobs are lost. Tax revenues are reduced which affect out counties, cities, and schools ability to provide services and a ripple effect occurs in the Yakima Basin's economy.

09

Comment IND-0065

From: Jennifer Wynkoop <olsonjwindy@yahoo.com>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Feb 27, 2008 12:16 PM
Subject: Black Rock Dam Proposal-Not the right solution

Feb 27, 2008

Gerald and Derek Kelso and Mr. Sandison

Dear Kelso and Mr. Sandison,

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

The joint federal-state portion of the study improperly assumes that the only way to meet future water needs for people and fish is to build a new surface storage dam. The joint federal-state alternatives fail to consider more environmentally and economically viable alternatives to new dams, including aquifer storage and recovery, water conservation and efficiency, more robust water markets, aquifer recharge, or a combination thereof. 01

The State of Washington, on the other hand, does take a look at these non-structural water management alternatives. The final draft of the study should provide a full analysis of these alternatives to new dams, and they should be considered as joint federal-state alternatives rather than as state alternatives only. Anything less will delay and confuse implementation of smarter water management policies in the Yakima River basin. 02

One thing is clear from the draft study: the proposed Black Rock dam should be removed from further consideration. The $6.7 billion proposed dam would drain resources from more sensible and efficient tools to improve water management and fish and wildlife habitat. On top of that, the leaky reservoir has the potential to cause radioactive groundwater underneath the Hanford nuclear reservation to impact the Columbia River, contaminating the river and the water supply for downstream communities. **Money to further study the dam could be better spent on studying feasible alternatives. In particular, aquifer storage and recovery is growing in popularity throughout the southwest where water resource issues have reached a critical level. The State of Washington should invest resources in exploring this exciting new technology that potentially has far fewer environmental impacts than traditional dam and resevoir structures.** 03

The Black Rock proposal should be abandoned in favor of using a more environmentally friendly and cost effective alternatives. There is no need to spend any additional taxpayer dollars studying this risky and expensive proposal.

Again, thank you for this opportunity to comment on the draft study.

Sincerely,

Ms. Jennifer Wynkoop
3020 N 31st St
Tacoma, WA 98407-6409

Comment IND-0066

My concern with the Black Rock project is the lack of a real EIS study. A brief review of the proposal does not seem to satisfy the true scope and depth needed for a venture of this magnitude.

Just the possibility of an effect on the ground water on the Hanford site needs a through review by competent engineering personnel that have only a professional interest in the project.

01

Also the return on the taxpayer's dollar is less than minimal if the figures that were published in the Tri City Herald are accurate.

Jack Dawson Pasco

Jack Dawson

2-28-08

Comment IND-0067

From: "Craig F. Miller" <craigfmiller@comcast.net>
To: <storagestudy@pn.usbr.gov>
Date: Thu, Feb 28, 2008 8:02 PM
Subject: Dams

Hello,

I recommend against the proposed new Black Rock Dam, Wymer Dam, and Wymer Dam pump exchange. 01

Washington state has a duty to protect and allocate water for the common good. These dams would dry up our rivers, deplete our drinking water aquifers, harm fish and wildlife, and risk our water future. Economically these projects do not make good sense.

I oppose these new dams. Please support sensible water policies for our state.

Thank you.

Craig Miller

405 Prospect St Apt 202

Seattle, WA 98109

Comment IND-0068

From: "Mark Hamlin" <mrhamlin@sisna.com>
To: <storagestudy@pn.usbr.gov>
Date: Fri, Feb 29, 2008 12:42 AM
Subject: Black Rock Dam debacle

To anyone who claims to care what people think and what is really good for our future,

01

With all due respect, how long do you think it will take to realize that this idea was misguided? Just how sustainable is this kind of development? Are we really looking to a healthy future for life in this region? I don=t think this is a good solution. Holding water will not increase the quantity or help protect the quality. It will create more problems though. If making money is one of the motivations, we should consider who that will benefit and for how long and who will really pay for it. I don=t want to pay for it. If you are considering supporting such a foolish scheme, please reconsider.

Thank you,

Mark Hamlin
8010 E. South River Way
Spokane, WA 99212-1811
home: 509-922-0940
fax: 509-924-7295
mobile: 509-999-9759
<mailto:mrhamlin@sisna.com>

Comment IND-0069

From: "Ellen Smith" <smithem55@gmail.com>
To: <storagestudy@pn.usbr.gov>
Date: Fri, Feb 29, 2008 1:01 PM
Subject: No Black Rock Dam

To: US Bureau of Reclamation
Upper Columbia Area Office
1917 Marsh Road
Yakima, WA 98901-2058

RE: Stop the Proposed Black Rock Dam Project

I am writing to state my opposition to the Black Rock Dam project. As I understand it, this new dam would be located on the Columbia River just 5 miles above the Hanford Nuclear Reservation, the Hanford Reach wildlife areas, and residents of the Tri-Cities, where I have family. Seepage from the dam could affect the nuclear waste stored on the Hanford and help flush it into the Columbia. And, according to your office and the Washington Dept. of Ecology, the Black Rock Dam would return 16 cents on the dollar spent to build and operate it. This project makes no financial sense and is a hazard to the health of populations downstream. **01**

Please include my comments in public response to this project.

Sincerely,

Ellen M. Smith
7116 Greenwood Ave. N #402
Seattle, WA 98103

Comment IND-0070

From: Jon Soest <jfs@seanet.com>
To: <storagestudy@pn.usbr.gov>
Date: Fri, Feb 29, 2008 1:14 PM
Subject: Please Abandon the Black Rock Dam Proposal

Feb 29, 2008

Gerald and Derek Kelso and Mr. Sandison

Dear Kelso and Mr. Sandison,

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

As a contributer to the Wenatchee River Watershed Plan for many years, I know that there are many other alternatives for providing water to our area. The same is true for the Yakima area. Please consider other more efficient and less costly alternatives and drop the Black Rock proposal.
As a physicist, I have great concerns about the radioactive waste in the Hanford area. No proposal should even be considered at all until

the Hanford waste problems are finally and completely cleaned up. And I don't mean just talk about it, I mean clean it up. We cannot put

our future generations at risk because of short-sighted and uneconomic proposals like this one.
Again, thank you for this opportunity to comment on the draft study.

Sincerely,

Dr. Jon Soest
18150 River Rd
Leavenworth, WA 98826-9218

01

Comment IND-0071

From: <cgopher4582@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Sat, Mar 1, 2008 4:53 AM

I definitely do 100 percent beleave in the black rock reservoir. We need it during the time when there are drought times and the salmon wont get confused they are not as dumb as those people think they are, I mean those people are not salmon them selve ARE THEY. The black rock reservoir is worth the cost and it would pay for it self the very first time when we and the farmers around here get a drought. 01

Thank you for taking the time to read my opinion.

Carl M. Jensen
507 N 4th Av #602
Pasco, Wa. 99301

509-494582

Comment IND-0072

From: "Marshall Goldberg" <mfgold@comcast.net>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Mar 2, 2008 11:17 AM
Subject: Public Comment on Proposed Black Rock Dam

To Whom It May Concern:

I am writing to express my opposition to the proposed Black Rock Dam.

The dam will be located 5 miles above the Hanford Nuclear Reservation (HNR). This is an earthquake prone area. Such an event could cause the dam to collapse and then wash across the HNR, thereby releasing nuclear waste downstream. Since the HNR has not been cleaned up, this prospect is especially worrisome. Moreover, seepage from this dam would accelerate the Columbia River migration of the radioactive waste plumes that are currently under the HNR.

01

02

Given this potential for such an egregious environmental catastrophe, I believe a decision to approve this project would be reprehensible and completely irresponsible.

Marshall Goldberg, M.D.
Oak Harbor, WA

Comment IND-0073

27 February 2008

Kim McCartney
Upper Columbia Area Office
1917 Marsh Road
Yakima, Washington 98901

Dear Mr. McCartney:

Thank you for your time on Wednesday evening, 27 February 2008.

Here are the questions I could not find the answers to (admittedly my search was limited) in the documents on the CDs I received. If you could provide me with paper copies or where to find the answers on the disks, I would appreciate it.

1) Water pumped into storage, especially if it is to be held for long periods, will disappear from storage due to evaporation or leakage (infiltration). As a result the amount of water available for use will be diminished (the leakage will reappear elsewhere, potentially in places where it may be recovered but at a lower elevation so that the energy of pumping it will have been wasted). Have the losses been estimated as a fraction of the water pumped and across the multiyear storage scenario? **01**

2) Climate scientists are warning us not to use the past as a guide for the future, but are not providing clear guidance on what to expect in the future - either changes in total annual precipitation for an area or the form and availability (what fraction will be snow and when would it be expected to melt). How sensitive to different possible future climates are the models for increasing storage? **02**

Thank you for your help in finding the answers to these questions.

Sincerely,

phelps freeborn
3408 Taylor Way
Yakima, Washington 98902

Comment IND-0074

27 February 2008

Yakima River Basin Water Storage Feasibility Study Draft PR/EIS

The problem which the Yakima River Basin Water Storage Feasibility Study is to consider is: how do we address the mismatch between the irrigation water consistently available and the area currently under irrigation. That is our "wants' appear to be greater than "is possible" using water from the Yakima River. There are two approaches to "solving" the problem - 1) increasing the amount of water available during years with low precipitation (including years with adequate precipitation but too much run off early in the season which cannot be captured by the existing storage facilities) and 2) reducing the area under irrigation to match the water available.

As I understand the situation, the Bureau of Reclamation can study the first approach but not the second, but Ecology can consider both.

Many of the speakers on Wednesday evening, 27 February 2008, explicitly or implicitly stated that they would not consider the second approach and most of them equated the second approach with totally eliminating irrigated agriculture in the basin. Many of the speakers also assumed that growth in agriculture and population, etc., was inevitable, good and necessary.

The earth is finite and as Malthus pointed out centuries ago, growth cannot continue indefinitely when there is only a finite resource available, e.g., water or land. The current world population has exceeded the expectations of people like Paul Ehrlich due to the Green Revolution and related advances. Unfortunately, most of the advances have significant (often not obvious or hidden) costs. The ones I am aware of include: overappropriation of water (see "When the Rivers Run Dry" by Fred Pearce, for several examples, both surface and groundwater), contamination of rivers and other waters by pesticides, and increases in nutrients in surface waters due to the use of fertilizers imported into the drainage from elsewhere resulting in deterioration of water quality (for example, the Yakima River from Prosser to the mouth). As a species, we are smart enough to understand these problems, the challenge is are we smart enough to change our practices and forestall even worse problems which are likely to result from continuing to believe in indefinite growth.

The problem to be solved is that the amount of precipitation which lands in the Yakima Basin is finite and our desires are potentially infinite (certainly more than is consistently available). This same problem is true of the larger Columbia Basin, with proposals to take Columbia River water to meet the desires in the Odessa basin and the Umatilla, Oregon area. In the United States, water problems of insufficient water availability are widespread: the depletion of the Ogallala Aquifer, the shortfall in the Colorado Basin, the drought in the southeastern United States this year, and there have been terribly water short years in many areas of the United States in the past decade or so which I cannot cite by date. The problem in the Yakima Basin is not unique. So, if we "solve" the problem for the Yakima River by taking water from the Columbia River (there is a contention that it will only be "rerouted" through the Yakima River with no net loss to the Columbia below the mouth of the Yakima which is approximately true but does not appear to be correct - evaporative losses from the increased storage won't be returned to the river and in water short years there will be a net transfer out of the Columbia, perhaps at a time which is "less" critical for flow in the river), this model cannot be applied to all of the areas with water shortages now, and it will be more true in the future if populations and desires continue to grow.

The solution to the problem for the Yakima Basin should be a solution which can be widely applied, that is not a solution of the sort characterised as "robbing Peter to pay Paul". That is water use in the Yakima Basin should be limited to the water available in the basin and not create the nightmares currently plaguing California as a result of their attempts to move water across long distances and many watersheds.

There are several potential approaches to reducing the water needs in the basin to match the water available. These include: 1) foregoing the fisheries (one speaker clearly did not want to see this approach taken and I agree - we should leave a healthy environment with as wide a diversity as we inherited to our descendants), 2) having the government buy out enough

27 February 2008

junior water right holders to assure the remaining junior water right holders can expect adequate water in all but the most extreme (not seen to date) years [I would set the lands acquired aside as wildlife preserves available to the taxpayers who bought the lands], or 3) the landowners with junior water rights could purchase a large block and dedicate only a fraction (e.g., one third, given that during short years in the past there was only a third as much water available as was wanted) of the land to crops which require a reliable water source and plant the remainder in crops appropriate to the water availability that year (including fallow in some years). My preference is for government acquisition of land, but at a larger fraction and setting some of the water rights obtained aside to increase instream flows so that there would be additional flows available for fish every year, even in water short years. The last choice is apparently available now and requires little or no government action (I am not an expert on water law in Washington, so there may be some issues with consolidating the water usage on a small part of one's acreage instead of spreading it across the entire acreage within the irrigation district, which might have to be addressed). This choice would not improve flows for fish but would appear to cost the taxpayer nothing. Given the history cited in "Cadillac Desert" and the apparent ratio of costs to potential profits for the Black Reservoir, constructing additional storage and pumping facilities will be at taxpayer expense, with only indirect benefits to the general taxpayer and considerable benefits to the owners of lands which can move from annual crops to perennial crops as appears to be the intent of the Black Rock proponents.

01

I am disappointed that the options for reducing the amount of irrigation water needed rather than increasing the availability of water for irrigation did not receive greater discussion. The last two of my proposals would not result in transferring taxpayers' money to irrigators, which is what the increased storage proposals appear to be. My third proposal above is an elaboration of what would be possible (and in fact likely with further consolidation of land holdings if there is no hope for additional water) under the "no action alternative".

Another area which did not seem to receive sufficient discussion is the assumption that conditions in the past are sufficient to predict the future. Admittedly, the prognostications for climate and precipitation are consistently that it will be different in the future than it has been for the last century or two, but how different is unclear, both in direction and magnitude. Banking on the effectiveness of increased storage, is a gamble that there will be no net decrease in precipitation in the future, just a change in timing or timing of runoff. The model of reducing the area irrigated can be applied over and over if need be, or even reversed if the situation warrants such a change.

02

Phelps Freeborn
3409 Yakima Avenue
Yakima, Washington 98902
(509) 454-0871
no e-mail address

Comment IND-0075

520 Carpenter Rd.
Granger, WA 98932
Feb. 27,2008

U.S. Bureau of Reclamation
Department of the Interior
1917 Marsh Rd.
Yakima, WA 98901-2058
Attn. Mr. David Kaumheimer

Dear Sirs:

As a landowner and a farmer on the Roza Irrigation District I wish to weigh in on behalf of the proposed Black Rock Storage reservoir.

We simply must have more storage available in the Yakima basin. I have suffered through several droughts since I took over the family farm in 1975 after the death of my father. The last one in 2005 just about ruined me. What was totally ruined was a beautiful new seeding of alfalfa planted the preceding fall.

The benefits to salmon and to recreation have not been valued in the study. I realize it is difficult to do. Withthe growth of the city of Yakima there will be an increasing demand for the municipal water supply.

01

Yours truly,

Bruce A. Johnson

Bruce A. Johnson

Comment IND-0076

2/29/08

U.S. Bureau of Reclamation,

I urge you to oppose the Black Rock Dam — No More Dams on Columbia — let the river flow & salmon swim !! This dam would be dangerously close to nuclear waste at Hanford — clean up Hanford as priority !!! Neither Black Rock nor Wyne Dam + pump. exchange are cost effective — stop wasting public money. Invest in smart, small scale, cost effective water policies + projects only.

Sincerely, Michael Spitale

01

Comment IND-0077

cc'd To Governor Chris Gregoire and

To U.S. Bureau of Reclamation, Upper Columbia

RE: Black Rock Dam

I'm writing to oppose the Black Rock Dam as its location is just five miles above the Hanford Nuclear Reservation in an earthquake prone area. The additional risks of adding a dam to an already huge environmental problem is irresponsible to say the least. I'm very concerned about Hanford already! 01

The return on each dollar spent on the Black Rock Dam is 16 cents, on Wymer Dam 29 cents and Wymer Dam pump exchange seven cents according to U.S. Bureau of Reclamation and WA Dept. of Ecology.

While the State has a duty to protect and allocate water for the common good, these series of new dam proposals just are not sensible water policies.

Regards,

Jeanne Poirier

Jeanne Poirier
P.O. Box 228
Cashmere, WA 98815

Comment IND-0078

From: <bobpatcolyer@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 10, 2008 4:13 PM
Subject: New dams on the Columbia River

?? I can think of MANY MORE projects on which to spend the taxpayers' dollars than the proposed Black Rock Dam, the Wymer Dam, and the Wymer Dam pump exchange.? According to the Sierra Club the return on the dollar for each project is pitifully LOW.? Plus there is potential danger to the Columbia River from
water seeping from behind the Black Rock Dam, through the Hanford Nuclear Reservation and into the Columbia River, carrying with it radioactive waste.
?? The people of Washington have infinitely more pressing problems than one more dam on the Columbia, especially when four dams far upstream are of questionable value.? How about spending money on the poor, the working poor, the mentally unstable, those having no health insurance, the schools?? Spending millions of dollars on yet another dam while ignoring the very real problems of thousands of people is morally WRONG.
?? Please re-consider such wasteful projects and veto them.? Respectfully,
Pat Colyer, a Washington State inhabitant, voter and taxpayer

01

Comment IND-0079

From: <Bluebotl@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Mar 11, 2008 5:06 PM
Subject: black rock dam

Dear USBR,

I'm writing to express my opposition to the Black Rock Dam, the Wymer Dam and the Wymer Dam pump exchange. These dams, according to the U.S. Bureau of Reclamation and the Washington Department of Ecology will return much less in benefits than they will cost to build and operate.

Perhaps more importantly, The Black Rock Dam is sited on 5 miles above the Hanford Nuclear Reservation in an area that is earthquake prone. Should this dam be built and then collapse, water could flood across the nuclear reservation releasing reactive waste that cause severe damage from the Quad Cities to Astoria, Portland and Vancouver. Even were that now to happen, flumes of radioactive wastes are already are moving toward the Columbia river. Dam seepage would only exacerbate this problem. 01 02

Thank you for your time and consideration of my comments.

Sincerely,

Joe Ginsburg
12210 Densmore Ave. N.
Seattle, WA 98133-7729

Comment IND-0080

3/8/08

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

To Whom it May Concern:

I am writing to you regarding the Black Rock Dam project.

The Black Rock Dam proposal does not make economic sense. It would return just 16 cents for each dollar spent to build and operate it. These figures, from the Department of Ecology and U.S. Bureau of Reclamation, indicate to me that in these recessionary times, this would not be a wise investment. 01

The location proposed for the dam 5 miles above the Hanford Nuclear Reservation also does not make sense. This is an earthquake prone area so the risk of collapse cannot be discounted. If the dam were to collapse, a radioactive wave from Hanford would be released across the area ranging from the Quad Cities to Portland and even to Astoria. 02
Then there is dam seepage. Dam seepage has the potential for accelerating the plumes of radioactive waste already migrating toward the Columbia River. 03

I oppose this dam for the reasons cited above. I also oppose the proposed Wymer Dam and Wymer Dam pump exchange because they too would not be economically viable. 04

Please do not build these dams. Please support more sensible water policies for our state.

Thank you,
Meredith Long

Meredith Long
45 Chukar Lane
Riverside, WA 98849

Comment IND-0081

February 28, 2008

Black Rock Reservoir Proposal

The proposal to build the Black Rock Reservoir is extremely short sighted to say the least. The astronomical cost of the project and the impact on the environment not only at the site of the reservoir but the paths of the pipelines are not the main points of concern.

01

Please research the history of other projects that have been proposed that would have impacted the Hanford Reservation. Two examples that come to mind were the Ben Franklin Dam to be placed across the Columbia River near the 300 Area and the burial site for hazardous waste (BWIP) that was proposed in the Cold Creek Valley near the 200 East and 200 West areas. These projects were halted when it was made apparent that the geology and ground water would not allow either project to continue.

Pay attention to these facts. Listen to the geologists and sciences that have studied the problem of radioactive contamination under Hanford. All the real estate development, additional water for farmers, and economic growth will disappear if the water from Black Rock were to cause this contamination to reach the Columbia River. Such a happening would impact the entire Northwest and bring our now thriving area to a halt.

Murrel Dawson
9614 Vincenzo Drive
Pasco, WA 99301

Phone: (501) 551-9920
jmdawson@clearwire.net

Murrel D Dawson

Comment IND-0082

March 11, 2008

Bureau of Reclamation
Upper Columbia Office
Mr. David Kraumheimer, Env. Proj. Manager
1917 Marsh Road
Yakima, WA 98901-2058

Mr. Kraumheimer:

Am writing to express my concern about the proposed Yakima River Basin water storage plans. The cost of the Black Rock Dam is 6.7 billion plus.... and estimated return is 16 cents on the dollar... Not profitable.. Wonder if developers will be the big winners?

Also have concerns about dam & reservoir seepage into the radioactive wastes under the Hanford Reservation that are moving into the Columbia River. Surely this will hasten the movement of these wastes... and with Federal financial crunch, the cleaning up of these wastes is not a top federal priority..

01

I urge you to reconsider your plan for this reservoir and the dams. Thank you..

Sincerely,
Gwen Rawlings

Gwen Rawlings
7 South Reed
Kennewick, WA 99336

Comment IND-0083

From: "EDGAR A MEYER" <emeyer2@verizon.net>
To: <storagestudy@pn.usbr.gov>
Date: Thu, Mar 13, 2008 7:46 PM
Subject: Black Rock Dam proposal

Just the threat of groundwater movement from a large reservoir to the radioactive-contaminated water under the Hanford area adding to the risk of Columbia River contamination should end this proposal. **01**

Thank you for considering this view.

Edgar A Meyer M.D.
105 Chase Ave.
Cashmere, WA
98815

Comment IND-0084

From: "Dennis Neuzil" <dennisneuzil@foxinternet.com>
To: <storagestudy@pn.usbr.gov>
Date: Thu, Mar 13, 2008 1:46 PM
Subject: Reject Black Rock and Wymer dam proposals

Dear US Bureau of Reclamation Upper Columbia Office:

Please reject and drop the Black Rock and Wymer dam proposals. These dam proposals are both ecologically and economically unsound and do not support sound water resources policy for Washington state and the Pacific Northwest. **01**

Dennis Neuzil, Dr.Eng., P.E
Civil Engineer, retired
2307 - 94th Avenue NE
Clyde Hill, WA 98004
Tel 425-455-1419 (Fax 425-454-9122)
Email: dennisneuzil@foxinternet.com

Comment IND-0085

From: <tajenkins@pol.net>
To: <storagestudy@pn.usbr.gov>
Date: Sun, Mar 16, 2008 2:13 PM
Subject: oppose new Columbia R dams

I am writing to oppose the construction of new dams on the Columbia River, for
reasons of safety, financial viability, and environmental health. The Black Rock Dam is not a good investment for the public, with expenses far outweighing
benefits. In addition it poses an unacceptable safety risk of flooding of unstable nuclear waste at Hanford. Finally we are moving towards reducing dam
obstructions to our Northwest Rivers, to restore the health of salmon and river
habitat. Please do not go forward with the Black Rock Dam, Wymer Dam, or the Wymer Dam Pump exchange.
Thank you for your attention.
Tracy Ouellette,
MD 14078 MacTaggart Ave., Bow, WA 98232

01

Comment IND-0086

PRJ-1.10

March 14, 2008

Dave Kaumhelmer
US Bureau of Reclamation
Pacific NW Region
1917 Marsh Road
Yakima, WA. 98901-20058

RE: No to Black Rock

Dear Mr. Kaumhelmer:

Black Rock Reservoir is a threat to the NW with Hanford only 5 miles away and contaminated ground water already leaking into the Columbia River. The DOE report on seepage impacts from pollution under Hanford must be included in any evaluation of Black Rock. The pressure to store water is reflected all over the Western United States and Canada, and the planning is rushed and inadequate. It is similar to the planning that left us without fish ladders along the Columbia at Grand Coulee.

01

Do not give in to immediate pressures at the expense of sound, long range planning. This planning needs to include Canadians, Oregonians and all stake holders. The pressure is only going to increase so saying No now to rushed planning and loud efforts to force things through is a good policy. Do not accept the Black Rock EIS. Thank you.

Sincerely,

Susan Evans

Susan Evans
434 Orondo Avenue
Wenatchee, WA. 98801

Comment IND-0087

01

Re: Black Rock Dam

It seems strange that dammed rivers elsewhere are considering removing the dams & you're planning one which gains less than the cost & would

Received in
MAR 17 2008
Yakima, Washington

US Bureau of Reclamation
Upper Columbia A O
Yakima WA
98901-2058

Mrs Jean R Strand
17543 102nd Ave NE # 237
Bothell, WA 98011-3790

Comment IND-0088

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

James Daniel Kinney Jr.
207 Santa Roza Dr
Yakima Wa.

March 21, 2008
Draft Planning Report/Environmental Impact Statement
Yakima River Basin Water Storage Feasibility Study

Dear Mr. Kaumheimer,

Thank you for allowing me to comment regarding the Yakima River Basin Water Storage Feasibility Study.

As a resident and businessman in Yakima for over 40 years, I have worked to provide a viable community, one that is both economically prosperous and offers the recreational opportunities of the Great Northwest. I believe that water is a very important ingredient in our lives here in Central Washington. Truly the water has turned the desert to into the Fruit Bowl of the Nation, and is the lifeblood of our valley.

As a member of the Yakima River Watershed Council's Storage Committee (Formed 1994), I studied and learned a great deal about the water needs and uses throughout the Yakima Valley. In June 1998 the Yakima River Watershed Council issued a Report with the following Recommendation:

> Recommends pursuing the least cost, least ecologically damaging, surface water storage reservoirs as a potential way of making water available during the water short years for the recovery of the basin at risk fish species and the legitimate needs of the current agricultural and municipal base.

In reviewing the Black Rock Study plan with this recommendation in mind, the main problem I find with this Feasibility Study is that Black Rock is certainly NOT a least cost Proposal. With Total Project Cost of $4.5 Billion, and Annual Operational costs of $60 million this solution is too expensive for water users and taxpayers alike. I might add that it is also NOT very energy efficient – With annual pumping costs of $50 million. That's enough energy for 54,000 homes, which would require the construction of another wind farm, the size of the Wild Horse Project above Ellensburg, to produce that much energy.

01

Black Rock looks to me like it's an overblown solution. Why is the Dam so large?

Black Rock would store 1.3 million acre-feet of water behind a 700-foot-high dam – A dam higher and longer than Grand Coulee that holds back the Mighty Columbia. The main driver of this Study has been the goal to provide 70-percent of proratable entitlements, but Black Rock would impound almost 3 ½ times the amount of water that would be needed to bring the Junior Water Districts to 70% of their entitlement in the worst year on record, 1994, when they received only 37% of their entitlement. [800,000 ac-ft May-Sept – 425,000 available (Proration of May-Sept) = 375,000 additional supply for proratable entitlement at 70% (717,000 needed for 100% entitlement)]

02

The National Economic Development Benefit Cost ratio of only 16 cents shows the true folly of this proposal. There has already been far too much spent on this unacceptable proposal. By contrast the more conservative Bumping Lake Enlargement could produce a 425,000 ac ft increase – Bureau of Reclamation study estimated the cost to build it in 1983 would have been $151 million, and annual operating costs of $100,000. I am sure that adjusting those figures to 2007 Cost estimates would fall far short of the Black Rock $4.5 Billion price tag.

03

The Golf courses, Resorts, and the real estate boom, that proponents' talk about are pure speculation and definattly should not be used as justification for increased irrigation storage. Recreational Values, and Commercial ventures are truly pie in the sky. And, how can the operational objective to maintain Black Rock reservoir at full capacity be achieved, when the Columbia River Basin Management Water Management Program has already stated that withdrawals of water from the Columbia River in July and August would be prohibited. Are not July and August not only the prime Recreational months, as well as the months of highest irrigation demand? How could the Black Rock lake level be maintained with No water supply during the largest two months of demand?

04

I have one additional Concern, that of Groundwater movement to Hanford which could possibly wash contaminanents into the Columbia River. Proponents have offered the idea of sealing the reservoir bottom or construction of a collection system. Unfortunately the Dam is proposed to be built atop faults that are associated with the Yakima Fold Belt, in an area of relatively high earthquake potential. Surely the dam will be designed to withstand seismic activity, but what assurances will we have that an earthquake will not shift the rock structures under the earth and permit both leakage and increased seepage of groundwater.

05

06

J. Daniel Kinney Jr.

Comment IND-0089

3-29-08

To- B. Reclamation EPM.

The Black Rock storage facility is a very good solution for water storage. I urge you support the promotion of this, and complete it. Our vision in 50 years ahead cannot begin to focus on the benefit we create today. — Thank you

Columbia Basin farmer of 25 years
Burl L. Booker, Connell WA.

01

Comment IND-0090

From: Joseph Caggiano <jacagg@verizon.net>
To: <storagestudy@pn.usbr.gov>
Date: Mon, Mar 24, 2008 1:40 PM
Subject: Black Rock Reservoir

To Whom It May Concern:

I oppose the construction of Black Rock Dam and Reservoir. While it might benefit a few farmers, on balance, it would be a negative for the area. I oppose the reservoir on several grounds:

1. Financial

A projected return of $.16 per dollar invested is another way of saying that $.84 of every dollar will be lost. The economics do not make sense under any circumstances. I do not want the U.S. Government borrowing more money from China or other foreign government to fund a project of dubious value. Even if there are offsetting cost factors, such as creating a recreational lake with attendant homes and development, this would be private money and not affect the taxpayers share of the costs of this facility. The only possible benefit would be increased taxes for the jurisdictions affected. Not worth the risk and the potential effects on the ecosystem of the area, including the potential effects on anadromous fish, notably salmon.

2. Geological

One abutment of the reservoir would be built above a fault with a significantly thick zone of fault gouge. Not only does this present challenges for foundation stability and stability of the resulting reservoir, but reservoir induced seismicity is well known from other areas of the world. Given that this structure would be built on a fault and leakage from the reservoir could reach the fault zone, thereby reducing shear stress along the fault plane, the potential for reservoir-induced seismicity is increased. Should any slippage occur along the fault, further instability is possible, both to the dam and the impounded water. **01**

3. Hydrogeological

This is a leaky aquifer system, with estimates of thousands of gallons of potential water loss. Thus, the anticipated capacity of the reservoir might not be reached unless increased pumping from the Columbia River is allowed, and that is a matter of significance for river flow in the Columbia River from which the water to fill the reservoir would be extracted. Water flow in the Columbia River is regulated and extraction requires a permit. The leaky aquifer has the potential to raise the water table and hydrologic head beneath the 200 Areas of the Hanford Site where groundwater is contaminated from years of intentional and unintentional releases to the ground. Raising the water table would increase the hydrologic head and could accelerate the rate of contaminated groundwater toward the Columbia River--another potential negative consequence. Significant water losses from any reservoir from surface evaporation would accelerate the rate of potential water loss, leaving less water than currently anticipated that would be available for irrigation and other uses. **02** **03**

4. Modeling

Computer models of natural system processes are only as good as the assumptions, boundary conditions, and data that are used as input. The fact that very little characterization has been performed to accurately determine various geologic and hydrologic parameters indicates that the results of any modeling necessarily have high degrees of uncertainty because of the uncertainty that is inherent in the input data into the model. To rely on regional scale studies by the U.S.G.S. for input at the scale of this model is unacceptable, because the scale of the investigations and the scale of the model are entirely different.

04

For these reasons, I am opposed to further development of the Black Rock Dam and Reservoir. There has been sufficient study to indicate that Black Rock Dam and Reservoir would be a bad investment, so further taxpayer money should not be spent on gathering additional data.

Thank you for the opportunity to comment on this proposal.

Joseph A. Caggiano
WA State LHG #757
330 Snyder St.
Richland, WA 99354

Comment IND-0091

From: DAVID E ORTMAN <deortman@msn.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Mar 25, 2008 11:01 PM
Subject: RE: Yakima River Basin Storage Feasibility Study

Via Email to: <storagestudy@pn.usbr.gov>

March 24, 2008

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

RE: Yakima River Basin Storage Feasibility Study, Kittitas, Yakima and Benton Counties, Washington / Draft Planning Report and Environmental Impact Statement

Dear Bureau of Reclamation:

The following are comments on the above referenced feasibility study, draft planning report and environmental impact statement.

I join with others who are strongly opposed to Governor Gregoire=s efforts to construct massive new water storage dams for irrigators in eastern Washington. One project alone, the Black Rock reservoir, would cost over $6 billion dollars. Groundwater seepage from this project would threaten the already long overdue cleanup of the Hanford Nuclear Reservation. Other projects such as the Wymer site in the Yakima basin would likely cost over a half billion dollars if it were ever built. This project, and other sites in the Yakima Basin, has been studied and found to be perennial losers over the last thirty years at a time in which Yakima irrigation districts have yet to take water conservation seriously or pay off the existing Bureau of Reclamation=s Yakima River Basin Project. In addition, the feasibility study fails to analyze how the Wymer project could contribute to instream flows when the 1945 Consent Degree (see page 1-15) already allocates all existing water within the Yakima Basin. As the feasibility study states (page 1-17), the 1977 adjudication of the Yakima River system does not supersede the 1945 Consent Degree until a final judgment is entered. **01**

The five page summary of anadromous fish on pages 4-94 to 4-98 of the feasibility study fails miserably in disclosing the status of anadromous fish in both the Columbia and Yakima Rivers. A thorough review of anadromous fish under the Endangered Species Act should be provided. A thorough review of fish hatcheries in the Columbia and Yakima Rivers should also be provided. Congress passed the Yakima River Basin Enhancement Project in 1979. Since then, the Bureau of Reclamation has failed for nearly forty years to address issues of water-spreading, water-pricing, project repayment, surplus crops, or water conservation by senior irrigation districts in the Yakima Basin. The following information should be provided as part of any final planning **02**

report/FEIS:
- What are the Yakima River Bain irrigation districts growing? Surplus crops? Is the Kittitas Irrigation District still growing hay for the Japanese race horse industry?
- What percentage of crops grown in the Yakima River Basin are exported out of state or out of country? What is the estimated carbon footprint for transporting such crops out of state or out of country?
- What have the irrigation districts actually done on the ground since 1980 on water conservation? - What are the current costs to the irrigators of water (per acre feet) and electricity for pumping (are they still subsidized by BPA?)

03

- What would be the true costs of irrigated crops if they had to pay market rates for water and power? - Where are the irrigators at in terms of repayment for the existing Bureau of Reclamation Yakima River Basin Project?
- What is the water consumption from the Yakima River Basin wine industry? Are there any eastern Washington vineyards that do not rely on irrigation?

- What contribution could the Wenatchee National Forest and other state or private forest lands make to increasing Yakima River Basin water supply later in the year by managing such lands for snow pack retention instead of timber harvest?

04

- What is the estimated evaporation rate from the proposed water storage projects?

05

In summary, the Yakima River Basin Water Storage Feasibility Study is nothing more than an attempt by Governor Gregoire to buy off eastern Washington votes in exchange for environmentally damaging and wasteful mega water projects. The Black Rock and Wymer projects should not be constructed. The Bureau of Reclamation should pull the plug on any further dam project studies.
Sincerely,

David E. Ortman
Attorney-at-Law
7043 22nd Ave N.W.
Seattle, WA 98117

Comment IND-0092

From: Susan McDonald <ssmcdon@msn.com>
To: <storagestudy@pn.usbr.gov>
Date: Tue, Mar 25, 2008 10:47 PM
Subject: BLACK ROCK DAM

WE ARE VERY MUCH IN FAVOR OF THIS BLACK ROCK DAM. WATER SHORTAGES WILL ONLY CONTINUE, LAND USE FOR AGRICULTURE NEEDS WILL CONTINUALLY INCREASE, AND INSTALLATION COSTS WILL ONLY SOAR, THE MORE TIME THAT PASSES. 01

THE ENVIRONMENTALISTS IF THEY HAD THEIR WAY, WE WOULD ALL BE LIVING BACK IN THE DARK AGES. PEOPLE AND THEIR SURVIVAL NEEDS HAVE PRIORITY. THIS WILL CREATE A RECREATIONAL ENVIRONMENT, AS WELL AS A COZY HABITAT FOR WILDLIFE OF ALL KINDS. IT WILL BENEFIT HUNDREDS OF THOUSANDS, ENHANCE MANY COMMUNITIES, AND AGRICULTURE ENDEAVORS. GREAT IDEA TO GET MOVING ON.

STEVE/SUSAN MCDONALD
RICHLAND, WA

Comment IND-0093

From: <Skybradley10@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Mar 26, 2008 3:47 PM
Subject: Blackrock Dam

Dear Sirs:

I am opposed to the construction of the Blackrock Dam.

The proposed site is mostly undisturbed natural habitat. **01**

The cost to the taxpayer would be huge and the limited benefit will be to large corporate and agricultural businesses.

We do not need any crops which might be grown using the water because we can import them at much lower cost - if we stop subsidising American agriculture directly and through tariffs.

Farming is the most destructive use of land since the natural habitat is destroyed Additional water is bound to result in more large scale farming and loss
of wildlife and native plants.

We who actually live on the east side of the State can no longer accept it being treated as a sacrifice zone by the west side politicians.

The claimed recreational benefits must be deleted from the draft EIS since there are already many large slack water recreational areas near this site which
are very lightly used do to low population in the vicinity. **02**

Sincerely,

Schuyler L. Bradley
2015 Riverside Dr.
W. Richland, WA
99353

Comment IND-0094

From: "Mickie Chamness" <mickiec@charter.net>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Mar 26, 2008 10:34 PM
Subject: comments on Black Rock Reservoir

Mickie Chamness

4255 Tami St.

Richland, WA 99352

509-628-0709

I learned a lot at the public meeting, and appreciate getting copies of the EIS and the supporting technical reports on CD's to read. Thanks. I also appreciate the opportunity to voice my concerns.

1. I started my professional career as a geologist mapping faults on Umtanum Ridge near Priest Rapids Dam for the Department of Energy. The Untanum anticline in that area has a steeply dipping to overturned northern limb with a major south-dipping thrust fault that is exposed in the bedrock between the dam and the ridge front. Wells drilled for the Puget Power Sound and Light Skagit Hanford Nuclear Project encountered the fault. Each of the basalt layers in that steeply dipping northern limb slid past each other as the basalt folded, creating breccias that are often, but not always, cemented. These cemented breccias are actually more resistant to erosion, and form vertical walls parallel to the folded basalt layers. There is a secondary thrust fault (the Buck Thrust) 1/3 of the way up the north side of Umtanum Ridge just above Priest Rapids Dam that formed to accommodate deformation as the basalt layers not only tried to fold about a vertical plane along the folds axis, but also bend as that axis changed trend from east-west to slightly more northwest-southeast. My point is that the geology of Umtanum Ridge is complex, and drilling a tunnel through it will probably be more difficult than you anticipate. Drilling through both Umtanum and Yakima Ridges will probably be much more expensive than planned. I am concerned that any leakage of water through the lined tunnel could lubricate existing fault surfaces and allow them to reactivate. That could be minor faults that would disrupt the tunnel, or potentially larger faults such as the main Umtanum Thrust or possibly even the Buck Thrust where it extends back into the anticline core. There are springs on the ridge nearby, and you may encounter confined aquifers as well. And you'll definitely encounter Grande Ronde Basalt in the tunnels.

2. Seepage of water from the dam into the unconfined and confined (basalt) aquifers will move to the east, toward the Hanford Site. Increases in head based on the different model runs appears to range from 1 to 20 feet beneath the 200 West Area, that is the area of groundwater contamination on Hanford Site closest to the dam. Since discharges of water ceased on the Hanford

Site in the late 1980's, unconfined water levels have dropped as much as 20 feet. This has caused changes in the movement of contaminated groundwater, and may have left some contaminants "stranded" in the vadose zone. If head levels rise again, it will probably cause further changes in groundwater movement and may remobilize "stranded" contaminants.

3. It appears that water will also flow at the surface down Dry Creek and Cold Creek. There may also be the impacts to flows at Rattlesnake Springs on the Hanford Reach National Monument. Both cases will change the environment of the Hanford Reach National Monument. I wasn't able to find a discussion of this in any of the technical reports, and hope it has been evaluated.

01

4. The cost-benefit studies indicate that none of the joint alternatives are economically justified. I'm not sure I understand the mechanism for continuing with this proposal when the return on the dollar for the three alternatives are all below $0.30 and none are deemed economically justified. Does that mean the dam could be built anyway? Recreational uses and resort homes should not be used as part of the justification for such a large expense.

5. The no-action alternative and the state alternatives for enhanced water conservation and market-based allocation of water resources all provide significant water savings. I would like to see the no-action joint alternative selected, and some combination of the 3 state alternatives tried. At some point, we will have to recognize that water will be a limiting resource, and we should start preparing for that now but starting major conservation education efforts instead of waiting another 20 years when there is no more "excess" water to utilize.

Comment IND-0095

From: "deidre" <linkdal@televar.com>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Mar 26, 2008 3:28 PM
Subject: Wind Farm Comments

Deidre Link
560 Hawk Haven Rd.
Cle Elum, WA 98922
509-674-2420

March 26, 2008

RE: Yakima River Basin Draft Planning Report/EIS Comments

David Kaumheimer, Environmental Programs Manager

To Whom It May Concern,

Thank you for the opportunity to comment on this water storage proposal. I am well aware of the water issues/situation in the Yakima Basin: WHAT ARE YOU THINKING? Blackrock has more problems than you can shake a stick at. The cost/benefit is amazing. I guess, in D.C. with the right kind of 'spin', anything is possible. Blackrock is priced out at over 6 billion dollars and is going to benefit a small percentage of people.

Most of Eastern Washington is a DESERT. The dams that have been built have damaged fisheries, helped farmers and created hydroelectric power. Humans being human have done little to conserve water or control population growth. Consequently we are running out of surface water rights - have run out I guess. The idea to build a big bathtub and allow more uncontrolled growth makes little or no sense.

The study does not take the fact of climate change into account. If we get less rain/snow fall, 20, 30 50 or more years down the road how can this project know or guarantee there will be enough water to support the growth developers and businessmen want to create? **01**

Just say no to this project.

Regards,
Deidre Link

Comment IND-0096

From: Mary Peters <marylynne888@msn.com>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Mar 26, 2008 1:44 PM
Subject: Yakima River Storage Study, Draft Environmental Impact Statement

March 26, 2008

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

Dear Mr. Kaumheimer:

As a 32 year resident of Richland, Washington and neighbor of the Hanford Reservation, I am concerned over the proposed Black Rock Dam and Reservoir/Yakima River Basin Water Storage Facility.

Having read a summary of the feasibility study, I would like you to consider it a study and not a final nor correct sets of facts. Some of the maps, the listing of Franklin County as part of the study and the evergreen trees that are pictured makes me question if anyone has visited this area. Yes, we are the evergreen state and at the very western edge of this project there are evergreens and mountains, however, the main part of the area impacted by the dam and reservoir is a shrub-steppe, treeless, high desert.

Some of the figures in the study don't add up. The amount of water that will be removed from the river at a critical spawning time for the salmon is a concern of mine. Also will the volume of the water after spawning be great enough to wash the silt out of the spawning redds? **01**

Why was the Environmental Impact Study completed before the Department of Energy Study? How much electricity will be needed for this project? Where will it come from? Will I experience brown-outs? Who will pay for it?

What about the earthquake factor? There is a fault line near Rattlesnake Mountain. How big of an earthquake is 'too big'? What about slippage? Sand? Clay? We have them both and the size of this structure is huge even compared to Grand Coulee Dam (the "largest structure by the hand of man"..as the song says). Will the land stand up to the stresses? **02**

As you, and others 'back East', read this study, there is a large emphasis on Recreational Benefits. There is a listing of annual visitors to some lakes, rivers and reservoirs in our state. Many of these are at the western end of the Yakima River Basin, with trees. The figure for visits to these areas is 108,000 visitors. The study projects year 1- 250,000 and after 20 years 700,000 visitors. Yike! Before I moved here Desertaire sold lots along the Columbia River and tauted it as the perfect vacation home area. In over 30 years it has never taken off or developed into anything large or well populated. A high-end resort at Black Rock? I don't think so. What about the lake itself? It will fluctuate and have the 'bathtub ring' scenario. That is not aesthethically pleasing. One map shows 4 miles of mud at some **03**

times during the year. The drop off into the reservoir is very sheer. This is not conducive to swimming. boating, hiking or viewing.

04

As a Richland resident ,downstream from the Hanford Area, I am extremely concerned about ground water movement and contamination. This is a huge project. Large amounts of earth and then water will be moved. As water leaks out of the reservoir, it will move towards the contaminated area of the Hanford Reservation. What measures will be put in place so contaminates do not reach the Columbia River?

What is the rush with the project? Please take time to reevaluate this first study. Please allow for an Independent Review.

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

Sincerely,

Mary Peters

508 Fuller Street
Richland, WA 99354

Marylynne888@msn.com

Comment IND-0097

From: Gayle Robinson <gayle.robinson@hotmail.com>
To: <storagestudy@pn.usbr.gov>
Date: Wed, Mar 26, 2008 12:20 PM
Subject: BLACK ROCK DAM

The Black Rock Dam should definitely be constructed. It would be a win-win situation. It would create a habitat for wildlife, a recreational area, and above all, it would help to insure water for agricultural use. As the demand for more food products increases, we will need such structures in place to keep up with the demand. Otherwise, if there are shortages of food, prices on food items will go up, and we will be in as bad a shape for food as we are for gasoline. We should not let environmentalists rule to the point that average people suffer. Also, if the building of the dam is put off, the construction prices will be much higher at a later date. **01**

Gayle Robinson
West Richland, WA

Comment IND-0098

01

To Area Manager 3-24-08

I would like to thank all of you who have worked on this proposal. This is the best project for the area I have seen presented in 30 years. The potential to improve fish habitat & water use in the Yakima to Prosser area are unbeatable. Also the possible step in the Flip-Flop program makes a lot of sense

Sincerely
Hal Shidler
YTID grower

Received in Mailroom
UCAO
MAR 26 2008
FO
Yakima, Washington

MANY GLACIER HOTEL
GLACIER NATIONAL PARK
MONTANA
Referred to as the "Showplace of the Rockies" opened on July 4, 1915. Local timber and native stone, taken from the Many Glacier valley, were used in its construction. Many Glacier boasts a true Swiss atmosphere - from the Alpine beauty that surrounds it to the decor within.

Comment IND-0099

RECLAMATION
Managing Water in the West

C A O MAR 26 2008 F O
Yakima, Washington

COMMENT FORM

Yakima River Basin Water Storage Feasibility Study Draft PR/EIS

Name (please print legibly): Richard Vorenkamp M.D	
Organization: Retired	
Mailing Address: 836 N 48th Ave	
City, State, and Zip Code: Yakima Wash 98908	
Telephone: 509 966 1033	**E-mail:** vorenkamp@charter.net

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:

Water storage options based on Yakima River flows are not feasible since we know that droughts can reduce their value significantly.

Despite its cost a Black Rock reservoir could be extremely valuable for many reasons but only if it can be built without endangering down river communities

01

(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)

from radioactive plumes. Decisions to build should be based on seepage studies being done by DOE. the results of which are pending.

Why not enlarge the Bumping Lake reservoir? 02

R Vaentyn MD.

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.

Comment IND-0100

From: <PLCRJC@aol.com>
To: <storagestudy@pn.usbr.gov>
Date: Thu, Mar 27, 2008 8:28 PM
Subject: Black Rock Reservoir

As this years' spring runoff begins, wouldn't it be great if that extra water was going into the Black Rock Reservoir instead of being flushed down the Columbia, with no benefit to man nor beast? 01

It is high time that we started actually doing something to address the water crisis that we are facing in our region. It is high time that we quit being tangled up in our underwear with more studies and what-ifs, and start helping ourselves. It is high time for Black Rock!

Bob Cummings
4321 Mt Challenger Ct
West Richland WA 99353
509-628-2878 home
509-551-7374 cell

Comment IND-0101

March 23, 2008

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

Re: **BLACK ROCK DAM**

Dear Sir or Madam:

We were shocked to learn that the State of Washington is proposing the building of a dam, the cost of which is approximately $6.7 BILLION Dollars, which would be located just 5 miles above the Hanford Nuclear Reservation, which is an earthquake prone area. Surely, there is some mistake here.

All parties are aware, that should there be an earthquake, it could cause a washing of waters across the Hanford Nuclear Reservation releasing radioactive waste from the Quad Cities area to Portland, and beyond. As you are also aware, there are currently plumes of radioactive waste migrating from Hanford to the Columbia River. Any dam seepage from Black Rock would accelerate this tragedy. 01 02

We have also learned that this dam would return 16 cents for every dollar spent to build and operate it. These facts come from the U. S. Bureau of Reclamation and the Washington Department of Ecology.

Is this an example of wise use of tax payer dollars? We do not think so.

We understand that there are two other dam items under consideration (Wymer Dam, and Wymer Dam pump exchange). These fall in the same category of money wasted.

We look forward to learning that this "folly", as well as the other two, has been removed from the taxpayers table, never to be heard of again. Thank you.

Very truly yours,

Joseph F. and Diane M. Williams

Joseph F. and Diane M. Williams
3880 Stikes Drive, S.E.
Lacey, WA 98503

Cc: Governor Chris Gregoire
Office of the Governor
P. O. Box 40002
Olympia, WA 98504-0002

Comment IND-0102

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

SUBJECT: YAKIMA STORAGE STUDY, DRAFT ENVIRONMENTAL IMPACT STATEMENT

Dear Mr. Kaumheimer:

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

First of all, this "study" does not meet the standards of a true Environmental Impact Study. It does not address concerns regarding affects on migrating salmon. It appears that you are mixing Yakima and Columbia River waters, which will confuse the fish. Your greatest drawdown of Columbia River water is in September and October, during the major migration of salmon. This will be disastrous to our fish. **01**

In the paragraph "Large Dam Height," it states that the "design would need to be independently reviewed by an expert board of consultants." Why has this not been done and included in the study? Why have you not waited until the Department of Energy completes their study on the effects of increased ground water seepage which would move contamination to the Columbia River? This would be a catastrophic event that could not be cured. It must be prevented! **02**

I also have concerns about the geology of the dam placement. You are planning to build on a trust fault in an earthquake zone and against a landslide prone Horse thief Mountain. It may be stable now, but what happens when a great deal of water of applied? **03**

This project will consume vast amounts of electricity and produce none. Who pays for this? We taxpayers? As for "recreational" aspects, what mountain lake, with forests on the banks, did you use as your picture for the "….River Recreation Survey Report of Findings?" Most of the summer, there will be only mudflats shown on the banks. That is not very appealing. If this is a real estate developers dream, they should pay to build and operate it. I certainly don't want my taxes creating profits for the real estate industry!

Finally, I am appalled that you spent 18 million dollars to prepare and produce this Feasibility document (IT IS NOT AN EIS) that does not justify the $4 billion cost to benefit very few. Wise management of water supplies will provide for the farmers to produce needed crops.

04

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

Sincerely,

Charlotte Reep March 28, 2008

8205 Sunset Lane; Pasco, WA 99301

Comment IND-0103

From: Nancy and Richard Rust <ndrust@comcast.net>
To: <storagestudy@pn.usbr.gov>
Date: Fri, Mar 28, 2008 9:10 PM
Subject: Black Rock Dam

There are lots of reasons why the Black Rock Dam should not be built. I thought we had decided against it years ago.

The facts are there:

It would be built on unstable geology, on a fault and subject to earthquake damage. 01

There would be a threat to the nuclear reservation if it should fail. 02

There would be a drain on energy needed elsewhere as water is pumped from the Columbia. 03

Water in the Columbia is already spoken for. 04

It would be a bad use of taxpayers dollars. Studies have shown it would yield $0.16 on the dollar.

Why are we still talking about it? Because someone ones to build a resort? It that supposed to pay for it? If so that's voodoo economics.

Please stop subsidizing water. Conserve instead!

Nancy Rust
18747 Ridgefield Rd NW
Shoreline WA 98177

Comment IND-0104

March 29, 2008

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

RE: Yakima River Basin Water Storage Feasibility Study and E.I.S.

Dear Mr. Kaumhelmer:

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

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

The current E.I.S./ Feasibility Study should be ~~read~~ considered only as a feasibility study. It is not adequate to meet

01

01

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

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

Sincerely;

Ann Aagaard
16524-104th Ave. N.E.
Bothell, WA. 98011

Comment IND-0105

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

David Kaumheimer:

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

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

01
02
03
04

Sincerely,
Cherie Baudrand
Teacher, Kennewick

Comment IND-0106

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

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

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

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

01

Sincerely,

Jeff Marty
1127 Foxtrot Lane
Richland, WA 99352

Comment IND-0107

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

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

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

01

ADVANTAGES:

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

DISADVANTAGES

* No momentum.

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

...Pat Tucker, Paterson WA.

Comment IND-0108

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

March 29, 2008

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

Dear Mr. Kaumheimer:

Thank you for the opportunity to comment on the Draft EIS for the Yakima River Basin Water Storage Feasibility Study. 01

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

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

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

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

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

Kind regards,

David Van Cleve
272 Mapleway Road
Selah, WA 98942

Comment IND-0109

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

March 29, 2008

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

Dear Mr. Kaumheimer:

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

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

As a taxpayer I am greatly offended by the potential use of my tax dollars to fund a project with a benefit cost ratio (per the recent EIS) of sixteen cents to the dollar. As I stated in my comments on the scoping document, my husband and I own six + acres serviced by the Naches Selah Irrigation District. Other than what I now pay, I do not know what these proposals would cost me if built. I was also hoping for clarity on items such as who would pay for annual costs (such as the electricity needed on an annual basis to pump water from the Columbia upstream behind the proposed Black Rock dam). **01**

It is wrong to put forth an environmental impact statement on this proposed dam without knowing the potential impacts of seepage from the proposed dam on contaminated groundwater under or near the Hanford Nuclear Reservation. **02**

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

Kind regards,

Margie Van Cleve
272 Mapleway Road
Selah WA 98942

Comment IND-0110

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

Forwarded message showing my support for the Blackrock Project.

Hello Senator Murray, I recently attended a real estate seminar in Kennewick, Wa, in which I learned of the Black Rock Project. This is a proposed reservoir pumping water from the Columbia river into the Black Rock valley, during peak flows of the Columbia. This would provide a reliable source of water for irrigation, and a constant, steady flow of water for the Yakima river, improvinghabitat for salmon and other fish species. Presently, 10,000 salmon return to spawn in the Yakima each year. Biologists/scientists estimate that 200,000 could return with improved stream flow, and habitat improvements. Several projects are planned around the reservoir,including a world-class fishing/golf resort, and 2 planned housing developments. Being a realtor in the Tri-Cities, I could see the benefits for myself, but for the community as well.According to scientists, the reservoir would resolve water issues in the area for the next 100 to 150 years. Engineers have indicated that any reservoir has a percentage of leakage, and Black Rock would be no exception. But, because it would be a slow leakage, it would have the effect of restoring underground aquifers in the area. I see this as a win-win situation for the area and the state, resulting in increased tourism and revenues for the region, not to mention the jobs provided in building the dam, whick would require 3 years to build, at an estimated cost of 3 to 4 billion. I, as a realtor, strongly support this project, and urge you to do the same. Thank you for your time and consideration. Take care. Best Regards,Steve VestRealtor ReMax First Advantage1110 N Center Pkwy Ste AKennewick, Wa 99336Office: 509-736-3344Fax: 509-735-9755Cell: 509-378-5597TollFree:800-736-2964email: stevevest@remax.netoff website: www.FirstAdvantageInc.com

01

Comment IND-0111

March 24, 2008

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

Dear Mr. Kaumheimer:

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

My first question stems from the fact that the proposed dam would be located on a thrust fault. What is the basis for determining that the risk of earthquakes or landslides is inconsequential? **01**

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

Another question is associated with the possible impact of leakages on groundwater flow that could increase the flow rate of contaminants from the Hanford area into the Columbia River. Since the study by DOE on this potential impact has not yet been finished, how have you been able to address this concern in the EIS? **02**

I am also concerned about the cost to benefit ratio associated with the proposed dam. The idea of this area becoming a major recreational facility which would somehow mitigate the project cost seems at odds with other similar developments in Eastern Washington, e.g., Desert Aire. What is the basis for this optimistic projection of use of the proposed dam as a recreational facility? **03** What is the basis of your estimation of the cost in electrical power to pump water to the project? How does this compare to the current cost of electrical power and projected future costs? **04** What evaporation and leakage rates have you used in your calculations and on what are they based? What impact will the pumping have on the power supply in the project area and what is the basis for this determination? What is the probability that BPA will be forced to buy power from outside the region at a higher rate and how will this affect the cost to benefit ratio? **05**

I am looking forward to your responses.

Sincerely,

Debbie Berkowitz

Debbie Berkowitz

Comment IND-0112

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

To Whom it man Concern;
It's ridiculous to have this issue still in the planning process and only further illustrates that there is no conscience when spending public money. I never planned on having to comment on the feasibility of this project because it is so ill conceived and fraught with environmental and technical issues that it should have died long ago. But after spending hundreds of thousands of taxpayer dollars we have promoted a project that will never stand the scrutiny of a thourogh Environmental Impact Statement because of the ecological and cultural concerns and very likely won't stand seismic concerns. What is point of that? You can not inundate the area with water and not create problems for the wildlife that inhabits the area, and not create major ground water concerns and you can not remove large volumes of water from the Columbia without creating problems for already endangered salmon. It's a plan doomed to failure and so please let it die. I agree that it could be a
boon to agricultural and recreation interests and if those that benefitted from it were the ones financing it, it might seem somewhat palatible but it's another case of minority interests trying to get a publically financed windfall. There are other more pressing needs, please let us spend our rescources and efforts in resolving problems associated with them.

01

Regards

George Bowerman

Comment IND-0113

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

Dear Mr. Kaumheimer,

The Yakima River Basin Water Storage Feasibility Study is unacceptable as an EIS because it lacks sufficient information on the impacts of the project. One major flaw is the absence of the Department of Energy report on the results of a study of possible impacts of seepage from Black Rock on Hanford ground water. Without this critical information, this report cannot be an EIS. **01**

Another example is that the study raises the issue of stress faults, landslides and potential for earthquake but does not adequately address them. **02**

Yet another example, on page 35 under Large Dam Height, the report states that such a design would need to be independently reviewed by an expert board of consultants, but such independent review has not been done. **03**

The study acknowedges a benefit of 16 cents on the dollar. This is a totally unacceptable benefit. **04**

The report misrepresents Black Rock as if it would be a mountain lake, and greatly over estimates the visitor traffic and revenue. In fact the reservior will be drawn down and be a mud flat in an arid area for a part of the year. **05**

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

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

Comment IND-0114

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

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

01

Comment IND-0115

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

Dear USBR staff,

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

Thank you,
Barbara Christensen
3105 Plymouth Dr
Bellingham WA 98225

*P**ROBLEMS WITH BLACK ROCK DAM*

o *Unstable Geology*

The Black Rock dam would be built on a thrust fault in an earthquake zone, in an area prone

to landslides. There is risk for failure of the dam due to seismic activity. The Bureau says

these problems can be engineered away, but we disagree. Even if we had the money to pay
for safeguards, there would still be substantial risk.

01

o *Hanford Contamination*

Groundwater seepage from the bottom of the Black Rock reservoir will head straight to the

Hanford Nuclear Reservation, saturating and re-suspending contaminants that the public

has paid billions of dollars to isolate. These toxic and radioactive materials would then seep
into the Columbia River, including the Hanford Reach. This is an unacceptable impact!

02

o *Regional Energy Drain*

Black Rock would require pumping of water uphill (1400 feet) from the Columbia River.

This would be a substantial energy user in the Pacific Northwest, both in terms of power for

pumping and foregone energy production at five downstream dams. We need that energy

03

for other, more productive uses. Note: although some energy could be re-captured as the

water is pumped down into the Yakima Valley, it is vastly less than what would be required

to pump the water uphill in the first place. Some supporters claim Black Rock could be

used as a pump-storage facility, but the economics don't work B water cannot

simultaneously be pumped back and forth from the Columbia River, sent down into the
Yakima Valley for irrigation.

03

o *Water Not Available from the Columbia River*

Black Rock reservoir would be huge. Water in the Columbia River is already spoken for by

hydropower, irrigation, and to maintain instream flows for fisheries. Ironically, it is the U.S.

Bureau of Reclamation's own Columbia Basin Project that has the biggest set of water rights

B only half used at this point. Water is not available from the Columbia River to fill the
Black Rock reservoir.

04

o *Outrageously Bad Economics !*

Sixteen cents on the dollar B need we say more? Under federal law, the economic analysis

indicates that the Black Rock project cannot be built.

o Regional Benefits Are Private, Not Public

Black Rock supporters say that a master planned development could be built on the shores

of the reservoir, creating regional benefits. Not true. First, Black Rock would be an

operating reservoir with frequent bathtub rings. Folks with property at Banks Lake and

Dworshak Reservoir can tell you this is not an attractive option. Second, is the Black Rock

Valley really an ideal place to put a resort? If the real estate developers believe that it is,

they should pay to build and operate the reservoir. It is not the obligation of federal

taxpayers to create profits for the real estate industry.

*'YAKIMA VALLEY WATER SUPPLY SOLUTIONS
*

o *Conservation & Pricing*

Aggressive, mandatory water conservation that applies to all water rights and water users is

the first step toward sensible water management. Second, water should be priced

according to its real value. Stop subsidizing water supply and farmers will grow crops that
reflect the true value of the water.

05

o *Fish Passage at Existing Dams*

The first step for improving fisheries in the Yakima basin is to open up habitat in the

mountains. This means installing passage at the Bureau's storage dams (Keechelus,

Kachess, Cle Elum). Riparian habitat and water quality improvements are needed too. Yes,

the Yakima River does need more water in certain reaches at certain times of year.
However, the public does not need to build a multi-billion dollar dam to provide that water.

06

o *Watershed Restoration*

Healthy forests and floodplains provide natural water storage. The state and national

forests of the Yakima basin must be managed to maximize their water storage capacity.

Similarly, the Yakima River must be re-connected to its floodplain. These actions will

capture and hold water runoff, help fill reservoirs and maintain instream flows for fisheries.

--
BRC

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

Comment IND-0116

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

I find many statements in different sections conflict such as dam height and underground seepage (dam is 700 to 800ft?; seepage to Hanford site drainage is 31 cu. ft. or 51 cu. ft.). **01**

Your estimate of ground water seepage to the Hanford Site is unacceptable due to possible movement of contamination and water table affect. **02**

Two reports are due out soon one from DOE and another on earth quake evaluation on the Upper Columbia River Dams, neither of these are referenced or acknowledged. **03**

This is not an EIS without supportable data. On the Hanford Site the EIS must include worth case scenario of catastrophic occurrences (floods, ground water contamination). **04**

The recreational value is not as I see it, when the waterline vary 60 to 100 feet seasonally at peak recreation time value is lost. **05**

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

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

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

Comment PUB-0001

Comments portion of Public Hearings Summary

Economic analysis of Black Rock Alternative is incomplete/ incorrect/outdated

- Economic analysis does not, and the final PR/EIS should, take into account the following: **01**
    - Benefits of recreational development above the waterline, (estimated $3.5 billion in Mitchell Nelson study commissioned by YBSA);
    - Benefits to salmon recovery (estimated $2.6 billion by YBSA), including Yakama's cultural values for salmon recovery,
    - Economic benefits to the area of constructing Black Rock,
    - Benefits of eliminating agricultural losses resulting from droughts
    - Benefits resulting from amelioration of Treaty rights
    - Economic benefits resulting from recreation, tourism, and commercial development; and generation of energy.
    - Effects of climate change.

Amber Hansen, Port of Sunnyside; David McFadden, Yakima County Development Association; Doug Palachuk; Carpenter Farms; Michael Morrisette, Greater Yakima Chamber of Commerce; Steven George, Hop and Dairy Association; Thomas Allen, Joel Freudenthal, Yakima County Public Services; Gary Lukehart, YBSA; Warren Dickman, YBSA; Ken Nelson, Lower Yakima Valley, Yakima Valley Tri-Cities Association, Washington Association of Realtors; Tom Carpenter; Arnold Martin, Port of Sunnyside; Phil Williams; Glenn Clark; Art King, YBSA; Pete Gier; Harlan Hall; Charlie de la Chapelle, YBSA

- Need future value of Black Rock (not using historical values for commodities) **02**

Charlie de la Chapelle, YBSA

- The methodology used to determine the cost-benefit ratio is flawed. All factors related to the cost of the project must be assigned monetary values to create an accurate ratio, e.g., decision to use offstream storage facilities, creation of more normative flows; decision to not bring new acreage into production; creation of a reliable water supply, not a new supply. **03**

Mike Leita, Yakima County; Rick Glenn, AmericanWest Bank;

- Rationale of no less than 70 percent proration is not included in the economic analysis. **04**

Joel Freudenthal, Yakima County Public Services;

- Economic analysis misses the point, premise, and legislative intent. **05**

Joel Freudenthal, Yakima County Public Services;

- Economic analysis is inconsistent with *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&Gs).* **06**

Joel Freudenthal, Yakima County Public Services;

- The multiplier effect for the basin is 2-5; those benefits were not included in the study. **07**

Arnold Martin, Port of Sunnyside

- OSE and EQ accounts do not reflect potential mitigation for seepage from the Hanford Site. **08**

Terry Keenhan, Yakima County

- Was loss of 20,000 acres of orchard in 1 year accounted for in the economic analysis? **09**

Jim Amundson

Black Rock Alternative is the appropriate alternative

- Black Rock Alternative is the only alternative that provides sufficient water for fish passage and drought relieft; additional storage is needed; water conservation and other methods are inadequate. **10**

David McFadden, Yakima County Development Association; Jim Breedlove; Steve George, Hop and Dairy Industries; Michael Morrisette, Greater Yakima Chamber of Commerce; Arnold Martin, Sunnyside Port District; Donald Leippert; Rick Glenn, AmericanWest Bank; Tom Carpenter; Phil Williams; Pete Gier; Harlan Hall; Charlie de la Chapelle, YBSA; Brad Toner;

- Black Rock Alternative is the only alternative that meets the criteria set forth by Congress. **11**

Amber Hansen, Port of Sunnyside; Michael Morrisette, Greater Yakima Chamber of Commerce; Arnold Martin, Sunnyside Port District; Rick Glenn, AmericanWest Bank; David Rupe; Charlie de la Chapelle, YBSA; Brad Toner;

- No Action Alternative is not acceptable. **12**

Mel Wagner, Rockey Marshall, YBSA; Michael Morrisette, Greater Yakima Chamber of Commerce; Amber Hansen, Port of Sunnyside; David McFadden, Yakima County Development Association; Chris Nass, Yakima Association of Realtors; Jim Sewell, Port of Grandview; Ken Nelson, Lower Yakima Valley, Tri-Cities Association; Washington Association of Realtors; Pete Gier; Dave Rupe; Charlie de la Chapelle, YBSA; Brad Toner.

Insufficient alternatives evaluated

- Bumping Lake enlargement should have been considered. **13**

Rick Dieker

- Need analysis of floodplain and reach restoration and combined effects of State alternatives. **14**

Michael Garrity, American Rivers

- Pipeline from Columbia River to Sunnyside would be adequate to fill Roza Canal and should be considered as an interim solution. **15**

Rick Lamoureux;

Ecology should have looked at other alternatives

- Alternative to groundwater for agricultural users in Odessa **16**
- Sources of water supply for pending water right applications **17**
- New uninterruptible water supply for holders of interruptible water rights on the Columbia River mainstem **18**

Joel Freudenthal, Yakima County Public Services

Climate change was not evaluated sufficiently

- The effect of climate change was not evaluated sufficiently. **19**

Terry Keenhan, Yakima County; Doug Palachuk, Carpenter Farms; Arnold Martin, Port of Sunnyside; David Rupe;

Black Rock Alternative is not the appropriate alternative/not fully evaluated

- It is not economically viable; benefit-cost ratio provided in Draft PR/EIS is too optimistic. **20**

John Osborn, CELP; Rick Dieker; Vince Panesko

- It is too costly **21**

Michael Garrity, American Rivers; John Osborn, CELP; Mike Lilga; Carol Moser;

- It is not energy-efficient. **22**

John Osborn, CELP; Dan Kinney; Rick Lamoureux;

- It provides too little benefit to fish. **23**

Michael Garrity, American Rivers;

- How will added storage volume be used in years that it is not needed? Will you open more land than in times of drought will require additional water? **24**

Jack Dawson

- Increased recreational and commercial development is speculation and should not be used as justification for Black Rock Alternative. **25**

Dan Kinney

- Concerned that development based on the water in Black Rock Reservoir and the M&I water use would become "drivers" of Black Rock in the future, and the fluctuating water levels would not be good for associated recreational and commercial development. **26**

Mickey Chamness;

- Black Rock Dam is oversized (larger than Grand Coulee Dam). **27**

Dan Kinney; Mike Lilga; Bob Schweighardt

- Failure of a dam this size would be catastrophic; further engineering studies are needed. **28**

Jim Stoffels; Rick Leaumont, Audubon Society; Bob Schweighardt; Mike Luzzo

- Ecology of large dams needs to be evaluated. **29**

Dana Ward, Audubon Society;

- Black Rock Reservoir would be dry in the summertime. **30**

Carol Moser;

- Uncertain where water to fill Black Rock Reservoir will come from. **31**

John Osborn, CELP;

- Enormous evapotranspiration on reservoir will increase humidity in the area. **32**

Carol Moser; Rick Lamoureux; Dana Ward, Audubon Society;

- Black Rock Alternative will replenish the groundwater in the area. **33**

Donald Leippert; Arnold Martin, Port of Sunnyside;

- Seepage from Black Rock reservoir would mobilize contaminated groundwater beneath the Hanford Site and carry it to the Columbia River. New DOE model should be used to evaluate the effects. DOE's study should be published and reviewed before decision is made. **34**

Michael Garrity, American Rivers; John Osborn, CELP; Mike Lilga; Rick Leaumont, Audubon Society; John Lucas; Carol Moser; Rick Lamoureux;

Mickey Chamness; Jack Dawson; Vince Panesko; Duane Faletti; Mike Luzzo; Carole Byrd.

- Effects on groundwater levels need to be evaluated. **35**

Dana Ward, Audubon Society;

- Geology beneath damsite is unstable: There is a thrust fault beneath the proposed damsite and is also prone to landslides. **36**

John Osborn, CELP; Walter George; Mike Lilga; Rick Leaumont, Audubon Society; Carol Moser; Mickey Chamness; Jack Dawson; Bob Schweighardt; Mike Luzzo; Carole Byrd; Jack Dawson

- Reservoir will not provide quality drinking water. **37**

Vince Panesko

- Concern about effect on fish of mixing Columbia River and Yakima River water (false attraction). **38**

Carole Byrd; Jack Dawson Rick Leaumont, Audubon Society

- Concern about interruption of migratory wildlife corridor between the Hanford Reach National Monument and the Yakima Firing Range. **39**

Rick Leaumont, Audubon Society; Dana Ward, Audubon Society; John Lucas;

- Effect on shrub-steppe corridor needs to be evaluated. **40**

Dana Ward, Audubon Society;

- Analyses are not sufficient for an EIS. **41**

Rick Leaumont, Audubon Society; Dana Ward, Audubon Society; John Lucas; Jack Dawson

- Wymer Dam and Reservoir is more feasible than Black Rock Alternative. **42**

Rick Dieker;

If a decision is made to proceed with planning for Black Rock project, we strongly recommend adoption of the following measures:

- Consider the PR/EIS as a feasibility study only and develop a new comprehensive Environmental Impact Statement. **43**
- Passage of Federal and State legislation to transfer water rights to fish and wildlife (held in trust by the U.S. Fish and Wildlife Service, U.S. Marine Fisheries Service, and Washington Department of Fish and Wildlife. **44**
- Acquire lands along the Columbia River that will unite the National Monument and the Firing Center as well as a corridor along the ridgeline to Yakima – add these lands to the Monument. **45**
- Project waters mixed with Columbia River water should be diverted into wetlands established in the Yakima Valley – to prevent their introduction into the Yakima River. **46**

- Establish dikes and flood in Black Rock reservoir so that shallow wetlands remain as reservoir waters are drawn down. Will benefit fish, wildlife, recreation, and view shed. **47**
- Fully mitigate the impacts to fish, wildlife, native plans for water diverted out of the Columbia River for the project. **48**

Rick Leaumont, Audubon Society

Table 3 – Responses to individual comments.

Indian Tribes

TRB-0001-01	Sections 4.20 and 4.21.2 recognize the Yakima River Basin Water Storage Feasibility Study (Storage Study) alternatives are on traditional lands of members and bands who comprise the Yakama Nation, and that actions to identify, evaluate, and possibly mitigate project impacts will follow the National Historic Preservation Act, as amended (NHPA), consultation process.
TRB-0001-02	See response to comment TRB-0001-01.
TRB-0001-03	See response to comment TRB-0001-01.
TRB-0001-04	See response to comment TRB-0001-01.
TRB-0001-05	Section 4.20.2.1 conveys an awareness of a range of historic resources that are discoverable by a Class III survey of a Preferred Alternative, and consultation with Tribes on the evaluation and mitigative measures will be done. Mitigation measures on significant properties are specified in a Memorandum of Agreement (MOA) between the State Historic Preservation Officer, Advisory Council on Historic Preservation, and Tribes.
TRB-0001-06	See response to comment TRB-0001-05.
TRB-0001-07	See response to comment TRB-0001-05; however, Federal agencies are limited under the NHPA to mitigate specific historic property types to benefit the greater public good.
TRB-0001-08	See response to comment TRB-0001-05.
TRB-0001-09	The referenced paragraph has been revised to convey that the introduction of the horse created greater opportunities for cultural change and adaptations throughout the range in which it was adopted.
TRB-0001-10	Comment noted. The cultural resources overview in *A High-Level Class 1 Inventory of Cultural Resources for the Yakima River Basin Storage Study in Benton, Kittitas, and Yakima Counties, Washington* (Reclamation, 2008h) (TS-YSS-24) presents a more detailed context for the complicated human history in the area covered by the Draft Planning Report/Environmental Impact Statement (PR/EIS); however, it relies on existing sources and is not intended to clarify questions or issues of academic interest.
TRB-0001-11	See response to comment TRB-0001-10. Research questions contained in the comment are certainly subject to further exploration if, and when, a Class III survey is done for a preferred alternative and mitigation measures are developed in consultation with the Yakama Nation.
TRB-0001-12	In the context of the NHPA, mitigation refers to historic properties, typically a cultural site, rather than to a Tribe. Consequently, monetary consideration is not a typical mitigation measure.
TRB-0001-13	The second and third bulleted points in section 4.20.2.4 have been revised to remove any ambiguity that consultation with Tribes is optional.
TRB-0001-14	See response to comment TRB-0001-13. In addition, Reclamation does not consider an MOA to advance mitigation of historic properties as a regulatory action in the context of Executive Order (EO) 13175. Rather, the NHPA provides sufficient direction to agencies to consult with Tribes where historic properties are concerned.
TRB-0001-15	Section 4.20.2.5 has been clarified to acknowledge that archeological means is not the only way to address impacts to the spectrum of values attributed to a historic property.
TRB-0001-16	Section 4.22.1 notes that the lands in both the Wymer and Black Rock storage reservoir alternatives are mainly in private ownership; private lands outside

Table 3 – Responses to individual comments.

Indian Tribes

	Reservation boundaries generally do not harbor Indian Trust Assets (ITAs), although there are resource-specific exceptions (certain minerals, for example).
TRB-0001-17	This comment is in reference to Reclamation's *Modeling Groundwater Hydrologic Impacts of the Potential Black Rock Reservoir* (Reclamation, 2007a) (TS-YSS-19). Comment noted. Additional investigations were proposed and would be required prior to final design of the project.
TRB-0001-18	This comment is in reference to TS-YSS-19. Specific locations of aggregate and other construction materials for either alternative in the Draft PR/EIS have not been identified. It may be possible to find these materials in places outside of aquatic habitats to prevent any adverse impacts to that habitat. Reclamation will adhere to all laws, rules, and policies regarding working in aquatic habitats.
TRB-0001-19	This comment is in reference to TS-YSS-19. Comment noted. Additional hydrogeologic investigations have been proposed and would be required to reduce model uncertainty prior to final design of the project.
TRB-0001-20	This comment is in reference to TS-YSS-19. Additional analysis has been included in the Final PR/EIS in Section 2.4.1.1 concerning seepage mitigation features and their efficacy. The purpose of these features is to reduce and capture seepage from the potential Black Rock reservoir and prevent significant impacts to the Hanford Nuclear Reservation (Hanford Site). The Department of Energy (DOE) is studying and modeling the fate of contaminants at the Hanford Site under various hydrologic conditions, including the possible addition of seepage from the Black Rock reservoir.
TRB-0001-21	This comment is in reference to TS-YSS-19. The limited testing completed at the site was done at locations considered significant for defining the depth and characteristics of the Horsethief Mountain fault/south dam abutment and in the reservoir basin. As noted in this comment, there is a need for additional investigations to characterize many other locations within the project area. See section 2.2.3.1 in the Final PR/EIS for proposed further investigations.
TRB-0001-22	This comment is in reference to TS-YSS-19. A hydrogeologic testing and characterization program has been proposed and only the first of many sites were tested as part of the initial assessment work. Additional investigations would be required prior to final design of the project. See section 2.2.3.1 in the Final PR/EIS for proposed further investigations.
TRB-0001-23	This comment is in reference to TS-YSS-19. See response to comment TRB-0001-20.
TRB-0001-24	This comment is in reference to TS-YSS-19. Increased hydrogeologic data from the proper locations would reduce uncertainty in the model results. Investigations to provide those data have been proposed and would be required prior to final design of the project. See section 2.2.3.1 in the Final PR/EIS for proposed further investigations.
TRB-0001-25	This comment is in reference to TS-YSS-19. The hydraulic conductivity (K) values obtained from onsite field testing are used, along with other measured K values from locations within the model domain and from the Hanford Site, to provide a range of values that are considered reasonable and representative. Each model layer is represented by many different K values, all of which fall within that defined range. Hydraulic conductivity values of individual cells are sometimes changed during sensitivity testing and model calibration to best fit the model head values to observed head values.
TRB-0001-26	This comment is in reference to TS-YSS-19. The U.S. Geological Survey (USGS) Columbia Plateau groundwater model and Reclamation’s Black Rock seepage

Table 3 – Responses to individual comments.

Indian Tribes

	model are both regional in scale. The USGS model examines the groundwater conditions at steady state (after reaching equilibrium). The Black Rock seepage model was run in both a steady state and a transient mode. The transient runs examine the groundwater conditions (head and seepage rates) at various times in the future after the reservoir fills.
TRB-0001-27	This comment is in reference to TS-YSS-19. Specific site data are sparse and additional data are needed, but the modeling also used data from the calibrated Columbia Plateau groundwater model and from the extensive testing that has been done at the Hanford Site. See section 2.2.3.1 in the Final PR/EIS for proposed further investigations.
TRB-0001-28	This comment is in reference to TS-YSS-19. The water levels used for model calibration are considered static water level measurements because they are generally measured in late winter/early spring, prior to pumping from the wells for seasonal irrigation. The majority of water level recovery from the previous season's pumping has occurred by late winter.
TRB-0001-29	This comment is in reference to TS-YSS-19. Many of the driller's well logs that were available for the observation wells used in the Black Rock seepage model did not include information on how the wells were completed. All available data were used in the modeling process. Reclamation will not be revising TS-YSS-19.
TRB-0001-30	This comment is in reference to TS-YSS-19. Hydraulic parameters used in the Black Rock seepage model were based on both published values and values used in the USGS Columbia Plateau groundwater model.
TRB-0001-31	This comment is in reference to TS-YSS-19. The total change in head over the observation wells is over 1,400 feet; 30 feet is about 2 percent of the total change in head. It is common practice to assume a reasonable calibration is within 10 percent of the total change in head in the observations.
TRB-0001-32	This comment is in reference to TS-YSS-19. It was assumed for modeling purposes that the observation wells were completed in a single hydrogeologic unit; see response to comment TRB-0001-29. All available data were used in the modeling process.
TRB-0001-33	See response to comment TRB-0001-30. The sediments that are refered to in TS-YSS-19 are those that currently exist in the reservoir bottom. The existing sediments are composed of many layers of silts and cemented materials and are therefore presumed to have a low vertical permeability.
TRB-0001-34	This comment is in reference to TS-YSS-19. Comment noted. See footnote 4 on page 38 of TS-YSS-19.
TRB-0001-35	This comment is in reference to TS-YSS-19. The Black Rock seepage model showed that the majority of seepage from the reservoir would return to Dry Creek. The remaining water would increase aquifer storage as shown in figures 8-11 through 8-27 in TS-YSS-19. Proposed mitigation measures would capture the seepage in Dry Creek (expected to be about 46.5 cfs) and convey it to the Yakima River near Horn Rapids.
TRB-0001-36	The reason for the "peaks and valleys" on the hydrograph in chapter 7 in TS-YSS-19 is that the transient model takes into account the annual change in head in the reservoir due to water availability. The peaks represent times when the reservoir is full and the valleys are when the reservoir is drawn down.
TRB-0001-37	The fate of the seepage is explained in TS-YSS-19. The Black Rock seepage model shows the majority of reservoir seepage will return to Dry Creek; therefore, the increase in flow in the Saddle Mountains and Wanapum Basalts will be small.
TRB-0001-38	The Committee on Fracture Characterization and Fluid Flow was set up by the

Table 3 – Responses to individual comments.

Indian Tribes

	National Science Foundation (NSF) to establish procedures to calculate groundwater flow in fractured aquifer systems. The reference in TS-YSS-19 is the final report from the Committee and can be obtained from the NSF.
TRB-0001-39	The hydrologic testing program at Black Rock followed procedures similar to those outlined in this comment. Additional testing has been proposed and would be required to characterize the hydrogeology in the reservoir basin, the abutments and reservoir rim, and the Dry Creek area prior to final design. See section 2.2.3.1 in the Final PR/EIS for proposed further investigations.
TRB-0001-40	Storage parameters used in the Black Rock seepage model are found in table 4-4, page 27, of TS-YSS-19. The Black Rock seepage model showed that the unconfined aquifer would become saturated and the confined aquifer would remain confined.
TRB-0001-41	A cutoff wall through the sediments in the Dry Creek drainage is one of the seepage mitigation features proposed and modeled in *Modeling Mitigation of Seepage from the Potential Black Rock Reservoir* (Reclamation 2008a) (TS-YSS-25). The mitigation of potential seepage is presented and analyzed in the Final PR/EIS in section 2.4.1.1.
TRB-0001-42	Additional geologic mapping has been proposed and would be required as part of the next stage of investigations and final design.
TRB-0001-43	There is limited hydrologic test data available to characterize the hydraulic properties of the mapped faults in the model domain. Head differences across the Cold Creek fault indicate that it is a hydraulic barrier to lateral flow. Other faults are not as well characterized. Faults that are located in the reservoir basin and downstream would need additional testing to characterize them.
TRB-0001-44	The Vantage Sandstone is considered part of the Ellensburg Formation, which includes all of the sedimentary interbeds within the Columbia River Basalts. It lies stratigraphically between the Grande Ronde and the Wanapum Basalts. Hydrologically, it varies between a sandy aquifer and a fine-grained confining bed.
TRB-0001-45	Reclamation does not consider the 2006 hydrologic testing program to be fully comprehensive or detailed on a larger scale, but detailed on the individual borehole scale that was discussed in the *Supplemental Report for Appraisal Assessment: Geology and Hydrogeology, Right Abutment, Black Rock Damsite* (Reclamation, 2007j) (TS-YSS-18).
TRB-0001-46	The K values calculated from field testing at the Hanford Site vary over five orders of magnitude. The values from testing at Black Rock, including the fault zone basalt breccia, fall comfortably within the range of values from the Hanford Site.
TRB-0001-47	Hydrologic properties used in the groundwater seepage modeling to characterize the Black Rock area (sediments and basalt formations) are shown in tabular form in the supporting technical reports referenced in the Draft PR/EIS (*Appraisal Assessment of Hydrogeology at a Potential Black Rock Damsite* [Reclamation, 2004h] [TS-YSS-6]; TS-YSS-18; and TS-YSS-19).
TRB-0001-48	This topic is discussed in Dr. Spane's letter-report to Reclamation (included as Appendix A in TS-YSS-18), concerning the assumption of "pseudo-steady-state" injection rates for determining hydraulic conductivity from vadose zone test intervals.
TRB-0001-49	Many factors could affect the calculated K values of the fault breccia. The depth of the breccia between the two tested drill holes overlapped but was not exactly the same, the drilling methods varied, and the analysis methods varied. The calculated K values are very close, statistically, and well within an order of magnitude.

Table 3 – Responses to individual comments.

Indian Tribes

TRB-0001-50	The figures referred to in the comment (Appendix A, TS-YSS-18) show the piezometer completions to make them observation wells after the testing program was completed. They did not have a sand filter pack during hydrologic testing.
TRB-0001-51	The transmissivity, as well as the hydraulic conductivity, of the tested intervals are listed in the supporting document (TS-YSS-18).
TRB-0001-52	Drill hole DH-05-1 was recompleted and the wells, DH-05-1 and DH-06-1, were re-tested afterwards, as described in TS-YSS-18.
TRB-0001-53	Comment noted.
TRB-0001-54	Comment noted.
TRB-0001-55	Comment noted.
TRB-0001-56	Page 23 of technical report *Appraisal Assessment of Geology at a Potential Black Rock Damsite* (Reclamation, 2004g) (TS-YSS-5) refers to technical report *Appraisal Assessment of the Black Rock Alternative Facilities and Field Cost Estimates* (Reclamation, 2004c) (TS-YSS-2) for specific information regarding details of the Black Rock Alternative. Quantity takeoffs for the Black Rock features are provided in Appendix D of TS-YSS-2. Embankment zone quantities on sheet 10 of 33 for the Black Rock Dam and Reservoir - "Large Reservoir - Active Storage = 1.3 MAF Dam type 2: Central-Core Rockfill Dam," provide an estimate of the embankment materials required at the original damsite is 93,530,000 cubic yards.
TRB-0001-57	Comment noted.
TRB-0001-58	Comment noted.
TRB-0001-59	Anecdotal evidence, including the mapping of springs and "flowing wells" as noted in your comment, indicates that heads were higher historically in that area. There are no known springs existing there now and heads have decreased over time in the basalt units.
TRB-0001-60	The proposed design for the Black Rock damsite envisions a cutoff trench excavated to the top of bedrock beneath the entire length of the upstream concrete face of the dam which would serve as the primary water retention feature of the dam. The Ringold Formation and associated sediments would be left in place underneath the downstream rockfill section of the dam. Additional investigation at the damsite for final designs may determine that portions of the Ringold Formation are adequately cemented to serve as a competent foundation for the dam and could possibly be left in place, thereby reducing the volume and cost of foundation excavation. No additional site-specific geologic investigations have been completed to date. Additional geologic investigations of the damsite are recommended in the Final PR/EIS, section 2.2.3.1, to be completed before final designs are complete and a project cost ceiling is established. The resources required to accomplish geologic investigations have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
TRB-0001-61	Additional hydrogeologic investigations have been proposed and include long-term pumping tests. These investigations would be required prior to final design of the project.
TRB-0001-62	Additional geologic mapping and hydrogeologic investigations have been proposed and would be required prior to final design of the project.
TRB-0001-63	In section 2.2.1.3, there is a discussion of the municipal goal, how it was developed, and why Reclamation used it for the Draft PR/EIS. The last part of the section indicates that the estimate may be conservative, as it did not account for future conservation actions, increased pricing, and demand changes. The

Table 3 – Responses to individual comments.

Indian Tribes

	Roundtable participants indicated that they wanted this future municipal demand treated as a new water demand for the Storage Study. Based on that input, Reclamation modeled the future municipal demand as a separate water need.
TRB-0001-64	The text has been modified as suggested.
TRB-0001-65	The text has been modified as suggested.
TRB-0001-66	Table 3.40, page 3-61 of the *System Operations Technical Document* (Reclamation, 2008b) (TS-YSS-21) shows the distribution of the future additional municipal water supply needs of 82,000 acre-feet by four Yakima basin subareas and the water supply criteria used in the operation studies for each subarea. The 34,000 acre-feet for the Lower subarea (the area downstream of Sunnyside Diversion Dam) is provided from return flows, while the upstream subareas municipal needs of 48,000 acre-feet are supplied from unregulated flows prior to the storage control period and from reservoir releases once the storage control period begins. It was assumed 50 percent of the withdrawal returns as surface and subsurface flows and that the annual withdrawal is equally distributed each month. In a year like 1994, no proration was required for the Lower Yakima subarea and the municipal need of 34,000 acre-feet was available. For the subareas upstream of Sunnyside Diversion Dam, the municipal water supply for the period of October through April was not prorated and 28,000 acre-feet was available. In 1994, proration began in May and the 29-percent proration level was applied to the 5-month municipal need of 20,000 acre-feet, resulting in a supply of about 6,000 acre-feet. Thus, overall in 1994, the municipal supply available was 68,000 acre-feet.
TRB-0001-67	This comment concerns one of the State Alternatives discussed in the Draft PR/EIS. As noted in Chapters 3 and 5 of the Final PR/EIS, the State of Washington has decided not to proceed further with a joint National Environmental Policy Act/State Environmental Policy Act (NEPA/SEPA) process. Rather, they are continuing the SEPA process independent of the NEPA process to look at a broad range of solutions to water resource problems in the Yakima River basin. The State envisions this effort as the next phase of the Yakima River Basin Water Enhancement Project (YRBWEP) and has asked Reclamation to be involved in this effort. As a consequence, the State Alternatives have now been dropped from the Final PR/EIS. The State will respond to comments on the State Alternatives in its separate SEPA Final EIS.
TRB-0001-68	See response to comment TRB-0001-67.
TRB-0001-69	See response to comment TRB-0001-67.
TRB-0001-70	No. This sentence is in reference to the five 2-D reaches of the Yakima River (Easton, Ellensburg, Lower Naches, Union Gap and Wapato) that were modeled where there was the ability to track (in this case, through the Decision Support System [DSS] model) the amount of habitat for species and lifestage of interest based on flow. The Cle Elum River was not modeled. A doubling of winter flows in the Cle Elum River may increase the amount of over-wintering habitat; however, there is no way to quantify this change. In some reaches modeled with the DSS, not all flow increases resulted in habitat increases. This will rely on the expert opinion of the local fisheries biologists. Text contained within the section entitled, "Wymer Dam and Reservoir Alternative" under the "Anadromous Fish" section in the Executive Summary of the Final PR/EIS was modified to make a distinction between the Cle Elum River and the Yakima River.
TRB-0001-71	In part, the purpose and need for the Storage Study was to investigate what

Table 3 – Responses to individual comments.

Indian Tribes

	benefits could be achieved for threatened and endangered (T&E) fish by developing additional storage in the Yakima River basin. New storage would primarily affect fishery resources by altering riverflows so the analysis and the goals focused on those altered flows and the effects caused by them. While other actions, such as floodplain restoration or passage, may create benefits for fish, they were not addressed as they were not needed to achieve the purpose and need to provide additional storage in the basin.
TRB-0001-72	See response to comment TRB-0001-67.
TRB-0002-01	Comment noted. Also, see response to comment TRB-0001-67.
TRB-0002-02	The limited focus of the Joint Alternatives is reflected in the congressional authorization. The Storage Study was authorized by the Omnibus Appropriations Act of 2003 (Omnibus Act), Public Law 108-7. Section 214 of the Act of February 20, 2003 (Public Law 108-7), states, "*The Secretary of the Interior, acting through the Bureau of Reclamation, shall conduct a feasibility study of options for additional water storage in the Yakima River Basin, Washington, with emphasis on the feasibility of storage of Columbia River water in the potential Black Rock reservoir and the benefit of additional storage to endangered and threatened fish, irrigated agriculture, and municipal water supply.*" The Storage Study was conducted as directed in the authorization. The Storage Study evaluated plans that would create additional water storage for the Yakima River basin, and assessed each plan's potential to supply the water needed for fish and the aquatic resources, basinwide irrigation, and future municipal demands. Plans that did not involve creating additional storage in the basin, such as the State Alternatives in the Draft PR/EIS, were not evaluated, as they fell outside of the purpose of the study, which was to comply with Public Law 108-7. In response to public comment, the Washington State Department of Ecology is continuing the SEPA process independent of the NEPA process to look at a broad range of solutions to water resource problems in the Yakima River basin, which will include habitat restoration, fish passage and other actions (e.g., water conservation, water marketing, and groundwater storage). The State envisions this effort as the next phase of YRBWEP and has asked Reclamation to be involved in this effort. These alternatives will draw upon information in the following existing restoration planning documents for the Yakima basin: 1) *Habitat Limiting Factors, Yakima River Watershed, Water Resource Inventory Areas 37-39, Final Report* (Haring, 2001); 2) *Watershed Management Plan, Yakima River Basin* (Watershed Planning Unit and Tri-County Water Resources Agency, 2003); 3) *Yakima Subbasin Plan* (Yakima Subbasin Fish and Wildlife Planning Board, 2004); and 4) *Draft Yakima Subbasin Salmon Recovery Plan* (Yakima Subbasin Fish and Wildlife Planning Board, 2005).
TRB-0002-03	The economic analysis in the Final PR/EIS displays the benefit-cost ratio and the analyses that led up to those results. The costs include operation, maintenance,

Table 3 – Responses to individual comments.

Indian Tribes

	and replacement costs, so all aspects of a project will be considered. This information allows for a comparison of each alternative based on cost and benefit-cost ratio. The State Alternatives in the Draft PR/EIS have not gone through a benefit-cost analysis (BCA).
TRB-0002-04	The 70-percent criteria was used as a measuring tool to determine how well an alternative met the irrigation water supply goal. This criteria was applied only to the Joint Alternatives, as the State, under SEPA regulations, could apply other criteria. The State will address the State Alternatives and other ideas through a separate SEPA process.
TRB-0002-05	The Final PR/EIS lists the Bumping Lake Enlargement Alternative as an alternative considered but eliminated from further consideration (section 2.10). The State of Washington has embarked on an analysis using their legislative authority to look at all other ideas and potential solutions, including a new analysis of the Bumping Lake idea, for the Yakima basin. This comment and others will be available to the State for their use in that process.
TRB-0002-06	As the discussion of the municipal goal development in the Final PR/EIS (section 2.2.1.3) shows, the municipal water supply goal was set at 82,000 acre-feet at the urging of the Roundtable group. This goal is conservative by estimating that all future residential water use will be met by new water usage and not by changing the use of existing water supplies.
TRB-0002-07	Comment noted.
TRB-0002-08	The State of Washington has started such a process by initiating a separate SEPA process to investigate potential measures to address the issues stated in this comment.
TRB-0003-01	See response to comment TRB-0001-01.
TRB-0003-02	See response to comment TRB-0001-01.
TRB-0003-03	See response to comment TRB-0001-01.
TRB-0003-04	See response to comment TRB-0001-01.
TRB-0003-05	See response to comment TRB-0001-05.
TRB-0003-06	See response to comment TRB-0001-05.
TRB-0003-07	See responses to comments TRB-0001-05 and TRB-0001-07.
TRB-0003-08	See response to comment TRB-0001-05.
TRB-0003-09	See response to comment TRB-0001-09.
TRB-0003-10	See response to comment TRB-0001-10.
TRB-0003-11	See responses to comments TRB-0001-10 and TRB-0001-11.
TRB-0003-12	See response to comment TRB-0001-12.
TRB-0003-13	See response to comment TRB-0001-13.
TRB-0003-14	See responses to comments TRB-0001-13 and TRB-0001-14.
TRB-0003-15	See response to comment TRB-0001-15.
TRB-0003-16	See response to comment TRB-0001-16.

Table 3 – Responses to individual comments.

Federal Government

FED-0001-01	The suggested changes have been made to the Executive Summary of the Final PR/EIS.
FED-0001-02	The suggested changes have been made to section 1.6.1 in the Final PR/EIS.
FED-0001-03	The suggested changes have been made to section 1.6.1 in the Final PR/EIS.
FED-0001-04	Based on the mitigation proposed to address seepage from Black Rock reservoir, it is not expected that the Black Rock Alternative would result in any additional remediation or expedited remediation.
FED-0001-05	Reclamation typically completes downstream inundation studies due to dam failure during the concept stage of final design and not during the appraisal or feasibility stages of design. Black Rock dam has been designed to withstand a very large seismic event, and is thus considered to have a low potential for seismic dam failure. During final design, Reclamation would conduct risk analyses to verify the low potential for failure. If the Black Rock Alternative were to be brought forward and considered for final design, a downstream inundation study would also be conducted to identify consequences of dam failure. The final design of Black Rock dam would include any features necessary to limit risk of failure and annual failure probability to acceptable levels while considering the downstream consequences.
FED-0001-06	Reclamation is not in a position to estimate the cost impact to regional rate payers. This would require a rate case study wherein the cost of pumping energy would be considered an added cost of serving a firm pumping load or as foregone revenue to the Federal system when the nonfirm power needed to run the pumps is consumed by the Black Rock project instead of being sold in the bulk power market. The Draft PR/EIS simply estimated the power demand for pumping from the Columbia River to a Black Rock reservoir, and the monetary effect of using available nonfirm energy at existing Federal Columbia River Power System (FCRPS) hydroelectric plants. Then, outside the PR/EIS, the public may view this monetary valuation as: (1) a potential reduction to Federal system revenue expectations which would have certain effects to regional power rates, or (2) as a direct operating cost to be borne by irrigation benefactors of the Black Rock project when they purchase such nonfirm energy in competition with other nonfirm energy purchasers in the open market. This would have no impact on regional power rates.
FED-0001-07	The referenced language in tables ES.6 and 2.69 has been modified to indicate that seepage is not expected to reach the Hanford Site in a manner that would mobilize contaminants.
FED-0001-08	New language has been added to section 4.2.2.6 of the Final PR/EIS to address this issue.
FED-0001-09	Comment noted. Reclamation is continuing discussions with DOE to provide information about the potential seepage issue.
FED-0001-10	See response to comment TRB-0001-20.
FED-0001-11	See response to comment TRB-0001-20.
FED-0002-01	See response to comment TRB-0001-20.
FED-0002-02	See response to comment TRB-0001-20.
FED-0002-03	The No Action Alternative has been identified as the Preferred Alternative for the Final PR/EIS. However, if an action alternative were selected in the ROD, the certification process and conditions to satisfy section 401 of the Clean Water Act

Table 3 – Responses to individual comments.

Federal Government

	would proceed forward. Additional language has been added to section 4.6.2.6 of the Final PR/EIS to address water quality monitoring.
FED-0002-04	Under the Black Rock Alternative, impacts to wetlands would not occur, since the site had only 0.9 acres of ponded water used for livestock within the footprint of the reservoir. The Wymer site has 83 acres of identified wetlands, which would be lost to inundation. Seepage from Wymer dam and reservoir would provide subsurface and possibly surface flows that would likely expand the riparian and wetland plant community in Lmuma Creek downstream from the dam. If this action were selected, a mitigation plan would be formulated. Reclamation has identified No Action Alternative as the Preferred Alternative; therefore, impacts have not been measured in quantitative and functional terms.
FED-0002-05	A seismic hazards analysis, Reclamation's Technical Memorandum No. D-8330-2004-14, *Probabilistic Seismic Hazard Assessment for Appraisal Studies of the Proposed Black Rock Dam* (Reclamation, 2004b) (PSHA report), using existing data, was completed in 2004, as referenced on page 2-9 of the Draft PR/EIS. No additional site-specific earthquake loading analysis has been completed to date. Additional seismic studies are recommended in the Final PR/EIS (section 2.2.3) to be completed before final designs are complete and a project cost ceiling is established. Refinement of seismic data is not expected to exceed the design parameters used in the Draft PR/EIS. The resources required to accomplish a loading analysis are estimated and shown in the Final PR/EIS, section 2.2.3 along with other tasks to establish a project construction ceiling for congressional authorization.
FED-0002-06	A seismic map is included in the PSHA report, as referenced on page 2-9 of the Draft PR/EIS. Seismic design and construction standards and practices that would be used to reduce seismic risks are discussed in TS-YSS-2. These standards and practices would also be applicable to the Wymer damsite.
FED-0002-07	Geologic mapping of the Black Rock damsite has been completed and several landslide areas have been identified, as documented in TS-YSS-5. Geologic mapping of the Wymer damsite has been completed and several potential landslide areas identified, as documented in Reclamation's Geologic Report for Appraisal Assessment – Wymer Dam and Reservoir (Reclamation, 2008f) (TS-YSS-20). Additional geologic mapping and stability analyses would be needed to complete the landslide assessment and have been recommended in the Final PR/EIS before final designs are completed and a project cost ceiling is established. The resources required to accomplish geologic mapping and stability analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
FED-0002-08	The analysis in the Draft PR/EIS addresses the effects of the alternatives on sage-grouse and elk from the loss of shrub-steppe and possible impacts to corridors. In particular, it assessed the effects of the new dams and reservoirs. It is unclear from this comment what additional information is sought. It is suggested that access roads, pipelines, and utility corridors may fragment the

Table 3 – Responses to individual comments.

Federal Government

	areas further, but the pipelines and tunnels are buried and roads and utility corridors cross the sites today. It is not expected that, beyond the impacts caused by the dams and reservoirs, the other facilities would further fragment the shrub-steppe habitat beyond whatever fragmentation the existing facilities have caused. These facilities are generally quite small in size and some, like overhead utilities corridors, would not eliminate shrub-steppe. Shrub-steppe ecosystem provides little in the way of cover for large ungulates like elk. The existing corridors identifed by the fish and wildlife agencies for sage-grouse and elk are bisected by large roads, I-84 and SR-821 at the Wymer site and SR-24 at the Black Rock site. These roads have not been identifed as significant barriers in the existing corridors and it is not expected that smaller access roads would function as such. It should be noted in passing that in the vicinity of the Black Rock dam and reservoir, elk have not abandoned the area even though extensive areas of shrub-steppe have been lost as a result of fire in the last year.
FED-0002-09	The Yakama Nation provided comments during the scoping process for the Draft PR/EIS. Issues raised by the Tribe that were within the scope of the study were addressed in the Draft PR/EIS. These included an analysis of the effects of the alternatives on water quantity and quality. Additional comments by the Yakama Nation have also been addressed in the Final PR/EIS.
FED-0002-10	Additional analysis of indirect impacts from growth is not practical or necessary. The goal for municipal water supply was developed based on estimates of expected future growth made by local governments. These projections did not assume the development of any of the action alternatives considered in the Draft PR/EIS. Consequently, the alternatives are not growth inducing, but rather are responding to water needs for growth that is predicted to occur under the No Action Alternative. The reference to Low Impact Development techniques and their potential benefits in storm water management is noted.
FED-0003-01	At this time, a wind farm is not reasonably foreseeable. The company identified as proposing the wind farm has not formally identified Black Rock or Wymer project areas as potential wind farms.
FED-0003-02	The proposed project for the Black Rock Alternative specifies relocation of SR-24 to the south of the reservoir; this aspect of the Black Rock Alternative remains unchanged from the description provided in the Draft PR/EIS. In the Final PR/EIS, section 4.16.2.3, "Transportation Impacts of the Black Rock Alternative," has been revised to recognize that a northerly alignment would directly impact Yakima Training Center (YTC) lands/mission, noting that this impact is another key reason for proposing a southerly alignment (along with cost and recreation access perspectives). However, per Washington State Department of Transportation (WSDOT) commentary on the Draft PR/EIS (comment WAS-0004-01), further discussion among involved agencies and landowners regarding potential for relocation of SR-24 to the north, rather than south, of Black Rock Reservoir is included as a mitigation measure related to the transportation impacts of this alternative.
FED-0003-03	A northerly alignment for the relocation SR-24 to accommodate the Black Rock Alternative would likely cross YTC lands in Sections 4 and 5 of T12N R23E. However, [1] no detailed alignment studies have been performed for this option, and [2] such a northerly alignment is not part of the proposed project for the Black

Table 3 – Responses to individual comments.

Federal Government

	Rock Alternative. Referring to the response to comment FED-0003-02, YTC would certainly be involved in any future discussion of a northerly relocation alignment for Highway 24 (i.e., as a mitigation option to address concerns about the proposed southerly alignment), along with WSDOT and other involved parties.
FED-0003-04	Section 4.13, "Land Use and Shoreline Resources," of the Final PR/EIS has been revised to include discussion of potential conflicts/interactions between reservoir users and surrounding private and public lands, including the YTC.
FED-0003-05	Section 4.13, "Land Use and Shoreline Resources," of the Final PR/EIS has been revised to include discussion of potential impacts and appropriate mitigation related to trespass on surrounding lands (including the YTC) by public users at Black Rock and Wymer reservoirs.
FED-0003-06	See response to comment FED-0003-04.
FED-0003-07	Elk was used for big game movement corridor analysis since this is the species used by the U.S. Fish and Wildlife Service (Service) in the *Yakima River Basin Water Storage Feasibility Study Fish and Wildlife Coordination Act Report* (CAR). Data of sage-grouse movement can be found in section 4.11, "Threatened and Endangered Species."
FED-0003-08	Elk currently use the area within the Wymer footprint (Leingang, pers. comm.) during certain times of the year. The Wymer footprint is also a migration corridor for elk moving off the YTC to adjacent lands to the west, including Washington Department of Fish and Wildlife (WDFW) lands (Livingston, pers. comm.). Wymer dam and reservoir would not eliminate the east-to-west movement corridor for elk, but it would force them move north or south to get onto YTC lands to graze.
FED-0003-09	Visitation figures for this PR/EIS come from user counts by our surveyors of visitors recreating on and along the river during a 6-month peak recreation season from the beginning of April through September. Recreation visitor counts were taken on 63 separate days during this period. These days were varied across weekdays and weekend days. Four thousand, nine hundred, fifty-eight (4,958) visitors were counted and then divided by the 63 total count days to obtain the average number of visitors, 79 per day. The 79-visitor-per-day figure was then multiplied by 240 days. This totals 18,960 visitors. We have been aware of and are concerned with the large discrepancy between the Bureau of Land Management's (BLM) figures and our estimates. The fact that we counted only people observed recreating on or along the river may account for some of the difference. Not being able to count every day, all day, at every location could certainly explain some of the difference. Some difference could be attributed to counting only during a 6-month period. Differences between years of counts based on weather, riverflows, etc., could also help explain differences. Besides number of visitors, car, vehicle and conveyance counts were also made. Counts were made by activity, site, and location on the river and a number of other variables. Reclamation can make these data available to BLM, and would appreciate any suggestions or ideas BLM has to help bring the counts more in line, and/or explain the differences. Reclamation would work with the YTC before any alternative was constructed to determine restrictions on recreational opportunities that might be necessary because of the proximity to the YTC. These restrictions could include fencing, boating and fishing restrictions, and other types of actions.
FED-0003-10	Fire can be an issue in shrub-steppe and at recreation sites. A fire control plan would be needed for developed recreation areas associated with either Black Rock or Wymer reservoir. With current land use practices, which involve very limited

Table 3 – Responses to individual comments.

Federal Government

	recreational activities, fires regularly occur in the general vicinity of both the Black Rock and Wymer reservoir sites. For example, fires regularly occur on the Hanford Site, the Arid Lands Ecology (ALE) Reserve, and the YTC, even though little recreational use is allowed on any of these areas. This situation is not expected to change substantially from the current conditon if recreational developments associated with either reservoir were developed. However, in this case, the Preferred Alternative is the No Action Alternative.
FED-0003-11	Comment noted. Concerning the fish aspect of this comment, most of the perennial flow in Lmuma Creek exists downstream of the damsite; therefore, the loss of high quality salmonid habitat would be minimal. Above the damsite, the stream is generally intermittent. There would be an unavoidable loss of riparian habitat in the Wymer reservoir footprint. The Service indicated that, along much of its length, the reach to be innundated is grazed so habitat values are limited. This could be addressed through off- or on-site mitigation.
FED-0003-12	Regarding the intake system for the Black Rock Alternative, the only surface facility within the YTC would be an 80' x 80' fenced site (with vehicular access) where the surge/vent shaft for the import tunnel reaches the land surface. Other options for the Black Rock reservoir intake conveyance (e.g., pipeline) have been eliminated from consideration. However, further analysis of land ownership patterns around the proposed Black Rock reservoir location has revealed that one northern “arm” of the reservoir would encroach across the southern YTC boundary (in Section 4 of T12N R23E) for a short distance at full pool. This impact was not recognized in the Draft PR/EIS. Section 4.13, Land Use and Shoreline Resources, of the Final PR/EIS contains discussion of this impact, including appropriate mitigation to ensure that the impact is not significant.
FED-0003-13	According to a staff member of the Yakama Nation, a member of the conservation partnership, easements have been purchased on Rattlesnake Ridge near the footprint of Black Rock reservoir. The statement in the Draft PR/EIS is accurate.
FED-0003-14	The Washington State law referenced in the comment states, *“A [County or City] comprehensive plan, amendment to a plan, a development regulation or amendment to a development regulation, should not allow development in the vicinity of a military installation that is incompatible with the installation's ability to carry out its mission requirements.”* Neither the No Action Alternative nor any of the action alternatives described in the Draft PR/EIS would involve/require a county or city plan or regulation that violates this law. Potential incompatibilities or conflicts between project alternatives and the lands/mission of the YTC would be subject to proper coordination and appropriate agreements between Reclamation and the Department of the Army (see Final PR/EIS section 4.13, "Land Use and Shoreline Resources," discussions of the Black Rock and Wymer Dam & Reservoir Alternatives).
FED-0004-01	We concur. Additional text has been added to the Executive Summary in the Final PR/EIS.
FED-0004-02	Chapter 2 is intended to include information necessary to address the *Principles and Guidelines for Water and Related Land Resources Implementation Studies* (U.S. Water Resources Council, 1983) (*P&Gs*). That information is required for the Joint Alternatives, but not the State Alternatives. In an effort to make chapters

Table 3 – Responses to individual comments.

Federal Government

	4 and 5 similar, the information relative to the *P&Gs* was included in chapter 2. With the changes now being made and the essential elimination of chapters 3 and 5, the information has been left in chapter 2.
FED-0004-03	The evaluation criteria are outlined in section 2.2.1. They include the ability of the various alternatives to meet the instream water supply, irrigation water supply, and municipal water supply goals.
FED-0004-04	Refer to section 4.8.2.2 of the Draft PR/EIS, which discusses this topic. The average percent of water being pumped from Priest Rapids Lake in the Columbia River ranges from 0.2 percent (April and May) to a high of 5 percent (September), and no water withdrawals occur in July and August. The pumping schedule was designed to only withdraw water at riverflows above the target flows defined in the *2004 Biological Opinion on the Federal Columbia River Power System (FCRPS) Including 19 Bureau of Reclamation Projects in the Columbia Basin* (National Marine Fisheries Service, 2004a) (2004 BIOP). Section 2.4.2, figure 2.9, and tables 2.18 and 2.19 present information regarding Columbia River flow targets, water availability to pump, and actual amount pumped on a monthly time step for the 1981-2006 period of record. Riverflows downstream of Priest Rapids Dam during the fall Chinook spawning period can vary between 50,000 cfs to 160,000 cfs (see Draft PR/EIS, page 4-109) and river stage below the dam in the spring during fry emergence can vary as much as 13 feet in a 24-hour period (see Draft PR/EIS, section 4.8.2.2). The amount of daily flow and river stage fluctuation due to power production will overwhelm any effect resulting from the withdrawal of 0.2 percent to 5 percent of the river flow from the Priest Rapids pool. Furthermore, it was assumed for the purpose of this analysis that any water withdrawal above the 2004 BIOP target flows would not have any biological impacts to salmon and steelhead. It was assumed the 2004 BIOP targets flows were established with the intent to provide biological adequacy.
FED-0004-05	The analyses in chapter 4 rely on flow models which incorporate the present effects of current withdrawals on flows. These effects are incorporated into the No Action Alternative as well as each action alternative. Consequently, the comparisons of a future with the action alternatives to a future without them generally show no differences due to present withdrawals. The cumulative impacts analysis then focused on the effects the action alternatives would have, relative to the No Action Alternative, in combination with reasonable foreseeable future withdrawals.
FED-0004-06	In order to avoid duplication, chapter 4 references the reader back to the National Economic Development (NED) information provided in chapter 2.
FED-0004-07	The information necessary to conduct an analysis of the carbon footprint (greenhouse gases [GHG] sequestered vs. emitted) is not available. The No Action Alternative is the Preferred Alternative; however, should an action alternative be selected, construction and reservoir operations impacting GHGs would be defined in greater detail and the feasibility of conducting a carbon footprint audit would be considered at that time.
FED-0004-08	Mitigation and environmental commitments to prevent the Black Rock Alternative groundwater impacts noted in section 4.3.2.3 were identified in Draft PR/EIS sections 4.3.2.6 and 4.28, respectively. Mitigation and environmental commitments to address seepage associated with the Black Rock Alternative have been refined in the Final PR/EIS. As discussed in section 2.4.1.1 of the Final PR/EIS, the Black Rock Alternative has been revised to include changes in the design of the dam to alleviate groundwater seepage and the provision of specific features below the dam to capture surface-

Table 3 – Responses to individual comments.

Federal Government

	and groundwater seepage. These combined measures would prevent any seepage from the Black Rock dam and reservoir from reaching the Hanford Site. Thus, since there would be no surface- or groundwater contamination of the Hanford Site, there would not be any effects to public health.
FED-0004-09	Those measures are included as part of the proposed action.
FED-0005-01	The text has been modified as suggested in both instances.
FED-0005-02	The text has been modified as suggested.
FED-0005-03	The text has been modified as suggested.
FED-0006-01	The comment correctly references impacts to BLM lands and/or recreation sites from the Black Rock and the Wymer Dam and Reservoir Alternatives. These impacts were not recognized in the Draft PR/EIS. Section 4.13, "Land Use and Shoreline Resources," has been revised in the Final PR/EIS to identify these impacts and discuss appropriate mitigation.
FED-0006-02	Black Rock reservoir would have a negligible affect on the water temperatures in the Yakima River. Water would be drawn from the bottom of the reservoir and conveyed by tunnel and buried pipeline to the Roza and Sunnyside canals and then delivered to farms. Under average operations, the water would be withdrawn from at least 220 feet below the reservoir surface. Given that the depth of the outlet works is considerably less at the existing reservoirs and the water is conveyed down the Yakima and/or Naches Rivers, water reaching the canals from Black Rock may actually be cooler than occurs under current conditions. The median monthly direct spill back to the Yakima River is expected to peak in August at 1.65 percent of total river flow. This would have little, if any, affect on water temperatures. The water temperatures for Wymer reservoir are more crucial due to temperature issues through the entire Yakima River system. Projected Wymer reservoir seasonal stratification and subsequent release temperatures were modeled with the two-dimensional CE-QUAL-W2 (W2) model (Cole and Wells, 2007) and results discussed in the Draft PR/EIS. Water quality monitoring, quality assurances and controls, and standard operating procedures would be developed if a storage alternative were selected. A quality assurance project plan (QAPP) would be written using the Washington State Department of Ecology Guidelines and would include a list of priority parameters, a schedule of events, sampling sites with coordinates, data verification and validation, and any other pertinent information. These documents would be in place prior to any monitoring and would be strictly followed throughout the duration of the project. Modification would need to be made to the documents yearly to address any operational or environmental changes. However, the No Action Alternative is the Preferred Alternative in the Final PR/EIS.
FED-0006-03	A key finding of the fishery modeling (primarily for Black Rock and Wymer Plus Pump Exchange Alternatives) was that the observed increase in fish population abundance, etc., was largely due to improvements in juvenile (spring smolts and late summer/fall migrants) passage survival downstream from the City of Yakima. This was a result of better outmigration survival through the fish bypass systems at the diversion dams and improved in-river survival. Both the Black Rock and Wymer Dam Plus Yakima River Pump Exchange Alternatives resulted in a significant increase in spring flows compared to No Action, which reduced fish entrainment into the fish bypass systems, and resulted in decreased in-river predation.

Table 3 – Responses to individual comments.

Federal Government

FED-0006-04	One of the ideas to provide additional water storage in the Yakima basin was to raise the active capacity in the Cle Elum reservoir by 3 feet, for an added capacity of 15,000 acre-feet. This idea was studied by Reclamation but has not yet been implemented due to the costs involved compared to the amount of stored water garnered. Another alternative studied in the early part of the Storage Study was adding about 400,000 acre feet of storage to Bumping Lake. This involves building an entirely new dam. A summary of the findings relative to this alternative is included in section 2.9.1. Reclamation determined that the other three reservoirs in the Yakima Project did not have opportunities for increased storage capacity. It should be noted that increasing storage capacity at any of the existing dams by more than a small amount would require extensive modifications to the existing structures or an entirely new dam.
FED-0006-05	The comment references impacts to BLM grazing lessees due to development of Black Rock reservoir. These impacts were not recognized in the Draft PR/EIS. Section 4.13, "Land Use and Shoreline Resources," has been revised in the Final PR/EIS to identify these impacts and discuss appropriate mitigation, including compliance with 43 CFR 4110.4-2, related to notification of grazing lessees. The comment also cites potential disruption of access to BLM public lands caused by implementation and operation of Black Rock reservoir. Discussion of this impact and appropriate mitigation has been incorporated into section 4.13 of the Final PR/EIS.
FED-0006-06	The Draft PR/EIS acknowledges that Section 106 of the NHPA, which includes field surveys to identify historic properties and Traditional Cultural Properties (TCP), would be accomplished if an action alternative were selected. However, the No Action Alternative is the Preferred Alternative.
FED-0006-07	All lands within the project area would receive a field survey to identify historic properties; lands covered under previous field surveys would also be included in these surveys specific to the selected alternative if an action alternative were selected. However, the No Action Alternative is the Preferred Alternative.
FED-0006-08	Impacts to sage-grouse are addressed in section 4.11, "Threatened and Endangered Species."
FED-0006-09	See response to comment FED-0006-08.
FED-0006-10	The model for Brewer's sparrow (*Spizella breweri*) was the only shrub-steppe species model known to the Service staff while preparing to conduct Habitat Evaluation Procedures (HEP) during the 2007 field season. Although time constraints would have precluded the development of any additional models (for the HEP analysis), the HEP model that was used was an appropriate habitat suitability indicator for that effort.
FED-0006-11	See response to comment FED-0006-08.
FED-0006-12	Currently, there are no known greater sage-grouse nesting and brood-rearing areas in the Black Rock footprint. Radio-marked birds located in this area occur during late summer and appear to be birds moving from YTC to Rattlesnake Ridge.
FED-0006-13	The Service used HEP analysis to provide a determination of Brewer's sparrow habitat units that would be lost to each of the storage alternatives, based on existing shrub-steppe habitat. The results of the analysis were used, along with several other factors, to assist the Service in identifying their preferred alternative

Table 3 – Responses to individual comments.

Federal Government

	and recommendations for mitigation for each alternative in the CAR. The Conservation Reserve Program lands were considered agricultural lands in the analysis. The shrub-steppe within the Black Rock dam and reservoir footprint was of medium value in the HEP analysis and this was changed in section 4.7.2.3 in the Final PR/EIS.
FED-0006-14	Additional data was received from the Service relative to the HEP analysis at the Wymer site. The description of the HEP results for the Wymer site has been modified in section 4.7.2.4 in the Final PR/EIS.
FED-0006-15	The HEP analysis completed by the Service used a single species, Brewer's sparrow. It was chosen to represent species which use shrub-steppe. Species were not identified to represent other habitat types in the area. See response to comment FED-0006-14.
FED-0006-16	A "Movement Corridor" heading has been added to sections 4.7.2.3 and 4.7.2.4 in the Final PR/EIS. The greater sage-grouse issues were addressed in section 4.11, "Threatened and Endangered Species."
FED-0006-17	Reclamation has selected the No Action Alternative as the Preferred Alternative; therefore, a detailed mitigation plan has not been developed. If an action alternative were selected in the Record of Decision (ROD), a more detailed mitigation plan would be developed as part of implementation.
FED-0006-18	At this time, specific, reasonably forseeable proposals have not been identified. Such specific proposals, including appropriate environmental analyses, permit applications, and other specific actions would be needed to carry out an accurate quantitative analysis.
FED-0006-19	Comment noted.
FED-0006-20	See first portion of response to comment FED-0003-09.
FED-0006-21	See response to comment FED-0003-09. Reclamation recognizes that there could be off-highway vehicle (OHV) spillover from Wymer, but it is difficult to estimate at this time. Traffic on SR-821 would also increase.
FED-0006-22	The comment is consistent with analysis contained in the Draft PR/EIS. As stated in sections 4.19.2.4 and 4.19.2.6, respectively, of the Draft PR/EIS: "These facilities [pumping plant and switchyard], at least prior to mitigation, would represent a significant visual impact in the context of the largely undeveloped, scenic Yakima Canyon corridor," and "It is uncertain whether such measures [i.e., described potential mitigation measures] could reduce the level of visual impact overall to an insignificant level."
FED-0006-23	The probability of an increase in spring flooding as a consequence of river operations associated with the action alternatives is not likely. Only the Black Rock Alternative substantially increases spring flows in the upper Yakima, with a peak median increase of approximately 1,000 cfs (from 2,500 to 3,500 cfs; see figure 2.2 in the Draft PR/EIS). For comparison, the Yakima Project RiverWare model generated median summer flows in the Yakima Canyon (Umtanum gage) with a peak at approximately 4,200 cfs, which is much higher than the estimated median spring flow of 3,500 cfs for Black Rock. The existing reservoir flood control rules were applied for all the alternatives; therefore, no differences are expected in the frequency or magnitude of flood events in the upper Yakima River. Median summer flows in the Yakima Canyon (Umtanum gage; see figure 2.2 of the Draft PR/EIS) are reduced the most, from approximately 4,200 cfs to a low of approximately 3,000 cfs under the Black Rock Alternative, which is higher than the

Table 3 – Responses to individual comments.

Federal Government

	existing fall/winter base flows of approximately 1,100 cfs. Therefore, it is not likely that recreationists would encounter additional shallow areas due to changes to the flow regime resulting from the Storage Study alternatives.
FED-0007-01	WDFW has identified the Wymer reservoir site as wintering core habitat for bighorn sheep and core habitat for mule deer. Movement for wildlife in the area is primarily west and east. Wymer dam would eliminate some movement north and south on the east side of the Yakima River, but wildlife migrating from west to the east would not be adversely affected.
FED-0007-02	See response to comment FED-0007-01.
FED-0007-03	This information has been added to section 4.7.2.4 of the Final PR/EIS.
FED-0007-04	Comment noted.
FED-0007-05	The Draft PR/EIS noted that the current primary movement corridor is the Cold Creek Valley and Yakima Ridge, and it indicated that this would likely still be the corridor after construction of the dam and reservoir, as it is located largely to the east of the reservoir site.
FED-0007-06	Reclamation has selected the No Action Alternative as the Preferred Alternative, so a detailed wetland enhancement plan has not been developed. If an action alternative were selected in the ROD, a more detailed mitigation plan, including the possiblity of enhancing wetlands at a selected reservoir site, would be developed.
FED-0007-07	See response to comment FED-0007-03.
FED-0007-08	See response to comment FED-0007-01.
FED-0007-09	This information has been added to section 4.11.2.3, under "Long-Term Impacts" in the Final PR/EIS.
FED-0007-10	Figures 4.16 and 4.17 in the Final PR/EIS show the extent of the corridors would not change, so greater sage-grouse would continue to use them as they exist, except for those portions inundated by the reservoirs.

Table 3 – Responses to individual comments.

State of Washington

WAS-0001-01	The request for an extension of the comment time period was received after the comment period closed. No extension was provided.
WAS-0001-02	This is a result of a modeling artifact. For the months of January through March, the median flow was based on current operating conditions and was used to set the monthly target. However, the Storage Study Technical Work Group (TWG) established revised target flows beginning in April (for dry, average, and wet years) which was shaped downward from the peak flow in May. Consequently, this resulted in March having a higher flow than in April.
WAS-0001-03	This paragraph was rewritten in the Final PR/EIS to exclude any possible inference to the Yakima reach downstream of Prosser Dam.
WAS-0001-04	The seasonal volume error that was found is a result of mistakenly recording into table ES.2 values derived from average monthly flow values. It was later decided

Table 3 – Responses to individual comments.

State of Washington

	that median flow values were a better representation of monthly flow than average, which changed the seasonal flow volumes. This error did not affect model output because the flow targets (Wapato on table ES.1) are correct and were used as input criteria to the RiverWare flow model. All seasonal volume calcuations in this and other related tables were corrected in the Final PR/EIS.
WAS-0001-05	Comment noted. The intent of this table is to express alternative performance in terms of seasonal water volume (acre-feet) relative to the seasonal target volumes at the Umtanum and Parker gages--not seasonal average streamflow (cfs). This comparison is best understood by examination of the hydrographs in the Draft PR/EIS (see figures 2.2 - 2.7).
WAS-0001-06	Comment noted. Language in this paragraph contained within the section entitled, "Alternatives" of the Executive Summary of the Final PR/EIS was modified to clarify that the target flows discussed are in reference to the NMFS' 2000 and 2004 BIOP flow targets.
WAS-0001-07	This paragraph was rewritten in the Final PR/EIS (see section 4.8.2.3) under "Anadromous Fish, No Action Alternative." The No Action Alternative was essentially the same as current river operations with the addition of YRBWEP conservation measures. Therefore, summer rearing habitat in the upper Yakima River was essentially the same. And, because of the somewhat higher spring flows resulting from the YRBWEP conservation measures, a small benefit to smolt outmigration survival would be realized. The coho summer rearing habitat-to-flow curve [see figure 40 of the *Aquatic Ecosystem Evaluation for the Yakima River Basin* (Reclamation, 2008e) (TS-YSS-22)], shows a slight decrease in total habitat when flows increase from 300 cfs to 750 cfs; above 750 cfs, the habitat begins to increase. This loss of habitat between 300 to 750 cfs is due to an increase in mainstem channel velocity. Above 750 cfs, the increase in side-channel habitat makes up for the loss in the mainstem channel.
WAS-0001-08	It is assumed this is in reference to the second complete paragraph of the Executive Summary, page xxxi, of the Draft PR/EIS. Since juvenile coho salmon reside in the lower Yakima River (Wapato reach) in the summer, this species was chosen to discuss the relationship of summer juvenile salmon rearing habitat and flow. See figures 38 and 39 on page 77 of TS-YSS-22, which shows the flow-to-juvenile coho habitat area (figure 38) and the amount of juvenile coho habitat in June-September for each alternative (figure 39). With the exception of June, when the amount of habitat was greater for Black Rock, there was little difference in the amount of habitat between alternatives for each month. The reason for this is seen by examining the habitat-to-flow curve shown in figure 38, where there is minimal change in the amount of habitat within the summer flow range (approximately 500 to 1,500 cfs) for the various alternatives.
WAS-0001-09	Comment noted. If the System Operation Advisory Committee (SOAC) provided Reclamation with a river operations scenario defining how this water block is to be managed for instream flows, it would be possible to express fish benefits through application of the RiverWare and Ecosystem Diagnostics and Treatment (EDT) models.
WAS-0001-10	The analysis used the current state of conditions as modified by the actions expected to occur under each alternative. To the extent that actions involving

Table 3 – Responses to individual comments.

State of Washington

	habitat have already occurred, they are included in the current condition and in the No Action Alternative. Actions which are contemplated are not included unless they are reasonably foreseeable; this means there is a high degree of certainty that they will occur, plans have been approved, regulatory requirements have been met, and financing is available. Prospective habitat actions that are not reasonably foreseeble were not included as features of the proposed actions as they exceeded the purpose and need for the Storage Study to provide additional storage. See response to comment TRB-0002-02, which addresses the future direction of the State's SEPA process for the Storage Study.
WAS-0001-11	See response to comment TRB-0002-02. It is acknowledged that there is additional fishery benefit realized by the inclusion of tributary flow and habitat restoration actions, but these were outside of the scope of this study. It can be difficult to parse out the storage location of "fish water," and it is more instructive to first define where, when, and how much the "fish water" bucket is used (perhaps based on water year type and carryover). This exercise may then require focus on "fish water" storage location and amounts in terms of meeting desired flow conditions.
WAS-0001-12	See response to comment TRB-0002-02.
WAS-0001-13	Side-channel connectivity and winter habitat conditions are potentially viable indicators; however, Reclamation selected what were deemed the most important indicators. Though not directly specified in table ES.6, both attributes are captured in the EDT model. Specifically, for the five floodplains, 2-D modeled connectivity for each side channel is tracked through time (weekly) as a function of flow. Specific biological rules were developed for the EDT model to assess side-channel quality as a function of seasonal connectivity. Similarly, over-wintering conditions are assessed for each EDT reach based on the habitat type and condition using biological rules to estimate over-winter survival.
WAS-0001-14	The error has been identified and corrections have been made to tables 2.2 and ES.2 in the Final PR/EIS.
WAS-0001-15	Some of the percentage values presented in tables 2.10 and 2.11 of the Draft PR/EIS were incorrect. These values have been corrected in the Final PR/EIS (section 2.3.3).
WAS-0001-16	The lowest average content occurs in August at 71 percent. The lowest minimum for the period of record used would also be in August, at 42 percent. The reservoir was sized to meet needs under drought situations when demands may be high and supply from the Columbia low. Certainly, the filling schedule for the Black Rock reservoir could be optimized to take into consideration effects to migrating fall Chinook spawners. The criteria used to fill the reservoir was designed to maximize storage based on water availability above the 2004 BIOP target flows for the Columbia River. These criteria could be modified.
WAS-0001-17	The pumping plant and conveyance features were designed to fill the reservoir to its normal water surface elevation (El.) of 1,730 feet. The text on page 2-55 of the Draft PR/EIS was written to describe the physical locations of the intake on the Yakima River and discharge outlet into Wymer reservoir. For these studies, the

Table 3 – Responses to individual comments.

State of Washington

	minimum operating water surface of the Yakima River was estimated to be El. 1,275 feet, and the normal water surface in Wymer reservoir to be at El. 1,730 feet. The pumping units were selected to operate over an operating range of 365 to 475 feet of total design head. The top of inactive storage listed in table 2.30, El. 1,456 feet, is referenced to invert of the high-level intake of the outlet works. Initially, the low-level intake of the outlet works would be operated and the top of inactive storage will be at El. 1,375 feet. For this study, Reclamation estimated that sedimentation of the reservoir would eventually inundate the low-level intake, requiring future releases to be made from the high-level intake of the outlet works. See the *Wymer Dam and Reservoir Appraisal Report* (Reclamation, 2007c) (TS-YSS-16), which can be found on the Storage Study's Web site, http://www.usbr.gov/pn/programs/storage_study/index.html, for more discussion of these items.
WAS-0001-18	Yes, the proposed pipeline for the Wymer Dam Plus Yakima River Pump Exchange Alternative crosses Amon Wasteway; however, the crossing is not in the Yakima River delta. The crossing is approximately at station 135+00 of the pipeline along the abandoned railroad alignment. This crossing of Amon Wasteway is recognized in the impact analysis in section 4.13.2.5 (see table 4.41). The main impact to Amon Wasteway would be during the construction phase, and appropriate coordination with involved entities related to design and construction of the crossing is included as part of the "Mitigation" discussion in section 4.13.2.6 of the Final PR/EIS.
WAS-0001-19	Yes, it would be possible to revise the operational criteria to allow for more water exchange with Sunnyside Valley Irrigation District (SVID) for wet water years. It was operated this way to reduce pumping costs. Conversely--and it would be year-specific--one needs to weigh the cost of the additional pumping versus the percent increase in flow past Parker and the resulting biological/physical benefits.
WAS-0001-20	Comment noted.
WAS-0001-21	Population age structure is indirectly taken into account in the All H: Habitat, Hatcheries, Harvest, and the Hydroelectric Analyzer (AHA) model by utilizing input from the EDT model, where the user is required to define the mean population structure (e.g., percent age composition by brood year) for each population. Within the AHA model, the number of returning adults is based on the average observed smolt-to-adult-survival rate for each species. The relationship between spawners and harvestable surplus may not be linear, caused by year-to-year variation in run strength between the target and nontarget (e.g., weak and ESA stocks) population(s); however, for the purpose of comparing fish benefits between alternatives for planning purposes, this approach to accounting for population structure is deemed sufficient. Because of time constraints and the inability to quantify the long-term effect of potentially more carcasses in the mainstem reaches, the EDT carcass attribute was not manipulated for any of the alternatives.
WAS-0001-22	Fish passage at Cle Elum Reservoir and Bumping Lake is not reasonably foreseeable at this time. The feasibility study has not yet been completed, nor have the necessary environmental compliance processes been initiated either for the construction of the passage facilities or the supplementation program.
WAS-0001-23	With regard to steelhead, language in the Final PR/EIS (section 2.7.1.2) was

Table 3 – Responses to individual comments.

State of Washington

	adjusted to note the existence of Tribal harvest in the Columbia and Yakima Rivers. However, it is Reclamation's understanding that the Tribes do not target steelhead, but catch them incidentally when seeking other species. As a result, we do not believe that this omission would significantly affect the fishery benefit estimates and therefore do not plan to add this component into the economic analyses.
WAS-0001-24	Effects upon river sport fishing, including catch-and-release fishing, as well as a range of other recreational activities, were included under the recreation analysis for the Yakima River. The recreation analysis evaluated the extent to which monthly flows, by alternative, fell within the acceptable range of flows as obtained from recreator surveys. While the recreation analysis did not break down alternative-specific changes in Yakima River visitation by recreation activity, fishing for nonmigratory species was included in the analysis.
WAS-0001-25	By way of definition, the economic analysis uses the term “nonuse values” to represent preservation values unrelated to any use of the resource. Conversely, "use values" refer to participation values and can reflect either consumptive uses (e.g., harvest-based fishing) or nonconsumptive uses (e.g., wildlife viewing, catch-and-release fishing). Where necessary, Reclamation has tried to clarify these interpretations in the Final PR/EIS. Nonconsumptive (catch-and-release) fishing values for both anadromous and resident fish were excluded from the fish benefits section. However, nonconsumptive fish values were included in the recreation analysis, based on flows falling within acceptable ranges as obtained from a recreation survey. Also, see response to comment WAS-0001-24. When applicable, the "avoided-cost" concept represents a legitimate benefit or, more appropriately, a cost savings. If it could be shown that, by implementing one of the proposed alternatives, salmon recovery program costs could be reduced or avoided, then the avoided costs would reflect a benefit for that alternative. Reclamation’s current position with respect to this issue for the Yakima Storage Study alternatives is that the habitat-oriented salmon recovery programs currently in place in the Yakima River basin would not be significantly reduced with implementation of any of the proposed alternatives. The proposed alternatives provide additional water supply for fish purposes, but that would not preclude the need for habitat improvements. As a result, there are not significant avoided-cost benefits associated with any of the proposed alternatives. A discussion of avoided-cost benefits was added to the introduction of the fisheries benefits section (2.7.1.2) under "Economic and Financial Analysis" of chapter 2 of the Final PR/EIS.
WAS-0001-26	Nonconsumptive use values associated with wildlife viewing visitation are measured in the recreation analysis as opposed to the fisheries benefit analysis.
WAS-0001-27	Comment noted.
WAS-0001-28	The Black Rock Alternative would draw water from the Columbia River above the Hanford Reach. This reach of the Columbia River has not been designated under the Wild and Scenic Rivers Act, but it does lie within the Hanford Reach National Monument. This is noted on the frontispiece. For this analysis, the affected environment for the Columbia River is defined to extend downstream to the confluence of the Yakima River. This geographic boundary was chosen because the water pumped into Black Rock reservoir returns back to the Columbia River at the confluence of the Yakima; thus,

Table 3 – Responses to individual comments.

State of Washington

	Columbia River flows will be more or less the same as those upstream of the pump station in Priest Rapids Lake.
WAS-0001-29	As stated in the response to comment WAS-0001-13, both side-channel connectivity and winter habitat conditions are captured in the EDT model, and thus influence (among many other attributes) the fish abundance numbers.
WAS-0001-30	The aquatic invertebrates' analysis focuses on differences among alternatives. As such, the analysis did not include aquatic invertebrate productivity in the reservoirs or tributaries that were not significantly affected by the different alternatives relative to the No Action Alternative.
WAS-0001-31	The Columbia River instream flow constraints are representative of the 2000 and 2004 BIOPs which are referenced in section 2.4.2., page 2-41, of the Draft PR/EIS. These are the same as shown in table 3-8, page 3-22, of the *Columbia River Water Management Program Final Programmatic Environmental Impact Statement* (Ecology, 2007a), with the exception of the "Snake River at Lower Granite Dam flows." The flow constraints also include the Vernita Bar Agreement spawning flows at Priest Rapids Dam during the period of October 10–June 30 and the Washington State Policy for Voluntary Regional Agreements of no withdrawal in July and August.
WAS-0001-32	See response to comment FED-0004-04.
WAS-0001-33	Comment noted; however, Reclamation is not aware of SOAC flow recommend-dations being discussed in the Draft PR/EIS.
WAS-0001-34	See response to comment TRB-0001-67.
WAS-0001-35	See response to comment TRB-0001-67.
WAS-0001-36	See response to comment TRB-0001-67.
WAS-0001-37	The section labeled "Recommendations" in Stanford et al. (2002) appears at the end of Part D. It includes both findings of the studies and recommendations. It recommends that water from the Columbia River be exchanged for current diversions from the Yakima River by the Roza and Sunnyside divisions and that this be coupled with a floodplain expansion/revetment removal effort. The Black Rock Alternative and the Wymer Dam Plus Yakima River Pump Exchange Alternative respond to the first of these recommendations. The analysis of both of these alternatives looked at the impacts which would occur if the flow regime of the Yakima River were altered as a result of the exchange. The second part of the recommendation, to expand the floodplain, was not examined, as it fell outside of the scope of the Storage Study to consider ways to increase storage in the Yakima River basin. While some work has gone on to look at options for expanding floodplains in various locations, none of these efforts have progressed to the point where they are now reasonably foreseeable; therefore, they were not included in the cumulative impacts assessment. As such, the current analysis does respond to the recommendations in Stanford et al. (2002) to the extent they fell within the scope of the Storage Study.
WAS-0001-38	There are many factors that affect the quantity of recharge to the groundwater system. This topic is beyond the scope of this PR/EIS. Additional information is available from the *USGS Scientific Investigations Report 2007-5007* (Vaccaro and Olsen, 2007).
WAS-0001-39	The information about irrigation return flows was developed and analyzed by the

Table 3 – Responses to individual comments.

State of Washington

	USGS and is available in the referenced report: Vaccaro and Sumioka (2006), *USGS Scientific Investigations Report 2006-5205*.
WAS-0001-40	The intent of figure 4.10 was to highlight in general terms the process relationships between flow, sediment transport, channel structure, and the riparian floodplain. The intent was not to provide an in-depth discussion of how the various salmon stream habitat features (brown box) are affected by these four aforementioned categories.
WAS-0001-41	Section 4.5.2.2 in the Final PR/EIS has been modified to address this comment.
WAS-0001-42	The results from that study were as characterized in the Draft PR/EIS. The detailed information requested relative to the citation is available in that publication. The full citation is: Carroll, Jim and Joe Joy. 2001. *USBR Columbia River Pump Exchange Project Potential Water Quality Impacts on the Lower Yakima River*. (Publication No. 01-03-000) January, 2001. Environmental Assessment Program, Washington State Department of Ecology, Olympia, Washington.
WAS-0001-43	Comment noted. This information was taken from the *Priest Rapids Hydroelectric Project, Washington, Final EIS (FERC Project No. 2114)* (Federal Energy Regulatory Commission [FERC], 2006); therefore, no changes were made to this table in the Final PR/EIS (section 4.8.1.1). However, the data source was cited in the table title.
WAS-0001-44	See response to comment WAS-0001-43.
WAS-0001-45	Comment noted; fall Chinook was added to the list of species that migrate through the affected area in the Final PR/EIS (section 4.8.1.1).
WAS-0001-46	The primary flow objectives, which are all mainstem related (opposed to tributaries), were to improve spring flows past Parker; decrease summer flows in the upper Yakima River; and decrease the flip-flop effect in the upper Yakima and in the lower Naches Rivers; and increase winter flows in the Cle Elum River. While there are other flow objectives that could have been modeled, these objectives were all stated as important by the Storage Study TWG. Also, see response to comment TRB-0002-02 regarding the focus of the Joint Alternatives.
WAS-0001-47	Comment noted; text that expands on the Stream Network Temperature (SNTEMP) model that was used for the Storage Study was added to the Final PR/EIS (section 4.8.2.1). Pages 37-38 of TS-YSS-22 provide a brief description of the temperature modeling component in the context of the entire modeling design. Additional modeling details can be found in the USGS publication entitled, *Modeling Water Temperature in the Yakima River*, at the following web address: http://pubs.usgs.gov/sir/2008/5070/.
WAS-0001-48	The comment points to the need (which was recognized at the outset of the study) to have a stronger link between surface water temperature and how it is influenced by groundwater contribution. To some degree, this was captured in the temperature model through seepage runs conducted in various reaches. However, there are currently no means to predict the benefit to river temperature as a function of groundwater recharge associated with spring freshets. It is hoped that the USGS groundwater model currently under development will help define this groundwater-surface water temperature relationship.
WAS-0001-49	There are many ways a volume of water dedicated for instream flow/fisheries purposes could be modeled. The comment deals more with the issue of how best

Table 3 – Responses to individual comments.

State of Washington

	to optimize the water available for a decided-upon alternative, based on the water year type (and other factors). The purpose of the Draft PR/EIS was to evaluate three distinct alternatives, plus the No Action Alternative. Input was sought from the Storage Study TWG regarding designing a river operations scenario that seemed reasonable for each alternative. As is pointed out, this does not mean there are not other ways to use the available water for each of the alternatives, depending on which flow objectives one wants to emphasize. It should be pointed out that there is a link between the RiverWare flow output and the EDT model. In fact, the RiverWare model generated a daily flow time-step for the 25-year period of record that was used to directly estimate several EDT level 2 attributes (e.g., flow, habitat, temperature).
WAS-0001-50	All models should be viewed as uncertain conceptual guides of likely outcomes rather than absolute truth (Brown and Pasternack, 2008). One must be careful of the interpretation of any model results and not hold the belief that what has been modeled represents exactly what happens in nature; it is an unrealistic expectation. Hydraulic modeling was used in this study to understand the trend in habitat availability (and possibly quality) with changes in discharge. Hilldale and Raff (2008), in *Assessing the Ability of Airborn LiDAR to Map River Bathymetry*, discussed the topic of data quality (i.e., accuracy and precision) and light detection and ranging (LiDAR) ground-truthing for the 2-dimensional (2-D) models (Easton, Kittitas, and lower Naches), which can be downloaded at: http://www.usbr.gov/pn/programs/storage_study/reports/ts-yss-12/2Dmodel.pdf. Regarding survey resolution--Any river survey is difficult to do properly, especially for rivers similar in size to the Yakima. Microhabitat features are often transient. One must realize that microhabitat features are on a scale that does not fit with the overall scale of our modeling effort, with respect to the scale of the mesh and with the scale of our survey that was performed over 95 river miles (RM). For example, the Easton model was approximately 12 river miles long, with a grid resolution of approximately 2 meters in the lateral direction. It is unreasonable to expect a reach-scale model to capture microhabitat features that could constitute habitat, much less a survey that could include this level of detail over a long reach. It was mentioned that one preference would be to use transects. Transect surveys do not provide the spatial detail required for 2-D modeling. The 2-D model requires continuous input of topography, as provided by some type of topographical survey. It was also mentioned that there was a preference for sound navigation ranging (SONAR) surveys. This type of survey was performed in the Wapato and Union Gap reaches by the USGS in conjunction with LiDAR. The USGS used SONAR surveys to fill data gaps (e.g., tree-shaded side channels) in the LiDAR survey data. Studies covering a reach scale provide a much better understanding of the dynamic nature of rivers. This is true with many (if not all) fluvial processes, e.g., sediment transport, channel morphology, and aquatic habitat. The LiDAR enabled a significant portion of the Yakima River to be modeled in two dimensions over a reach scale, which provides significantly more detailed information about habitat than any one-dimensional model. There was no comparison of the USGS Delphi Survey results pertaining to

Table 3 – Responses to individual comments.

State of Washington

	species/lifestage preference curves to measured field data. Perhaps some of the work being performed by WDFW on juvenile spring Chinook and O. mykiss could be applied to this issue in the future.
WAS-0001-51	The EDT model incorporates all stream reaches in the Yakima basin (400+), including those below Prosser dam, and each of these reaches is ranked for at least 45+ environmental attributes. These reach types were not 2-D modeled because they--among many others--are confined and not floodplains; therefore, the types and amount of habitat are not as influenced by change in flow (which was the primary indicator used in the Storage Study). However, channel width did vary as a function of flow based on the monthly width pattern that defined the baseline condition. No temperature modeling was conducted downstream from Prosser Dam because it was perceived by Reclamation and USGS-Tacoma that the river temperature is driven primarily by air temperature. Focus was given to the Roza-to-Prosser-Dams reach where it was determined that the influence of additional water may affect river temperature.
WAS-0001-52	Since no 2-D modeling was conducted for the Prosser-to-Columbia-River reach, it is assumed that this comment is more directed to the Wapato reach. An initial loss of total habitat as a function of increasing flow was a common observation for the floodplain 2-D models for rearing lifestages (see figure 40 on page 78 of TS-YSS-22). This behavoir is a result of losing more mainstem habitat (as channel velocity increases) that is not fully compensated for by an increase in side-channel habitat for a given flow. However, at some point as flow increases, the increase of side-channel habitat does outweigh the loss of habitat in the mainstem channel, and the amount of total habitat increases.
WAS-0001-53	For each of the five 2-D modeled reaches, a few transects were taken to calibrate water elevation at a range of flows, and also to determine the hortizonal and vertical error associated with the LiDAR points. See response to comment WAS-0001-50.
WAS-0001-54	There was no ability with the temperature model to differentiate water temperature between mainstem and side channel. This would be useful information to have, but requires a groundwater model and a more sophisicated temperature model that can track temperature in two dimensions as a function of flow and groundwater influence through time.
WAS-0001-55	See response to comment TRB-0002-02.
WAS-0001-56	As stated in response to comment WAS-0001-13, the EDT model does account for side-channel connectivity as a function of flow for each of the five 2-D modeled reaches. As requested, flow-to-habitat calcuations were reviewed.
WAS-0001-57	It is assumed that what is meant by the term "comprehensively addressed" refers to the absence of 2-D modeling for reaches downstream from Prosser Dam. See response to comment WAS-0001-51. The EDT model does account for the reaches downstream from Prosser Dam and, in fact, does consider the habitat conditions of these reaches and how they influence the overall fall Chinook and coho populations' abundance, productivity, capacity, and diversity estimates.
WAS-0001-58	The initial part of the comment appears to be in reference to the habitat area by

Table 3 – Responses to individual comments.

State of Washington

	lifestage indicators presented in table 2.69. It is true that no models represent the real world 100 percent and are a simplification of what we can accurately measure and understand. For purposes of the Storage Study, the accuracy of the 2-D models was sufficient. The main purpose of the 2-D models was to monitor, with reasonable precision, the changes in habitat type and amount as a function of flow. This habitat data provided input to the EDT model habitat attributes (for the five major floodplain reaches), which provided a more robust method of tracking the biological effects to salmon and steelhead with respect to changes in the flow regime associated with each alternative. The comment appears to raise the issue of balance between model accuracy and geographic scale and the intended application of the model results. Clearly, model accuracy can increase if scale is reduced. However it was decided a more detailed representation of flow-to-habitat conditions for the modeled floodplains (or the inclusion of lesser floodplain reaches) was not required for the Storage Study. Beyond the aforementioned considerations, one must factor in the financial and time costs required to increase model accuracy and assess whether it is warranted or required to achieve the study objectives. See the response to comment WAS-0001-50 that provides more detail on the 2-D model calibration method. In reference to the last sentence of this comment ("Benefits of the proposed projects [see 4.8.2.7] are greater for older year classes rather than the year classes measured"), it is assumed the reader is making a comparison between the relatively small increases in fry/juvenile (i.e., smolt, summer/fall parr) habitat to the more substantial increases in adult fish abundance. An increase in juvenile passage mostly downstream of Wapato Dam was the main factor that accounted for this seemingly inequitable increase in adult abundance when compared to the modest increase in juvenile habitat area. In other words, the benefit realized in fish abundance between alternatives was largely explained by improved juvenile migration survival at the diversion dams and improved in-river survival. More details on this discussion point can be found on page 152, table 14, of TS-YSS-22.
WAS-0001-59	It is difficult to respond to this comment given that no page number, etc., was cited to better understand the context of the comment.
WAS-0001-60	Comment noted. For the purpose of the Storage Study, the Decision Support System (DDS) species/lifestage flow-to-habitat values are intended to provide the researcher/manager with a quick read of how the amount of habitat changed with respect to the flow regime associated with each alternative. The issue raised involves a more complex interaction of flow and various ecological interactions and the resulting influence on salmon productivity, which is not the intent of the DSS habitat indicators. This issue is addressed in the EDT model through the complex interaction of the rule curves that express the biological expression to a set of environmental conditions.
WAS-0001-61	On the surface, these two outputs (steelhead abundance and the Environmental Quality [EQ] rating for the Black Rock Alternative [or any alternative]) appear comparable; however, this is not the case. The EQ account is a qualitative method used to rate the environmental beneficial/adverse impacts of an alternative (see section 2.8.1 in the Final PR/EIS for a description of the methodology). Whereas, the EDT/AHA models were used to estimate steelhead abundance for each alternative. The methodology and purpose for each stated output are

Table 3 – Responses to individual comments.

State of Washington

	different and thus should not be equated as comparable. Steelhead for the Black Rock Alternative were given the rating of "1" (in the significance column under the "Threatened and Endangered" category in table 2.66 in the Draft PR/EIS) because this alternative (as well as the others) affects flow conditions mainly in the mainstem reaches below the five reservoirs. In the Naches River, flow upstream of the Tieton River confluence (RM 17.5) was minorly affected by the alternatives. Thus, it was deemed that of the various steelhead populations, upper Yakima steelhead would potentially be affected the most, and the others very little because their life histories are largely carried out in the tributaries or upper Naches River.
WAS-0001-62	See response to comment TRB-0002-02. There is a need, outside of this study, to evaluate the synergistic benefits of coupling flow (mainstem and tributary) with habitat restoration activities to assess the fisheries benefit associated with a more holistic approach to salmon restoration in the basin.
WAS-0001-63	The reason for no adult production (abundance) estimates specific to each Joint Alternative is that there was no model available to quantify this improvement as a function to a change in the flow regime. The EDT model is not designed to model resident rainbow trout and bull trout at this point in time. Regarding the economic use values, see responses to comments WAS-0001-24 and WAS-0001-25.
WAS-0001-64	Comment noted. This would require defining what index sites/attributes should be better defined in the modeling design.
WAS-0001-65	Section 2.4.2.3 describes how the municipal water demand was applied in the model. The water use was divided into three sections of the Yakima River and modeled as a continuous flow withdrawal at selected points in those three sections. Since most current municipal use is from groundwater, the assumption was made that future use would be from groundwater and that groundwater and surface water are connected. Another assumption was made that the mitigation for the municipal water use would not have to be at the point of use but could be in the reach of the river. Section 2.4.2.3 of the Final PR/EIS has been modified to include these assumptions.
WAS-0001-66	Reclamation has selected the No Action Alternative as the Preferred Alternative in the Final PR/EIS, so no design changes will be made to the Wymer Dam and Reservoir Alternative at this time. However, if this alternative were selected in the ROD, this modification could be considered during final design.
WAS-0001-67	It is difficult to model this benefit on a basinwide scale in quantitative terms. The EDT model does have a carcass attribute that can be modified on a reach-specific basis, but this would require forecasting the future benefit of nutrient enhancement from increased fish abundance. This was not done for any of the alternatives.
WAS-0001-68	See response to comment TRB-0001-20.
WAS-0001-69	This footnote comment to WDFW's spreadsheet addressing the error in seasonal acre-foot calculations was responded to in response to comment WAS-0001-04.
WAS-0001-70	See response to comment WAS-0001-69.
WAS-0002-01	"Development of treatment plans" has been included in the discussion of mitigation in section 4.20.2.4 of the Final PR/EIS.

Table 3 – Responses to individual comments.

State of Washington

WAS-0002-02	A Programmatic MOA has been included as a potential and negotiable mitigation strategy in section 4.20.2.4 of the Final PR/EIS.
WAS-0003-01	Rare plant surveys would be conducted if an action alternative were selected. However, the Preferred Alternative in the Final PR/EIS is the No Action Alternative.
WAS-0003-02	Comment noted.
WAS-0003-03	Comment noted.
WAS-0004-01	Further discussion with WSDOT of potential for relocation of SR-24 to the north, rather than to the south, of the reservoir in the Black Rock Alternative is included as a mitigation measure in the Draft PR/EIS. Also, the Black Rock mitigation discussion in section 4.16.2.6, "Transportation," has been augmented in the Final PR/EIS to place greater emphasis on WSDOT permitting requirements related to state route relocations, access, crossings, and utility installations.
WAS-0004-02	Comment noted. Discussion of transportation facility impact mitigation has been augmented in section 4.16.2.6 of the Final PR/EIS to place greater emphasis on compliance with WSDOT requirements.
WAS-0004-03	See response to comment WAS-0004-02.
WAS-0004-04	Comment noted.
WAS-0004-05	As noted in section 4.16.2.1 in the Draft PR/EIS, “No construction plans have been prepared for facilities associated with the alternatives. Consequently, no detailed analysis is possible of construction-phase impacts such as material haul routes, construction traffic volumes, increased road repair and maintenance requirements, frequency and length of detours, etc.” Necessary and appropriate coordination with involved agencies in planning for construction-phase transportation needs and mitigating impacts is included in Draft PR/EIS mitigation discussion. In addition, the discussion of transportation facility impact mitigation in the Final PR/EIS has been augmented to place greater emphasis on compliance with WSDOT requirements (see section 4.16.2.6).
WAS-0004-06	Stormwater and surface runoff was addressed in section 4.6.2.6, "Mitigation," for the construction activities. Actions would be taken to meet regulatory requirements in this regard. Discussion of transportation facility impact mitigation in section 4.16.2.6 in the Final PR/EIS has been augmented to place greater emphasis on compliance with WSDOT requirements.
WAS-0004-07	See response to comment WAS-0004-02.

Table 3 – Responses to individual comments.

Local Government Agencies

LOC-0001-01	Comment noted.
LOC-0002-01	The agricultural analysis used the budget analysis method outlined in the *P&Gs*. The other methods are suggested as options for analyzing agricultural benefits, but are not to be used in addition to the budget analysis method. If the other methods are used in addition to the budget analysis method, double counting

Table 3 – Responses to individual comments.

Local Government Agencies

	would occur. Data in published sources does not provide evidence that drought impacts extend beyond the drought year. Other factors besides drought impact production levels for all the commodities grown in the study area. For example, in 1995, the year following 3 consecutive drought years, apple production was 9 percent below 1994's record production level, according to the *Washington Agricultural Statistics Annual Report*. The *1995 Fruit and Tree Nuts Situation and Outlook* report (USDA, 1995) indicated that the loss in apple production in 1995 was due to a cool, wet spring as well as some hail damage.
LOC-0002-02	See response to comment LOC-0002-01.
LOC-0002-03	See first portion of response to comment LOC-0002-01.
LOC-0002-04	The KID water service contract allows them to take any flows, within the limits of the water right and contract, above the Title XII target at Prosser Dam, which is basically return flows from the other water users in the basin. The hydrologic modeling completed for the Draft PR/EIS did not indicate any water shortage for the KID in the No Action Alternative, so the KID did not receive any benefit from any alternative. The KID entitlement is not included in the calculation of prorationing for the TWSA above Parker. A discussion of this information is included in the Final PR/EIS in section 2.2.5.2.
LOC-0002-05	The probability of a dry year is equal in all years; therefore, each year has an equal probability of 1/25 or .04. Essentially, the analysis is averaging the benefits in each of the 25 years (the benefits are zero in all years except 1987, 1992, 1993, 1994, and 2005).
LOC-0002-06	As outlined in section 4.2.2.6 runoff modeling was not done because, though the current climate change models are largely consistent in projecting warming in the future, the same models are not consistent with respect to projected future precipitation. Some models project a decrease in precipitation, but the majority project an increase. Mastin and Sharp (2006) presumed no change in precipitation in their analysis, an assumption that may be incorrect. Hamlet and Lettenmaier (1999), whose results are cited in table 4.8, showed summer mean runoff at the Dalles could either increase or decrease depending largely upon the assumption made about future precipitation. Since precipitation is a key component in runoff modeling, and the existing climate change models do not agree on what future precipitation will look like, Reclamation chose to qualitatively address climate change rather than try to model runoff when there was uncertainty about a key variable.
LOC-0002-07	See response to comment TRB-0001-20.
LOC-0002-08	The use of drought relief wells is addressed under "No Action Alternative" in section 4.3.2.2. The ongoing Yakima Basin groundwater study (Reclamation, Ecology, Yakama Tribe, and USGS) has provided additional information about the impacts of pumping wells on surface water supplies and the interconnection of surface and groundwater.
LOC-0002-09	As noted in the Final PR/EIS, the State of Washington has decided not to proceed further in this joint NEPA/SEPA process as a joint lead agency for the Final PR/EIS; however, they are serving as a cooperating agency. In addition, they are initiating a separate process to prepare a supplemental Draft EIS under SEPA to look at broad range of solutions to water resource problems in the Yakima basin. The State envisions this effort as the next phase of the Yakima River Basin Water Enhancement Project and expects to ask Reclamation to be involved in this effort.

Table 3 – Responses to individual comments.

Local Government Agencies

	As a consequence, the State alternatives have now been dropped from the Final PR/EIS. The *Appraisal Evaluation of Columbia River Mainstem Off-Channel Storage Options* (Reclamation and Ecology, 2007b) (Off-Channel Assessment) was a State study. Reclamation lacks feasibility study authority to pursue the concepts that were included in that study. Therefore, the Storage Study Final PR/EIS is focused on inbasin alternatives that involve options for creating additional water storage in the Yakima River basin. Also, the concepts evaluated in the Off-Channel Assessment were not included in the cumulative effects analysis as they have not been developed to the point where they are reasonably foreseeable.
LOC-0002-10	Comment noted. Delisting criteria for the Middle Columbia River Steelhead Distinct Population Segment (DPS) is fairly complex, requiring that several criteria be met both wiithin the Yakima basin as well as in the other basins that comprise this DPS (see section 4.3 of the *Draft Yakima Subbasin Salmon Recovery Plan* (Yakima Subbasin Fish and Wildlife Planning Board, 2005). The breadth of fishery information generated by the Storage Study was not deemed sufficient to adequately address NMFS delisting criteria in order to discuss the possibility of any one of the alternatives leading to delisting.
LOC-0002-11	It might be advantageous to optimize the operational configuration of the selected alternative(s). However, a single operational scheme for each of the alternatives was was determined sufficient to compare alternatives. The operational criteria applied to each alternative was based on input from the Storage Study TWG. Therefore, there was some consideration given to how best operate each of the alternatives. The No Action Alternative is identified as the Preferred Alternative in the Final PR/EIS; however, if an action alternative were selected in the ROD, ways to optimize the operational scheme (depending on the water year type) would be pursued.
LOC-0003-01	The No Action Alternative is the Preferred Alternative. However, if an action alternative were selected in the ROD, contractors would file a dust control plan with the Yakima Regional Clean Air Authority prior to any clearing, grading, construction, paving, or landscaping.
LOC-0004-01	Response numbers 1 through 4 below correspond to the four questions presented in this overall comment. 1) The flow objectives referenced were developed through the Storage Study TWG and did consider biological fishery needs. So, in this sense, these flows are in the context of what SOAC and YRBWEP have been tasked with defining. 2) Because the Storage Study TWG did consider the biological needs of the fish when establishing these monthly flows, they should not be seen as "meaningless." Nor should they be considered final, given we had limited time to fully discuss the adequacy of these flows or to evaluate all the major reaches of the basin; in addition, these flow criteria were not presented formally to SOAC or YRBWEP for their consideration. 3) For the sake of simplicity, only the average-year flow objectives were presented in the Draft PR/EIS. However, for the same reaches both wet- and dry-year flow objectives were defined. Basically, monthly values (mainly in the spring) were

Table 3 – Responses to individual comments.

Local Government Agencies

	either increased (wet year) or decreased (dry year) relative to the average-year flow objectives. 4) While this approach does have merit and was considered, it is complicated by the fact that, depending on the stream reach and season, flows can be either too low or too high. It seemed to be more instructive to present the water needs by reach and allow the RiverWare model to evaluate the ability of each alternative to meet both irrigation and instream flow goals.
LOC-0004-02	Table 2.3, page 2-6, of the Draft PR/EIS indicates the proratable irrigation water entitlements total about 1.28 million acre-feet. Thus, a 70-percent dry-year water supply goal would amount to about 896,000 acre-feet as you assumed. These are the same figures referenced on page 44 of the *Yakima River Basin Storage Alternatives Appraisal Assessment* (Reclamation, 2006a) (TS-YSS-8). If the proration level in a dry year is 37 percent under the "without-project condition," a rough estimate of the proratable supply provided is about 474,000 acre-feet (1.28 million acre-feet x 37 percent), requiring an additional 422,000 acre-feet (33 percent) to meet the dry-year irrigation goal. In the Black Rock studies, however, nearly all of Roza's and all of Sunnyside's water came from Black Rock in drought years (table 2.20 in the Final PR/EIS) to maximize the amount of inbasin storage that could be used for fish flows. The above figures include the Sunnyside and Yakima-Tieton Divisions which have indicated they do not desire to receive an additional proratable supply in dry years. This has been addressed in the Final PR/EIS (see section 2.2.1.2). Further, the operational model and the constraints imposed by the Acquavella adjudication and "settlement agreements" may result in some differences from these "rough estimates." We have endeavored to be more explicit in regard to the current proratable entitlements and the dry-year proratable water supply figures provided to irrigation entities in the Final PR/EIS.
LOC-0004-03	See response to comment TRB-0001-20.
LOC-0004-04	See responses to comments TRB-0002-02 and LOC-0002-09.
LOC-0004-05	The Yakima River Basin Water Storage Feasiblity Study was authorized outside of the YRBWEP and is a separate and distinct project, not a subset of the YRBWEP.
LOC-0004-06	See response to comment LOC-0004-02.
LOC-0004-07	See response to comment LOC-0004-02.
LOC-0004-08	National economic benefits and regional economic effects of the Black Rock Alternative are discussed in chapter 2. The beneficial effects of that alternative on water quality, fish, and recreation are discussed in chapter 4 (sections 4.6.2.3, 4.8.2.4 and 4.9.2.4, and 4.12.2.3, respectively). It should be noted that that analysis did not indicate that water quality concerns in the Yakima River would be significantly reduced or eliminated by the Black Rock Alternative. For example, that alternative had little effect on summer water temperature in the Yakima River below Roza Dam.

Table 3 – Responses to individual comments.

Organizations

ORG-0001-01	The report qualitatively addresses the potential climate change impacts on regional water resources (section 4.2.2.6, subsection "Global Climate Change," subheading "Potential Climate Change Impacts on Regional Water Resources"). The reasoning for providing a qualitative analysis rather than a quantitative analysis was discussed in the Draft PR/EIS (same section and subsection, but subheading "Treatment of Climate Change in this Draft PR/EIS"; renamed "Treatment of Climate Change in the Storage Study" in the Final PR/EIS).
ORG-0001-02	The commenter outlines the merits of replacing a qualitative analysis of climate change implications (section 4.2.2.6, subsection "Global Climate Change," subheading "Potential Climate Change Impacts on Regional Water Resources") with a "quantitative bracketing" analysis where alternatives would be analyzed quantitatively under several contrasting climates. The latter approach could be useful if suitably scoped. However, one cannot say which approach would be more correct or useful given the available climate projection information (figures 4.4 through 4.7) that would have to support any quantitative approach, and how the precipitation projections within this information represent such a vast range of potentially drier to wetter climates.
ORG-0001-03	See response to comment TRB-0002-02.
ORG-0001-04	This response assumes that the reference to “targeted projects to change the form of the floodplain” addresses projects separate from the Storage Study, such as the Schaake restoration and the Gap-to-Gap levee-widening projects. While these types of projects may be affected by possible implementation of one or more scenarios related to the Storage Study, this level of analysis was beyond the scope of the Storage Study. There are a few reasons for this: 1. Evaluating projects that propose some sort of floodplain restoration would lead to rather high uncertainty in predictions/projections of increase in beneficial habitat. 1a. This uncertainty primarily comes from the fact that we do not know precisely what form those projects will take. They are still in early enough phases that final form is not known. For example, the Gap-to-Gap levee widening effort has hardly begun and levee positions are not yet determined. 1b. Predicting final morphology after making certain areas of floodplain accessible after many years of being cut off from the river has its own inherent uncertainty in a dynamic system. Any analysis we could perform within the Storage Study would be static, even if it assumes some sort of post-restoration form. Using your example of reopening side channels to add complexity requires in-depth analysis--will the slope and/or width of the side channel remain the same or will it change over time? Will it aggrade to the point that it becomes useless or will it scour enough to cause an avulsion? Most of these cutoff side channels were formed prior to upstream flow control, bringing into question whether or not the river has the ability to maintain this habitat under any current or future operations scenario that includes diversion for agriculture. These issues greatly affect the outcome of habitat availability and complexity. 2. Much of the benefit to habitat improvements related to increased flows is being or will be evaluated within the individual improvement project. This is a more appropriate setting in which to evaluate the benefit, rather than evaluating smaller scale (although important) benefit within the basinwide effort of the Storage Study. A high level of detail evaluating many individual projects within the Storage Study would have extended the project timeline significantly, increasing cost and possibly

Table 3 – Responses to individual comments.

Organizations

	creating conflicting projections (Storage Study results vs. individual study results). The 'broad brush' of the Storage Study would not likely capture the full spectrum of benefit of these individual projects, as different tools will likely be used to evaluate the individual projects than were used for the Storage Study. 3. 2-D modeling for habitat is costly and requires detailed topographic and bathymetric input, among other data. Performing a 2-D model analysis at each location where there is a proposed restoration project would have required a much greater effort and funding, and would have interfered with other agencies' efforts to evaluate their own individual project.
ORG-0001-05	The authorization for the Storage Study was very limited. It directed Reclamation to look at new storage options for the Yakima basin, including Black Rock reservoir. It did not authorize a wide-range evaluation of other actions, including habitat actions, which might provide benefits to fishery resources in the basin. Because the Storage Study authority was limited to new storage, the analysis focused on the effects new storage would have on riverflows.
ORG-0001-06	See responses to comments TRB-0001-71 and TRB-0002-02.
ORG-0002-01	"Local benefits" relating to economic development around the reservoir were excluded from the benefit-cost analysis. These "local benefits" actually reflect regional economic impacts which cannot be included in the benefit-cost analysis. As a Federal water resources agency, Reclamation must follow a published set of economic principles and guidelines when developing economic analyses. The *P&Gs* require Reclamation to take a national perspective within benefit-cost analyses so as not to favor one area of the Nation over another. Certain of the "regional benefits" that have been proposed by others (e.g., resort, residential, and commercial development) represent regional economic impacts as opposed to true national benefits since they reflect income transfers from other parts of the country. This income transfer concept is based on the assumption that if Black Rock were not constructed, developers would no doubt take their funds and invest elsewhere in the Nation. While these proposed development-based regional economic impacts cannot be included in the nationally oriented BCA since they do not reflect a national benefit, they are qualitatively discussed under the regional economic development (RED) account (section 4.14., "Socioeconomics").
ORG-0002-02	Comment noted. See response to comment TRB-0001-71.
ORG-0002-03	Comment noted.
ORG-0002-04	See response to comment ORG-0002-01.
ORG-0003-01	Comment noted. The feasibility-level of investigations is not a complete analysis of the geologic and groundwater conditions at the site. Additional investigations and analyses would need to be completed prior to final design of the project. Reclamation is continuing communication with DOE concerning potential Hanford Site impacts due to groundwater seepage.
ORG-0003-02	The Joint Alternatives generally improve flows for fish and wildlife along the Yakima River, and positive impacts are expected. Consequently, additional flows for mitigation have not been recommended. In the Final PR/EIS, the No Action Alternative is the Preferred Alternative, so mitigation lands have not been identified or wetland enhancement features designed for the Black Rock Alternative. However, if an action alternative were recommended in the ROD, Reclamation is committed to mitigation through land

Table 3 – Responses to individual comments.

Organizations

	acquisition for lands lost associated with dam and reservoir construction. The acquired land could be situated to provide corridors in or adjacent to the Hanford Reach National Monument. Wetland mitigation features could be incorporated into design of the reservoirs.
ORG-0003-03	No impacts to fish and wildlife along the Columbia River in the Hanford Reach were identified; therefore, no mitigation has been proposed.
ORG-0004-01	Comment noted.
ORG-0005-01	See response to comment TRB-0001-67.
ORG-0005-02	See response to comment TRB-0001-67.
ORG-0005-03	This is outside of the scope of the study since no effects to livestock or livestock forage production are foreseen.
ORG-0005-04	See response to comment TRB-0001-67.
ORG-0006-01	Definition of purpose and need for the NEPA process is at the discretion of the action agency. As noted, the purpose and need used in this study was drawn from the legislation authorizing it and for which funds were provided. The Storage Study was authorized by the Omnibus Appropriations Act of 2003 (Omnibus Act), Public Law 108-7. Section 214 of the Act of February 20, 2003 (Public Law 108-7), states, *"The Secretary of the Interior, acting through the Bureau of Reclamation, shall conduct a feasibility study of options for additional water storage in the Yakima River Basin, Washington, with emphasis on the feasibility of storage of Columbia River water in the potential Black Rock reservoir and the benefit of additional storage to endangered and threatened fish, irrigated agriculture, and municipal water supply."* The feasibility study was conducted as directed in the authorization. The Storage Study evaluated plans that would create additional water storage for the Yakima River basin and assess each plan's potential to supply the water needed for fish and the aquatic resources that support them, basinwide irrigation, and future municipal demands. Plans that did not involve creating additional storage in the basin, such as the State Alternatives in the Draft PR/EIS, were not evaluated, as they fell outside of the purpose of the Storage Study, which was to comply with Public Law 108-7. As noted in the Final PR/EIS, this process is no longer a joint NEPA/SEPA process and the State of Washington is no longer a joint lead in the Storage Study; however, they remain involved as a cooperating agency. As a result, the only alternatives that remain are those that involve options for creating additional water storage in the Yakima River Basin. Title XII of Public Law 103- 434 does not provide Reclamation feasibility study authority to investigate water management alternatives. Title XII does direct Reclamation to undertake certain actions, chief among them development and implementation of a Yakima River Basin Conservation Program. That program is currently being implemented and is included in the No Action Alternative.
ORG-0006-02	The Draft PR/EIS did include an analysis of groundwater storage in chapters 3 and 5 as a State Alternative. Since this is no longer a joint NEPA/SEPA process, a summary of that analysis is now included in chapter 2 as an alternative considered but eliminated (see section 2.10.5)
ORG-0006-03	NEPA requires that an agency consider all reasonable alternatives. Reasonable alternatives, including those which an agency may not have the authority to

Table 3 – Responses to individual comments.

Organizations

	implement, are those which meet the purpose and need of the study. In this case, the purpose and need was to conduct a feasibility study as authorized by Section 214, Public Law 108-7. That authorization directed Reclamation to look at options for additional water storage in the Yakima River basin. While nonstorage actions are authorized as part of YRBWEP by Title XII of Public Law 103-434, they are not reasonable alternatives for this study, as they do not involve options for additional water storage.
ORG-0006-04	In part, the purpose and need for the Storage Study was to investigate what benefits could be achieved for T&E fish by developing additional water storage in the Yakima River basin. New storage would primarily affect fishery resources by altering riverflows so the analysis and the goals focused on those altered flows. The fishery goals, described in terms of flows, were determined by the Storage Study TWG. Those goals did focus on some key reaches and key time periods. Where benefits could be created on tributaries as a result of the development of new storage, those were included. While other actions, such as floodplain restoration or fish passage, may create benefits for fish, they are generally not achieved by the creation of additional storage.
ORG-0006-05	For the three Joint Alternatives, an economic analysis was conducted. Those results are found in chapter 2 (see sections 2.4.4, 2.5.4, 2.6.4, and 2.7). For the State Alternatives, a cost analysis was done and was included in chapter 3 of the Draft PR/EIS. That analysis is no longer in the Final PR/EIS, as the State Alternatives have been deleted based on the decision by the State to separate from the joint NEPA/SEPA process for this project. The ability of the three Joint Alternatives to meet the 70-percent goal varied. Lowering the goal would have little affect on alternatives that failed to achieve the 70-percent goal such as Wymer Dam and Reservoir Alternative. A lower goal would affect the Black Rock Alternative, as it achieved the 70-percent goal. It could be redesigned to provide less water to achieve a lower goal, lowering both the costs and benefits of the alternative. Water marketing was also analyzed as a State Alternative. The socioeconomic effects were outlined in chapter 5 of the Draft PR/EIS. Water marketing would not create any additional water supplies for irrigation. For each transfer, one party's water supply goes up while the other's goes down. This may create an economic benefit for the parties involved, but the total amount of water delivered in a drought is unchanged.
ORG-0006-06	See response to comment TRB-0001-63.
ORG-0006-07	As the commenter notes, evaluating adaptation options to the potential future precipitation and runoff patterns associated with global warming is not a goal of the Storage Study. However, the considerations offered by the commenter could be useful for scoping purposes if such an adaptation study were conducted.
ORG-0006-08	See response to comment TRB-0001-67.
ORG-0006-09	See response to comment TRB-0001-67.
ORG-0006-10	See response to comment TRB-0001-67.
ORG-0006-11	See response to comment TRB-0001-67.
ORG-0006-12	See response to comment TRB-0001-67.
ORG-0006-13	See response to comment TRB-0001-67.
ORG-0006-14	See response to comment TRB-0001-20.
ORG-0006-15	See response to comment FED-0004-04, which addresses the issue of salmon and the Columbia River flows.

Table 3 – Responses to individual comments.

Organizations

	Regarding the issue of homing/false attraction of adult salmonids, there is very little scientific data on the chemical queues and concentrations on which salmon can imprint. A laboratory study by Fretwell (1989) (see Final PR/EIS, section 4.8.2.4) demonstrated that when the nonhome water source exceeded 10 percent in a mixture of home and nonhome water sources, that sockeye fish selected more frequently the home water source over their home water source. Furthermore, this topic is discussed in section 8.1 of the *Assessment of the Effects of the Yakima Basin Storage Study on Columbia River Fish Proximate to Proposed Intake Locations* (Reclamation, 2008d) (TS-YSS-13). With respect to Yakima steelhead impacts, the assessment was based on this study, the amount of spill of Black Rock water expected, and run timing. Collectively, they indicate that during the steelhead migration window, Black Rock spills would make up less than 1 percent of the flow in the Yakima River. The peak would occur in October. It seems less likely that salmon and steelhead destined to upper Columbia tributaries would falsely home to the Yakima River since approximately 5 percent of the Yakima flow would be comprised of Columbia River water that has been located in the Black Rock reservoir for a period of time (altering its chemical signature).
ORG-0006-16	The 2004 BIOP target flows are not met in some years. However, the Black Rock Alternative precludes the withdrawal of Columbia River water when riverflows are at or below the 2004 BIOP target flows (see tables 2.18 and 2.19 in the Final PR/EIS).
ORG-0006-17	See first portion of response to comment FED-0004-04.
ORG-0006-18	See latter portion of response to comment ORG-0006-15.
ORG-0006-19	Comment noted.
ORG-0006-20	The recreation analysis did attempt to take into account the visitation effects from drawdown. Federal funding would not be used to construct any developments on private lands. It has been suggested that economic development and speculation associated with windfall property value gains on neighboring private lands could occur, but this is not certain and is disputed by others. Should the Black Rock reservoir be constructed, land use on private lands is beyond Reclamation's jurisdiction. Note that while a qualitative discussion of possible economic development around the reservoir is included in the RED section (section 4.14, "Socioeconomics") (along with the necessary range of caveats given the speculative nature of any such development), these effects are not included in the NED BCA because they reflect a regional economic impact as opposed to a national benefit.
ORG-0006-21	See response to comment TRB-0001-67.
ORG-0007-01	See response to comment ORG-0006-01. In addition, the No Action Alternative does include conservation activities authorized and planned pursuant to Section 1203 and 1204 of Title XII. They include activities that, based on the level of planning, the funding history, and the level of commitment by the involved partners, Reclamation believes will be implemented in the future, irrespective of the outcome of the Storage Study. Since the conservation activities are included in the No Action Alternative, they are also presumed to have occurred in the future with each of the three Joint Alternatives.

Table 3 – Responses to individual comments.

Organizations

	Passage at Bumping Lake Dam and Cle Elum Dam were not included in any of the alternatives because feasibility studies are ongoing. In addition, no environmental compliance activities have been completed, and there are no appropriations or a history of appropriations for the construction of passage at these sites. Construction of passage at either site would not provide additional storage, which is the purpose and need for the Storage Study.
ORG-0007-02	See response to comment ORG-0007-01.
ORG-0007-03	The proratable irrigation goal of not less than 70 percent was taken from the *Watershed Management Plan* developed for the Yakima basin. During the development of the Draft PR/EIS, the proratable districts in the basin were contacted about whether the 70-percent goal was still valid. Sunnyside and Yakima-Tieton districts indicated they did not want to receive additional water during drought years, and RID indicated they would be satisfied with 100,000 acre-feet. The Kittitas Reclamation District (KRD) and Wapato Irrigation District indicated they still wanted the 70-percent water supply. These new dry-year volumes are explained in the Final PR/EIS (section 2.2.1.2) and the differences in water volumes available for other uses are displayed. The 896,000 acre-feet is not the amount of water needed to achieve a 70-percent water supply in a dry year, but is the volume of water that could be exchanged by a Black Rock Alternative during an average and wet year with five irrigation districts (Sunnyside, Roza, Terrace Heights, Union Gap, and Selah-Moxee). This volume was used in the initial phases of the Storage Study. In the Draft PR/EIS, the operations of the Black Rock reservoir were modified to decrease, as much as possible, the pumping volumes into the reservoir. This reduced the maximum water exchange volume to about 600,000 acre-feet. Section 2.4.1.4 includes a discussion about the annual operation scenario.
ORG-0007-04	Comment noted.
ORG-0007-05	Flow objectives were set for the lower Naches River and are shown in table 2.2. This reach was identifed by the Storage Study TWG as a key reach as it has a large floodplain and is significantly affected by Yakima Project operations.
ORG-0007-06	The No Action Alternative has been identified as the Preferred Alternative in the Final PR/EIS. The No Action Alternative does include conservation actions and land and water acquistions under the existing YRBWEP, which are considered to be reasonably foreseeable. This is based on the planning activities that have gone on as part of YRBWEP and expressions of interest from cost-share partners. The impacts from those actions were addressed in the Draft PR/EIS by comparing current conditions to conditions under the No Action Alternative. For example, in tables 4.3, 4.4, and 4.5, both current conditions and conditions under No Action are shown. Where the differences between current and No Action were insignificant, this was noted.
ORG-0007-07	Federal guidelines require NED BCA to compare benefits and costs of each proposed alternative to the No Action Alternative. The description of the No Action Alternative explains all of the projects and programs assumed to be included within the alternative, thereby indicating a significant difference from current conditions. Comparing No Action Alternative effects over the 100-year study period to current conditions within a benefit-cost analysis would create the false sense that static conditions are an alternative under consideration.
ORG-0007-08	The No Action Alternative was intended to reflect conditions that would occur in the absence of any action to increase storage in the basin. As such, actions by

Table 3 – Responses to individual comments.

Organizations

	Reclamation to actually modify demands or alter existing water rights, beyond the conservation and acquisition activities discussed in section 2.3, were not included, as they were not expected to occur if no action is taken. Consequently, the No Action Alternative is intended to reflect what would happen if the system were left "as is." The analysis of the other alternatives shows how the water supplies would be used for irrigation, fish, and municipal uses if new storage were constructed.
ORG-0007-09	See response to comment TRB-0001-20.
ORG-0007-10	See response to comment TRB-0001-20.
ORG-0007-11	Additional information concerning the costs of the seepage mitigation has been included in section 4.14 of the Final PR/EIS and added to the NED BCA.
ORG-0007-12	The No Action Alternative is the Preferred Alternative identified in the Final PR/EIS, so additional investigation of seismic and other geologic hazards for the Black Rock damsite have not been conducted. However, if an action alternative were recommended in the ROD, Reclamation is committed to additional analysis of site seismicity, reservoir rim stability, and other geologic hazards. These additional investigations and analyses would be performed to support final design of a Black Rock dam (see section 2.2.3).
ORG-0007-13	The No Action Alternative is the Preferred Alternative identified in the Final PR/EIS, so additional investigation of seismic and other geologic hazards for the Wymer damsite have not been conducted. However, if an action alternative were recommended in the ROD, Reclamation is committed to additional analysis of site seismicity, reservoir rim stability, and other geologic hazards. These additional investigations and analyses would be performed to support final design of a Wymer dam (see section 2.2.3).
ORG-0007-14	The Potholes Supplemental Feed Route project does not involve any additional water withdrawals from the Columbia River or any additional pumping. Consequently, it does not have cumulative effects on those resources. The Columbia River Mainstem Off-Channel Reservoir project is still in early stages of planning and is not reasonably foreseeable. Consequently, it does not belong in the cumulative effects section. The *Final Supplemental Environmental Impact Statement for the Lake Roosevelt Incremental Storage Releases Program* was released by Ecology in August 2008. Potential cumulative impacts from this action are now addressed in sections 4.2.2.6, 4.4.2.7, 4.6.2.7, and 4.8.2.8 of the Final PR/EIS.
ORG-0007-15	Under the Joint Alternatives, municipal water for new uses could be met by or mitigated from the newly developed storage.
ORG-0007-16	In looking at the relationships between flows and habitat, the USGS used the hydraulic modeling results generated by Reclamation through RiverWare. This was the model used to generate hydrology data for the entire study. This RiverWare flow data was used in the USGS DSS model to generate habitat availability under various flow regimes. The results from that effort are summarized and displayed in table 4.25 for anadromous fish and in table 4.32 for resident fish. Those results are discussed in section 4.8.2 and 4.9.2 for anadromous and resident fish, respectively.
ORG-0007-17	The expenses associated with “complicated institutional arrangements” were not included in the economic analyses. Also, see response to comment ORG-0007-11.
ORG-0007-18	The No Action Alternative does contemplate that, to the extent new water for

Table 3 – Responses to individual comments.

Organizations

	municipal and industrial (M&I) use is needed and available, it would need to be acquired. Little acquisition is anticipated as part of the No Action Alternative. The No Action Alternative falls well short of meeting the municipal goal for the Storage Study.
ORG-0007-19	Quantifying recreational site substitution is an extremely difficult analysis to perform with any degree of certainty, especially when looking at recreation visitation over a 100-year study period. About the only way to estimate site substitution from existing sites to Black Rock or Wymer would be to make use of a multiple-site regional recreation model. Since Black Rock and Wymer would be new sites to the region, no such regional model exists. Attempting to select a percentage of visitations at Black Rock or Wymer which substitutes from existing sites would be pure conjecture. The decision was made to present the without-substitution recreation visitation estimate and note that a certain unknown degree of substitution is likely to occur. Also, see response to comment FED-0004-04.
ORG-0007-20	It was assumed that water withdrawals at flows greater than the 2004 BIOP target flows would not be detrimental to Columbia River fishes. It was assumed these NMFS-established target flows were based on meeting the biological needs of Columbia River salmon and steelhead. A review of the National Research Council's (NRC) document entitled, *Managing the Columbia River; Instream Flows, Water Withdrawals, and Salmon Survival* (2004) indicates the lack of scientific knowledge concerning the biological effects to salmon and steelhead on future Columbia River water withdrawals. However, they did state additional water withdrawals during periods of peak demand (e.g., summer) that also occur during low-flow water years and/or high water temperatures would ". . . increase the risks to survivability to listed salmon stocks . . ."
ORG-0007-21	While the Draft PR/EIS was being developed, the 2004 BIOP was being challenged in Court. The Court left the 2004 BIOP in place until a new BIOP could be produced. Though the Court did order some changes in the proposed operation of the system while the BIOP was being rewritten, none of those changes involved the target flows. In addition, this comment is addressed in a similar response to comment FED-0004-04.
ORG-0007-22	Comments were solicited from NMFS, but none were provided. NMFS was invited to be a cooperating agency in the study, but declined. They did take part in the Storage Study TWG to a limited extent. The No Action Alternative is the Preferred Alternative in the Final PR/EIS, so consultation has not been initiated at this point in the process. However, if an action alternative were selected for implementation, consultation would be initiated.
ORG-0007-23	With respect to the hydrologic indicators, four of the six indicators (April 1 TWSA, April-September diversion volume upstream of Parker gage, September 30 reservoir contents, and irrigation volume delivery shortage) must be expressed by volume (acre-feet). The other two hydrologic indicators (April-September Yakima River flow at Parker gage and Yakima River flow at the mouth), are also expressed in volume because the context of this section is more related to water budget than to instream flows. The effects of an alternative on the flow regime is best presented in figures 2.2 through 2.7 in the Final PR/EIS, which shows the median daily flow at several gage sites for all the alternatives. These figures present the daily median flow regime based on the 25-year period of record, which is a more

Table 3 – Responses to individual comments.

Organizations

	accurate portrayal of flow effects by an alternative than is the median seasonal flow volume. Velocities are very informative from a biological perspective. Preferred velocity ranges for selected salmonid life stages were used for the habitat area indicators presented in tables 2.69, 4.25, and 4.31 of the Final PR/EIS.
ORG-0007-24	The purpose of showing the unregulated flow regime was to provide a point of reference. In this case, the term "normative" can mean any amount of change to the flow regime that moves the existing flow regime to a more unregulated state. It does not imply that a flow regime very similar to that of unregulated is achieved (or even possible). The Black Rock Alternative was stated as being more normative than the other alternatives mainly because it improved spring flows downstream of Parker Dam the most, and reduced summer flows in the upper Yakima River to the greatest extent.
ORG-0007-25	Withdrawal of Yakima River flows for storage in Wymer reservoir occurs primarily during January-March when riverflows at the Wymer pumping plant would be in excess of 1,475 cfs. The volume available to pump from the Yakima River during January-March and the volume pumped to Wymer reservoir are shown in table 2.34. In most years, the riverflow is much greater than that pumped. Such action is contrary to the objective of improving instream flows to mimic the natural (unregulated) flow during that period of the year.
ORG-0007-26	The Yakima-Naches River September “flip-flop” operation does accomplish the primary objective of reducing flows to encourage spawning in a more confined Cle Elum River channel than would otherwise occur if Cle Elum Reservoir releases were maintained at the pre-September flow level for the remainder of the irrigation season. Through this operation, spawning is restricted from occurring on the fringes of the channel which are dewatered when reservoir filling begins at the end of the irrigation season in late October. This reduces the volume of reservoir inflow which would have to be bypassed downstream to maintain winter incubation flows over the redds. While the “flip-flop” operation is effective for spawning in the Cle Elum River, it does result in higher irrigation releases from Rimrock Reservoir and higher flows in the Tieton River and the lower Naches River beginning in September. This is not conducive to fishery habitat conditions in these reaches. Alternative means of addressing how to meet the major irrigation demands in the middle Yakima River basin subarea (primarily from the Roza Diversion Dam to the Sunnyside Diversion Dam) is a priority. One of the merits of a water exchange is the capability to remove major diversions from specific reaches of the river system, significantly reducing the volume of storage releases that must be moved from the upper reservoirs for diversion to the Roza and Sunnyside Divisions. The reference on page 2-21 in the Draft PR/EIS to reregulating reservoirs as part of No Action is in reference to small reservoirs built along existing canals to conserve water in the operation of those canals. These are not large dams located on rivers that might be used to reregulate rivers flows.
ORG-0007-27	The section cited provides a background to some of the desired attributes that define an undisturbed riverine ecoystem. Clearly, there is a challenge to balancing all of the demands placed upon the Yakima basin. The Title XII flows are met under the No Action Alternative, but the higher flow objectives developed as part of the Storage Study are not. Through modeling tools developed as a result of the Storage Study, fish managers will have the means to better define biologically

Table 3 – Responses to individual comments.

Organizations

	based flows for the basin. While it is true that "salmonid recovery" and "restoration of normative flows" will require a more holistic view than strictly "infrastructure construction," the purpose of the Storage Study was to look at storage alternatives. In addition, this comment is addressed in a similar response to comment TRB-0002-02.
ORG-0007-28	The paragraph cited on page 4-118 of the Draft PR/EIS was not intended to diminish the value of current restoration efforts being conducted by Reclamation and other stakeholders. The intent was to communicate the fact that it is unrealistic to expect any alternative to come close to achieving near-historic anadromous fish abundance levels given the degree of land use modification that has occurred within and outside of the Yakima basin. For example, there are cities and roads/highways that have restricted the historic floodplains and it is highly unlikely these areas will be restored to functioning fisheries habitat.
ORG-0007-29	See response to comment WAS-0001-24.
ORG-0007-30	Initially, there does appear to be a contradiction between the observed change in habitat amount for the cited species and life stages versus population performance measured by abundance, productivity, and carrying capacity. However, a key finding of the fishery modeling was that the observed increase in fish population abundance, etc., was largely due to improvements in juvenile (spring smolts and late summer/fall migrants) passage survival downstream of the City of Yakima. This was a result of better outmigration survival through the fish bypass systems at the diversion dams and improved in-river survival. Both the Black Rock and Wymer Dam Plus Yakima River Pump Exchange Alternatives resulted in a significant increase in spring flows compared to No Action, which reduced fish entrainment into the fish bypass systems and resulted in a decreased in in-river predation. In general, there was not a substantial change in the amount of habitat on a monthly basis across the alternatives for the floodplains modeled. It is important, however, to compare changes between alternatives on a monthly basis since the flow regime, whether unregulated or regulated, is constantly changing from month to month, which influences the amount and types of habitat that is wetted.
ORG-0007-31	For clarification, the use of the July 15 - September time period is in reference to the adult bull trout spawning migration (from the reservoirs) period; this is somewhat different than the spawning period (when they actively dig their redds). The first occurrence of this July 15 - September period is in table ES.6 on page xl of the Draft PR/EIS.
ORG-0007-32	See response to comment TRB-0001-67.
ORG-0007-33	Comment noted. The alternatives have no effect on temperatures for char spawning or rearing, which are identified in the revised *Washington State Water Quality Standards*.
ORG-0007-34	The *Water Quality Standards for Surface Waters* (WAC 173-201A-230) (Ecology, 2006a) does not give standards relating to river systems. The values used in the Draft PR/EIS came from literature reviews. However, there are numeric and narrative criteria for lakes, which will be used along with the literature values to assess the phosphorus levels in the reservoirs.
ORG-0007-35	See response to comment FED-0002-08.

Table 3 – Responses to individual comments.

Organizations

ORG-0007-36	The documents cited provide good information on the stated attributes for current operating conditions. Some of the stated attributes, such as water temperature (Roza to Prosser Dams) and flow indicators were modeled through the EDT model to try to capture changes to these attributes as a function of changes in flow associated with the various alternatives. However, there was no way to predict changes to the 2-D water temperature patterns associated with the forward-looking infrared (FLIR) as a function of changes in flow associated with each alternative. At the time of this writing, no formal comments have been received from NMFS pertaining to the Storage Study Draft PR/EIS.
ORG-0007-37	The level of reservoir fluctuation was taken into account by the recreation analyses. Drawdown will peak in mid-to-late summer, providing for alternative recreation activities along the shoreline such as picnicking, wading, swimming, driving, and OHV use, shoreline fishing, hiking, horseback riding, wildlife viewing, and other land-based activities. Drawdown in the mid-to-late summer will cause a shift in water recreation use from high-speed boating activities to more human-powered boating activities (e.g., sailing, canoe, small boat and belly-boat fishing, kayaking, and tubing). Black Rock and Wymer would be the closest opportunity for these activities for Yakima residents. The highway that would be submerged as part of the Black Rock project (SR-24) could provide a year-around boat ramp access, in contrast to the fact that boat ramps at other lakes in the Yakima Basin are often “out of the water” by late season. Figures 4.19 and 4.19a-e, which depict summer drawdowns, has been added to the Final PR/EIS.
ORG-0007-38	In the Final PR/EIS, the No Action Alternative is the Preferred Alternative, so mitigation lands have not been identified for the Black Rock Alternative. However, if an action alternative were recommended in the ROD, Reclamation would work with the South-Central Washington Shrub-Steppe/Rangeland Conservation Partnership to acquire habitat for wildlife migration, in addition to the mitigation measures stated in section 4.11.2.6.
ORG-0007-39	While in the short-run, there may be excess supply of water-based recreation within the region, the recreation analysis looks at a 100-year study period. The population in Yakima is expected to grow at 2 percent during the next 20 years, greater than the national average. The Hispanic and Asian population in the Yakima area will continue to grow at an above-average rate. These ethnic groups favor local, day-use and water-based recreation activities. Shoreline activities (e.g., fishing, picnicking, and swimming) are very popular with these user groups. The senior citizen population in the Yakima area will continue to grow at an above-average rate. This user group has the discretionary time and disposable income to enjoy outdoor recreation and they tend to favor local, day-use recreation activities. Warm flat-water reservoirs and lakes provide a different set of recreation opportunities than those provided in the nearby Yakima and Columbia Rivers and high mountain reservoirs. Black Rock and Wymer would provide increased diversity and choices for the public and would not compete with other sites in the local area.
ORG-0007-40	See response to comment TRB-0001-67.
ORG-0007-41	See response to comment TRB-0001-67.
ORG-0007-42	See response to comment TRB-0001-67.
ORG-0007-43	See response to comment TRB-0001-67.
ORG-0007-44	See response to comment TRB-0001-67.
ORG-0007-45	See response to comment TRB-0001-67.

Table 3 – Responses to individual comments.

Organizations

ORG-0007-46	See response to comment TRB-0001-67.
ORG-0007-47	See response to comment TRB-0001-67.
ORG-0007-48	See response to comment TRB-0001-67.
ORG-0007-49	See response to comment TRB-0001-67.
ORG-0007-50	See response to comment TRB-0001-67.
ORG-0007-51	See response to comment TRB-0001-67.
ORG-0007-52	See response to comment TRB-0001-67.
ORG-0007-53	See response to comment TRB-0001-67.
ORG-0007-54	See response to comment TRB-0001-67.
ORG-0007-55	See response to comment TRB-0001-67.
ORG-0007-56	Comment noted. The seismic effects listed are recognized hazards that are evaluated and addressed for all dams and water-retention structures. These seismic hazards are accounted for in Reclamation's design standards which would be used to prepare final designs for either the Black Rock or Wymer dams. However, the No Action Alternative is the Preferred Alternative identified in the Final PR/EIS, so additional investigations and design analyses have not been conducted for either damsite. If an action alternative were recommended in the Record of Decision, Reclamation is committed to additional site investigations and analyses in order to develop state-of-the-art designs that would address all hazards related to site seismicity and other geologic hazards (see section 2.2.3).
ORG-0007-57	The model of fold growth and fault movement described is consistent with published geologic literature for the Yakima Fold Belt and has been accounted for in Reclamation's design for the dam embankment by selecting a more robust rockfill-type of embankment rather than a more conventional zoned earthfill dam or a roller-compacted concrete structure. Design and construction considerations are presented in Reclamation's technical report TS-YSS-2, which is a supporting document for the PR/EIS. No additional seismic investigations have been completed to date. Additional studies, including site seismicity, have been recommended in the Final PR/EIS to be completed before final designs are complete and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-58	Reservoir-induced seismicity (RIS) is a geologic consideration that is routinely evaluated in the design of any large dam in the vicinity of faulted terrain, and a recommendation to further study RIS was included in Reclamation's PSHA report. No additional site-specific seismic analysis has been completed to date. Additional seismic studies, including RIS, have been recommended in the Final PR/EIS to be completed before final designs are complete and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish a seismic analysis have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-59	Geologic mapping of the Black Rock damsite has been completed and identified several landslide areas, as documented in TS-YSS-5. Additional geologic mapping and stability analyses would be needed to complete the landslide assessment and have been recommended in the Final PR/EIS before final designs are complete and a project cost ceiling is established (see section 2.2.3). The

Table 3 – Responses to individual comments.

Organizations

	resources required to accomplish geologic mapping and stability analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-60	See response to comment FED-0002-07.
ORG-0007-61	See responses to comments FED-0002-05 and FED-0002-07.
ORG-0007-62	Comment noted. The need for further characterization of the geologic hazards associated with the Joint Alternatives is recognized. No additional site-specific investigations and analyses have been completed to date; however, additional studies, including site seismicity and other geologic hazards, have been recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-63	Reclamation's PSHA study used all published geologic information for the Yakima Fold Belt and other seismic sources that was available at the time the PSHA report was produced in 2004.
ORG-0007-64	The PSHA report includes the Black Rock Valley fault as part of the Rattlesnake Hills fault, as noted in table 2-2 of the report (see page 9). The PSHA report follows the earlier work of Wong, et.al. (2002) in segmenting the Rattlesnake Hills fault into two separate segments. Evidence for late Quaternary faulting in the Yakima Fold Belt is limited to two specific areas on Toppenish and Ahtanum ridges, suggesting that fault displacement occurs on segments of the fault zones rather than rupture of the entire fault during a single event. The PSHA report uses this model pending further investigation of the faults in the area. No additional seismic investigations have been completed to date; however, additional studies, including site seismicity, are recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction cost ceiling for congressional authorization.
ORG-0007-65	Reclamation's PSHA study used all published geologic information for the Yakima Fold Belt and other seismic sources that was available at the time the report was produced in 2004. Further study to determine the age and characteristics of the Black Rock Valley fault would be needed to complete final design work. No additional seismic investigations have been completed to date; however, additional studies, including fault slip rates, offsets, and recurrence intervals, have been recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-66	Comment noted. Further study of the site-specific ground motion parameters would be needed to complete final designs of a Black Rock dam. No additional site-specific investigations and analyses have been completed to date; however, additional studies, including ground motions, time histories, rupture directivity, and hanging wall effects, are recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.

Table 3 – Responses to individual comments.

Organizations

ORG-0007-67	Comment noted. Further study of the site response of the Black Rock Valley fault would be needed to complete final designs. No additional seismic investigations have been completed to date; however, additional studies, including site response, have been recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-68	Comment noted. See response to comment ORG-0007-58.
ORG-0007-69	Reclamation has performed additional investigations at the Black Rock damsite which included drilling of two holes in the right abutment which intercepted the Black Rock Valley/Horsethief Mountain fault zone. In addition to providing information on the geometry of the fault zone, core samples were collected, and borehole water tests were conducted to measure the hydraulic conductivity of the fault zone and adjacent rock in both the hanging wall and footwall of the fault. The results of this investigation are documented in a report entitled, *Supplemental Report for Appraisal Assessment – Geology and Hydrogeology, Right Abutment, Black Rock Damsite* (Reclamation, 2007j) (TS-YSS-18). However, it is recognized that additional study and trenching to determine fault characteristics would be needed in order to develop final designs. Additional studies, including fault plane geometry, slip rates, movement history, and earthquake potential have been recommended in the Final PR/EIS to be performed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-70	Comment noted. It is acknowledged that there is no historical data for a Cascadia subduction zone earthquake since the last major event on that system occurred on January 26, 1700. However, data from subduction zone earthquakes such as the 1964 Good Friday earthquake in Alaska and the 2004 Andaman earthquake in Sumatra can serve as good corollaries for the Cascadia. Working in cooperation with the USGS and researchers in academia, Reclamation has included seismic loads and ground motions for Cascadia events for several dam safety modifications in the Pacific Northwest including Wickiup Dam in Oregon and Keechelus Dam in Washington. Independent peer review of these projects has shown that Reclamation's analyses for the Cascadia earthquakes are consistent with the current USGS models for the subduction zone and earthquake propogation. These analyses have been incorporated into the PSHA that was developed for the Black Rock damsite.
ORG-0007-71	Comment noted. The need for further characterization of the geologic hazards, including the liquefaction potential of foundation soils, for all structures associated with the Storage Study options is recognized. No additional site-specific investigations and analyses have been completed to date; however, additional studies, including assessment of the liquefaction potential of foundation soils, have been recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-72	Comment noted. See response to comment ORG-0007-57.
ORG-0007-73	Comment noted. See response to comment ORG-0007-62.

Table 3 – Responses to individual comments.

Organizations

ORG-0007-74	Reclamation's PSHA study used all published geologic information for the Yakima Fold Belt and other seismic sources that was available at the time the report was produced in 2004. Further study to determine the age and characteristics of faults near the Wymer damsite would be needed to complete final designs. No additional seismic investigations have been completed to date; however, additional studies, including fault slip rates, offsets, and recurrence intervals, have been recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-75	See response to comment ORG-0007-62.
ORG-0007-76	See response to comment ORG-0007-74.
ORG-0007-77	Comment noted. Reclamation's PSHA study used all published geologic information for the Yakima Fold Belt and other seismic sources that was available at the time the report was produced in 2004. Further study of the Umtanum Ridge–Gable Mountain Structure and its relationship to the Olympic–Wallowa Lineament would be needed to complete final designs. No additional seismic investigations have been completed to date; however, additional studies, including fault slip rates, offsets, and recurrence intervals, have been recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish these analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-78	Comment noted. Geologic mapping of the Wymer damsite has been completed and identified several potential landslide areas, as documented in TS-YSS-20, although the status of the potential landslide on the left abutment remains unresolved. Additional geologic mapping of the left abutment and the reservoir area is needed to complete the landslide assessment; however, no stability analyses of landslide areas have been completed to date. These activities would need to be completed for final designs of the Wymer damsite. Excavation of the landslide mass was considered as this material would be used as a borrow source for the rockfill section of the dam. No additional site-specific geologic mapping or stability analyses have been completed to date. Additional geologic mapping and stability analyses have been recommended in the Final PR/EIS to be completed before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish geologic mapping and stability analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-79	See response to comment ORG-0007-78.
ORG-0007-80	Comment noted. The Final PR/EIS has been updated to include triggering of existing and new landslides by ground shaking during large earthquakes (see section 2.2.2.1).
ORG-0007-81	Reclamation is keenly aware of the 1963 Vaiont Dam failure mode and would include an assessment of overtopping by a landslide-induced wave as part of a final design for Black Rock damsite. The landslide areas discussed in this comment are presently considered potential borrow areas that could be excavated and used in construction of the rockfill section of the dam. Reclamation would also consider stabilization of these areas should it be determined to leave them in

Table 3 – Responses to individual comments.

Organizations

	place. Additional geologic mapping and stability analyses would be needed to complete the landslide assessment and have been recommended in the Final PR/EIS before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish geologic mapping and stability analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
ORG-0007-82	Comment noted. See response to comment ORG-0007-81. Reclamation has implemented a landslide surveillance program for reservoirs with significant landslide hazards and includes plans for landslide monitoring, reservoir operations, and emergency response in its standard operating procedures for these reservoirs. Similar actions would be implemented if a Black Rock dam and reservoir were to be constructed and if a significant landslide hazard were to be identified along the reservoir rim or within the dam foundation.
ORG-0007-83	See response to comment ORG-0007-80.
ORG-0007-84	See response to comment ORG-0007-78. The technical assessment of reservoir landslide-induced waves at Wymer damsite would be similar to that for the Black Rock damsite, as discussed in the response to comment ORG-0007-81.
ORG-0007-85	Reclamation is aware of the potential for overtopping of the dam by a landslide-induced wave and would include an assessment of this failure mode as part of final designs for the damsite. Additional geologic mapping and stability analyses would be needed to complete the landslide assessment and have been recommended in the Final PR/EIS before final designs are completed and a project cost ceiling is established (see section 2.2.3). The resources required to accomplish geologic mapping and stability analyses have been estimated and are shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization. In regard to the recommendation for a contingency plan in the event of a large reservoir landslide, Reclamation has implemented a landslide surveillance program for reservoirs with significant landslide hazards which includes plans for landslide monitoring, reservoir operations, and emergency response in its standard operating procedures for these reservoirs. Similar actions would be implemented if a Wymer dam and reservoir were constructed and if a significant landslide hazard were identified along the reservoir rim or within the dam foundation.
ORG-0007-86	See response to comment ORG-0007-78.
ORG-0007-87	See response to comment ORG-0007-58.
ORG-0008-01	The Wymer Dam and Reservoir Alternative was stated as "better" than the No Action Alternative because it decreased summer flows in the upper Yakima River and Cle Elum River and increased winter flows in the Cle Elum River. In this sense, the Wymer Dam and Reservoir Alternative moves the flow regime to a more "normative" condition compared to No Action. Refer to figures 2.2 through 2.7 in the Draft or Final PR/EIS that depict these differences relative to the No Action Alternative.
ORG-0008-02	Similar to the response to comment ORG-0008-01, the Wymer Dam Plus Yakima River Pump Exchange Alternative decreases summer flows in the upper Yakima River and Cle Elum River, increases winter flows in the Cle Elum River, and increases spring flows downstream of Roza and Parker Dams compared to the No

Table 3 – Responses to individual comments.

Organizations

	Action Alternative. Refer to figures 2.2 through 2.7 in the Draft or Final PR/EIS that depict these differences relative to the No Action Alternative.
ORG-0008-03	See response to comment TRB-0001-67.
ORG-0008-04	Comment noted.
ORG-0008-05	It is true that the valuation of anadromous fish was based purely on fishery values for commercial, recreational, and Tribal harvest. The valuation of T&E fish was not included in the BCA, and has yet to be included in any Reclamation BCA due, in part, to its high contentious nature (related to applicability and measurement difficulties) and its questionable defendability. While the decision to leave nonuse values out of the BCA was discussed in the fishery benefits section, additional language has been added to the text of the NED Benefit-Cost Analysis summary (section 2.7.1) and the Executive Summary of the Final PR/EIS to highlight this issue. Valuing T&E fish is fraught with difficulties, but that does not prevent the estimation of harvest-based values. Displaying measurable values and noting values which could not be quantified were deemed useful information for decisionmaking purposes.
ORG-0008-06	See response to comment TRB-0001-71.
ORG-0008-07	See response to comment TRB-0002-02.
ORG-0008-08	In most cases, using cost as a measure of benefits would be inappropriate since a cost is just that--a cost and not a benefit measure. In instances where the level of benefits were assumed to be identical across all alternatives, as with many M&I analyses where the assumption is often made that M&I supplies must be met, the benefits across all alternatives would be identical and the only difference would stem from the cost of each alternative. In this situation of equal benefits, the costs of the No Action Alternative are avoided by pursuing one of the proposed alternatives. This is referred to as an “avoided-cost benefit” and is the approach used in the Storage Study to measure M&I benefits. Given that there is currently no mandate to recover Yakima basin fish populations to a certain level, the fish populations associated with each alternative vary considerably and, as a result, the avoided-cost approach would not be applicable.
ORG-0008-09	The objective of normalizing the hydrograph manifests itself through changes in fish populations and harvests associated with each proposed alternative as compared to the No Action Alternative. Harvest-based fishery values were included in the BCA. The analyses in the Draft PR/EIS compare the Joint Alternatives to the No Action Alternative. The difference between the off-channel storage options and the No Action Alternative stem from the additional benefits related to storage. If an in-river dam was proposed, it would be “charged” for the adverse environmental problems associated with in-river storage (e.g., fish passage problems, prevention of sediment transfer, loss of in-river recreation, etc.).
ORG-0008-10	Modeling that was performed for the Black Rock reservoir suggested that there would be no further impacts on temperature; however, the possibility does exist that the remaining water quality parameters could experience minimal improvements due to dilution.
ORG-0008-11	The quantity of exchange water provided by the Black Rock Alternative was not able to completely eliminate the effects of flip-flop on the Tieton River. Present river operations (designed to protect spring Chinook redds during incubation) that

Table 3 – Responses to individual comments.

Organizations

	decrease Easton reach and Cle Elum River flows to about 200 cfs to accomodate spring Chinook spawning, would require an additional water exchange with Wapato Irrigation Project (the primary user) in order to eliminate the late-summer release of water from Rimrock Reservoir. Though the Black Rock exchange with RID and SVID reduces the flip-flop effects on the Tieton River, it cannot eliminate it primarily because of WIP's irrigation demand after spring Chinook spawning has begun and, hence, the need to meet this demand through Rimrock releases.
ORG-0008-12	The basis for assuming such a climate scenario is not obvious. Assuming a future climate having this characteristic does not appear to be supported by the contemporary climate projection information summarized in figures 4.4 through 4.7.
ORG-0008-13	The agricultural benefit analysis is an incremental analysis between the No Action Alternative and the Joint Alternatives. Also, see response to comment BUS-0007-06.
ORG-0008-14	See response to comment LOC-0002-01.
ORG-0008-15	The Storage Study considered potential future climate change implications for alternatives' operations by: (1) providing a review of completed studies on potential climate change impacts to water resources in the Columbia River Basin and Yakima Subbasin (section 4.2.2.6, subsection "Global Climate Change," subheading "Recent Studies of Climate Change Impacts on Pacific Northwest Water Resources"); (2) summarizing contemporary climate projection information for the region (same section and subsection, but subheading "Contemporary Climate Projection Information"); and (3) providing a qualitative analysis of what these projections would imply for water resources in the region (same section and subsection, but subheading "Potential Climate Change Impacts on Regional Water Resources"). The commenter outlines the merits of replacing a qualitative analysis of climate change implications (same section and subsection, but subheading "Treatment of Climate Change in this Draft PR/EIS"; renamed "Treatment of Climate Change in the Storage Study" in the Final PR/EIS) with a "quantitative bracketing" analysis where alternatives would be analyzed quantitatively under contrasting climates. The latter approach could be useful if suitably scoped. However, one cannot say which approach would be more correct or useful given the contemporary climate projection information (figures 4.4 through 4.7) that would have to be relied upon to support a quantitative approach, and how the precipitation projections within this information represent such a vast range of potentially drier to wetter climates.
ORG-0008-16	The 700,000-visit estimate is based on the carrying capacity of the reservoir, and after the 23rd year following construction. The estimate is based on visitation growth of 5 percent for the first 10 years and 3 percent thereafter. The visitation projections for a proposed Black Rock and Wymer relied on past visitation trends at comparable sites in the Columbia Basin, outdoor recreation visitation trends to nearby State Parks, interviews with local experts (e.g., U.S. Forest Service [USFS], State Parks, fishing guides), county and city data on the current and projected changes in the socioeconomic and demographic profile of the residents in the tri-county region, due consideration of the preceding factors, and the sound

Table 3 – Responses to individual comments.

Organizations

	professional judgment of nationally recognized parks and recreation experts. While in the short-run there may be excess supply of water-based recreation within the region, the recreation analysis looks at a 100-year study period. The population in Yakima is expected to grow at 2 percent during the next 20 years, greater than the national average. The Hispanic and Asian population in the Yakima area will continue to grow at an above-average rate. These ethnic groups favor local, day-use, and water-based recreation activities. Shoreline activities (e.g., fishing, picnicking, and swimming) are very popular with these user groups. The senior citizen population in the Yakima area will also continue to grow at an above-average rate. These users have the discretionary time and disposable income to enjoy outdoor recreation and they tend to favor local, day-use recreation activities. Warm flat-water reservoirs and lakes provide a different set of recreation opportunities than those provided in the nearby Yakima and Columbia Rivers and high mountain reservoirs. Black Rock and Wymer reservoirs would provide increased diversity and choices for the public and would not compete with other sites in the local area. The supply of recreation facilities managed by the USFS, BLM, and State Parks in the Yakima basin are already established and aging, and are not expected to increase in condition or number. Demand for these limited facilities is increasingly exceeding the supply. The boating capacities for the water resources in the basin are based upon a set of Level 1 interagency and national coefficients developed and detailed in the *Water Recreation Opportunity Spectrum System* (WROS) *User's Guidebook* (Haas, et.al, 2004). Level 1 coefficients are those used based upon a low or modest level of analysis, rather than a Level 2 (modest or ordinary) or Level 3 (extraordinary) level of analysis. Pages 94-95 of the WROS Guidebook at www.usbr.gov/pmts/planning/wros/index.html provide details about the level of analyses and the procedures for estimating boating capacity.
ORG-0008-17	The regional economic impacts were calculated on the difference in the prorationing levels from the No Action Alternative compared to each water supply alternative. See the "Accomplishments" sections for each alternative in chapter 2. None of the alternatives provided a 100-percent water supply, so the economic activity from the proration level to 100 percent was not calculated.
ORG-0008-18	Many factors influence crop contracts and financing terms. It is not possible to isolate one factor, such as drought, when analyzing crop marketing issues.
ORG-0008-19	See response to comment ORG-0002-01. As noted in the NED versus RED discussion in section 2.8, “Comparative Evaluation of Alternatives” of the Draft PR/EIS, economic benefits are measured in terms of net values (e.g., profitability, net willingness-to-pay, or consumer surplus), whereas regional economic impacts are presented in terms of gross measures (e.g., sales/revenues, wages). Gross measures simply show the amount of money changing hands (e.g., business revenue reflects income from the perspective of the business, but simultaneously reflects expenditures or costs from the perspective of the purchaser). As a result, regional economic impacts in general do not reflect a net value or benefit and cannot be included in the NED BCA. Note that the intent of the RED analysis is to display the economic impacts on the regional economy and not to provide a comparison to costs as in the NED BCA. To further illustrate the difference between a benefit and a regional economic

Table 3 – Responses to individual comments.

Organizations

	impact, in a BCA, each project-based effect is measured as a benefit or a cost. If one incorrectly attempted to include regional economic impacts within a BCA, both positive and negative economic results could stem from the same effect. For example, construction costs reflect a project cost in a BCA, a negative effect. However, in-region construction costs generate output, income, and employment within a regional impact analysis, a positive effect. A given effect cannot simultaneously reflect both a benefit and a cost.
ORG-0008-20	See response to comment ORG-0002-01.
ORG-0008-21	In the RED analyses of recreation, it is standard practice to assume that the majority of impacts are generated by expenditures from recreators residing outside the region. Within-region, or local, recreators are generally assumed to spend their money within the region regardless of the alternatives under consideration, implying they would generate little by way of additional regional economic activity. This is because under the No Action Alternative, the assumption implies that local recreators would still spend the vast majority of their income within their region of residence. Similar levels of in-region expenditures from local recreators under both the action and No Action Alternatives results in only a minor change in regional economic activity stemming from local recreator expenditures. Therefore, regional economic impact analyses of recreation typically focus on nonlocal recreator expenditures.
ORG-0008-22	A qualitative discussion of the potential for economic development around the reservoir has been added to section 4.14, "Socioeconomics."
ORG-0008-23	The Draft PR/EIS did not include the concept of a pump-generator and a small reregulating reservoir at the base of Black Rock dam. The concept in the Draft PR/EIS was to use the Priest Rapids pumping plant site as the location for generators and release water from the Black Rock reservoir through the same tunnel used to convey water to the reservoir to convey water down to the pumping plant. Information gathered from Bonneville Power Administration (BPA) at that time indicated they did not believe that pump generation was a good fit for the FCRPS as far as integrating the pump generation with wind power. Reclamation concluded that such an operation would not be cost effective for either providing peak energy or integrating with wind energy. Reclamation would consider this concept if the Black Rock Alternative were to be authorized for construction; however, the No Action Alternative is identified as the Preferred Alternative in the Final PR/EIS.
ORG-0008-24	Given the information supplied by BPA, Reclamation is not going to pursue further analysis of pump-generation options at either alternative at this time.
ORG-0008-25	The "add-ons" referred to include mobilization costs, unlisted items, contingencies, and noncontract costs. These items are a part of any project cost estimate and are not an "effort to be most liberal in estimating project costs." Mobilization costs identify funds for mobilizing contractor personnel and equipment and the percentage used is based on past experience. Unlisted items are a means to recognize level of design detail used to prepare the cost estimates, and contingencies are funds to be used after construction starts to pay contractors for changed site conditions, change orders, etc. The 35-percent noncontract cost estimate identifies funds for preparing final designs and specifications, land acquisition, regulatory compliance and permitting activities, environmental mitigation and monitoring, and construction contract administration and management. At this level of design, these costs are typically estimated to be from 20- to 35 percent of the estimated field construction costs.

Table 3 – Responses to individual comments.

Organizations

	Additional information can be found in section 2.2.4. The Final PR/EIS includes a range of project costs to show the risks involved in cost estimating and data gathering. The economic benefits presented in the Draft PR/EIS were estimated based on economic theory, Federal guidelines/regulations/policies, and technical specialist expertise. There was no attempt to systematically understate or overstate the economic benefits.
ORG-0008-26	Your observation about the 10-year construction period is correct. Regardless of how the project is constructed or how fast the project could be constructed given unlimited funding, the rate of construction is controlled by how funding is available to pay the contractor. If the Federal Government is asked to participate in funding the project, the rate of funding is controlled through appropriation bills passed by the Congress for each fiscal year. Reclamation believes the 10-year construction period is a realistic expectation given the size of the features in either alternative.
ORG-0008-27	The Final PR/EIS includes discussion on the flexibility of each alternative in section 2.8.3.
ORG-0008-28	See responses to comments TRB-0001-71 and TRB-0002-02.
ORG-0008-29	See response to comment TRB-0001-20.
ORG-0008-30	Financial feasibility, including both the cost allocation and repayment processes, was discussed under section 2.7.2 of the Draft PR/EIS. Given none of the proposed alternatives were economically justified (i.e., benefits failed to exceed costs), costs could not be allocated and repayment estimates could not be developed.
ORG-0008-31	Additional text has been added to the Final PR/EIS to qualitatively describe possible economic development potential around the proposed Black Rock reservoir in section 4.14, "Socioeconomics." The recreation visitation and economic impact discussion in the report would double count information already included in the Draft PR/EIS. The resort, residential, and commercial development sections included analyses which may not be consistent with the *P&Gs*. Given the speculative nature of the development and the anticipated water-level fluctuation at Black Rock reservoir, Reclamation's position at this time is to neither dismiss nor endorse the Mitchell-Nelson report.
ORG-0008-32	The *P&Gs* require that historical values be used to measure benefits, not inflated future values. Increases in land/property values associated with possible economic developments around the Black Rock reservoir were deemed to be a potential regional impact as opposed to a national benefit, given that developers would go elsewhere with their money should the reservoir not be constructed, thereby resulting in no change from a national perspective. The *P&Gs* require the use of a present-value analysis where future benefits are discounted to the start of the benefit period (same as the end of the construction period) before being compared to the costs. Even if a "Future Value" analysis were presented, all benefits and costs would be valued at some future point in time (presumably the end of the benefit period) and the benefit-cost results should be similar to the present-value analysis. Also, see response to comment ORG-0008-26.
ORG-0008-33	See response to comment ORG-0008-12.
ORG-0008-34	Comment noted.
ORG-0009-01	The No Action Alternative has been identified as the Preferred Alternative in the

Table 3 – Responses to individual comments.

Organizations

	Final PR/EIS.
ORG-0009-02	Not all of the water predicted to seep from the Black Rock reservoir would travel toward the Hanford Site. Some of the water would raise water levels (increase aquifer storage) in the basalts surrounding the reservoir. Also, see response to comment TRB-0001-20.
ORG-0009-03	Detailed maps of the Black Rock Alternative are located in TS-YSS-2. Dry Creek and Cold Creek are shown on maps in TS-YSS-19 and TS-YSS-25. A detailed map for the Dry and Cold Creek drainages has been added to section 2.4.1.1 showing the mitigation features for the Black Rock Alternative.
ORG-0009-04	See response to comment TRB-0001-20.
ORG-0009-05	The earthquake magnitude reported in the Draft PR/EIS does, in fact, use the Richter scale as indicated in this comment. Earthquakes of this magnitude range are considered to be strong earthquakes capable of generating large ground shaking. Seismologists use peak horizontal acceleration (PHA) to measure the highest amount of shaking expected at a specific site or building during an earthquake. PHA is measured in terms of accelerations of gravity (g). This can be thought of as the acceleration from the earth's gravity that is felt on an object that is dropped from a great height such as a large building; the acceleration of gravity is 32 ft/sec^2. The estimated PHA for the Black Rock damsite is 0.95 g (or about 30.4 ft/sec^2), which is relatively strong ground shaking. Recurrence interval refers to how often a specific earthquake can be expected to be felt at a site. For the Black Rock site, a shaking on the order of 0.95 g generated by a Richter magnitude 6 to 7+ can be expected to average about once every 10,000 years. In contrast, the Cascadia subduction zone is expected to generate a Richter magnitude 8 to 9, with a PHA of up to 1.5 g approximately every 500 years or so. The USGS Web site for the Earthquake Hazards Program (http://earthquake.usgs.gov/) includes some very useful tools for explaining the physics of earthquakes and ground shaking.
ORG-0009-06	A map showing the locations of several fault zones in the vicinity of Black Rock damsite is included in Reclamation's PSHA report, as referenced on page 2-9 of the Draft PR/EIS.
ORG-0009-07	Comment noted.
ORG-0009-08	Comment noted.
ORG-0009-09	Comment noted.
ORG-0009-10	The review by the expert board of consultants was envisioned as part of the final design process and has not taken place. Such a review is not necessary to determine if a dam can be constructed at the Black Rock site but, rather, how that dam should be built if it is built. In the Final PR/EIS, the No Action Alternative is the Preferred Alternative.
ORG-0009-11	The maximum water exchange using releases from a Black Rock reservoir would be about 600,000 acre-feet as shown in table 2.20. In this scenario Black Rock reservoir is delivering 360,000 acre-feet into the Sunnyside canal at MP 3.83 (their entire irrigation demand) and 235,000 acre-feet to the Roza canal at MP 22.6 (all but 65,000 acre-feet of their 300,000-acre-foot irrigation demand). The 65,000 acre-feet required by Roza lands upstream of MP 22.6 continues to be diverted from the Yakima River at the Roza Diversion Dam.

Table 3 – Responses to individual comments.

Organizations

	Table 2.19 shows the estimated monthly and annual Columbia River pumping requirements to a Black Rock reservoir. The maximum pumping occurs after those years when the Columbia River flows in excess of the instream target flows are diminished (such as 1987-1988 and 1992-1994), during which time pumping was constrained for many months. However, the minimum total pumped in any year is 423,470 acre-feet and not the 18,000 acre-feet referenced in this comment. There are several differences in the projected volume of the water exchange between the Draft PR/EIS and Reclamation's *Summary Report, Appraisal Assessment of the Black Rock Alternative* (2004a) (TS-YSS-7). In TS-YSS-7, water entitlements (or rights) of the exchange participants were used, there were several other contemplated exchange participants in addition to the Roza and Sunnyside Divisions, and a "full exchange" was made whereby all entitlements were met from Black Rock reservoir in lieu of continued diversion from the Yakima River. In the January 2008 Draft PR/EIS, the Yakima Reservoir and River Simulation Model was used (see RiverWare Model, page 4-5). This simulation model is based on a daily time-step of historical runoff and diversions for a 25-year period of record of 1981-2005. These diversions were modified by water conservation measures assumed to be implemented to reduce diversion demands as a part of the No Action Alternative. In addition, Roza Division lands upstream of Roza canal MP 22.6 were provided water from the Yakima River and the several smaller irrigation entities were not included in the water exchange.
ORG-0009-12	This comment is partially addressed in a similar response to comment FED-0004-04. Regarding the second paragraph of this comment, the comparison made of Columbia River water withdrawals to a Black Rock reservoir is the sum of the average September and October volume pumped for the 25-year period of record (396,847 acre-feet, table 2.19) to the total average annual pumped for the entire 25-years (640,693 acre-feet), or 62 percent. However, the more appropriate comparison would appear to be a comparison of the 396,847 acre-feet to the average total September and October Columbia River flow at Priest Rapids Dam of about 9.9 million acre-feet shown in table 44, page A-52, of TS-YSS-21. This results in a withdrawal/total flow comparison which is about 4 percent.
ORG-0009-13	To be included in the cumulative impacts analysis, an action must be reasonably foreseeable. The referenced reservoirs were analyzed in a State-sponsored appraisal study, but they have not progressed beyond that phase. As such, we do not believe they are reasonably foreseeable and have not included them in the cumulative impacts.
ORG-0009-14	Reclamation, other Federal entities, and universities are conducting further testing, specifically on Columbia and Yakima River salmon migration. Reclamation will continue to conduct investigations and watch the latest science on these salmon and their ability to return to their natal streams.
ORG-0009-15	The No Action Alternative is the Preferred Alternative in the Final PR/EIS. However, if the Black Rock Alternative were selected in the ROD, analyses to reduce the amount of waste from the irrigation systems is included in the list of items in the Final PR/EIS to accomplish before final designs are completed.
ORG-0009-16	No specific plant surveys were conducted by the Service; the Service relied on information provided by WDFW and Washington Department of Natural Resources Natural Heritage Program in identifying wildlife and plant species that occur within

Table 3 – Responses to individual comments.

Organizations

	the affected area. This was the most current information available at the time the CAR was developed. The Service's plant survey recommendations pertaining to mitigation for the action alternatives were included in the Service's CAR (section IV pp. 54-56). Since the No Action Alternative is identified in the Final PR/EIS as the Preferred Alternative, mitigation is not an issue. However, if an action alternative were recommended in the ROD, plant surveys would be conducted prior to implementation of an action alternative to identify and protect existing listed plant species within the affected area to the extent practicable. This is stated in Reclamation's responses to the Service's recommendations in Attachment A to the Final PR/EIS.
ORG-0009-17	See response to comment FED-0002-08. Land acquisition is identified as a mitigation measure for the Black Rock Alternative. Linking the Hanford Reach National Monument and the YTC and/or establishing a corridor of public land along the Rattlesnake Hills would be considered as possible objectives of the acquisition program.
ORG-0009-18	In the Final PR/EIS, the No Action Alternative is the Preferred Alternative; however, if the Black Rock Alternative were recommended in the ROD, these features could be added at the final design stage.
ORG-0009-19	Factors justifying the estimated level of visitation at Black Rock include: 1. a longer recreation season due to the warmer setting; 2. the need for local residents to “head to the closest water” to try and beat the heat (although one might expect many recreators to head to the cooler mountain reservoirs as opposed to Black Rock); and 3. the fact that Black Rock reservoir would have significantly more surface acreage than the mountain reservoirs in the region, thereby allowing for a different set of recreational activities, implying less competition with existing sites. One must keep in mind that the 700,000-visitation estimate is projected to occur in year 23 (although first-year visitation of 250,000 is still over twice the current visitation estimate at all other water-based sites in the region). Also, see response to comment ORG-0007-39.
ORG-0009-20	The reservoir has the potential for a diversity of fish habitat in terms of water temperature and depth and bottom profile. The types of game fishes that could potentially inhabit the reservoir include rainbow trout and smallmouth bass. The head of the reservoir is not steeply-sloped and the potential exists to develop some wetlands.
ORG-0009-21	The visitation estimates for Black Rock reservoir were based on a water-based recreation opportunity spectrum analysis which takes into account reservoir surface acreage.
ORG-0009-22	The supply of recreation facilities managed by USFS, BLM, and State Parks in the Yakima basin are already established and aging, and are not expected to increase in condition or number. Demand for these limited facilities is increasingly exceeding the supply. See response to comment ORG-0007-39.
ORG-0009-23	The modeling studies did not use currently observed power rates that are paid by ratepayers during this year's streamflow and power marketing conditions. Instead, monthly power rates used in the modeling studies were the rates developed by

Table 3 – Responses to individual comments.

Organizations

	BPA for their 2003 rate case as stated in page 4-43 of the Draft PR/EIS. They are month-by-month rates in 2003 dollars for each water-year scenario that influences power marketing in the Western States. They are not highly discounted bulk power rates; they represent the regional incremental cost to purchase a block of megawatt-hours (MWh). However, these rates are not within Reclamation's purview to adjust into current-year dollars, nor to release to the public. On the other hand, the public can apply their own estimates of power rates to the detailed pumping loads and net power losses that resulted from the studies. Reclamation can make these detailed output data available to anyone upon request.
ORG-0009-24	The average monthly costs of power for the pumping operations are shown in table 4.14 in the Final PR/EIS. These costs are in addition to the cost of net power losses that are shown in table 4.13, which are part of the BCA. The power to run the pumps and the net loss of power on the FCRPS system are an additional power burden on the Federal system which may be met through power purchases whose market value is based on power rates used by BPA in its 2003 rate case. However, these costs would not necessarily be borne by all of the region's ratepayers.
ORG-0009-25	The table displays the 18-year average power requirements for each month. The number shown is the average megawatts (MW) that would be required every hour of each day that month. The annual average MW is figured by adding the average pumping loads shown for each month period. Note that April's contribution is 69, which is the average of 74 and 64. The result is 1,580 megawatt-months, which is then divided by 12, resulting in 132 average MW for each month. 1,580 megawatt-months is not the same as 1,580 average MW. A “megawatt” is a rate of power, whereas “megawatt-month” is a rate of power over a period of time. The 1,580 megawatt-months per year are expressed as 132 average MW of energy, whether it is over a period of a day, a month, or a year. Imagine 132 MW of power consumed each hour for all 8,760 hours of one year. Imagine 132 MW each hour for all 720 hours of a 30-day month. Finally, imagine 132 MW each hour for 24 hours of one day. The average in any case (one day, one month, and one year) is 132 megawatts per hour. It is also called 132 average MW. The Final PR/EIS does not assume this energy as a load on the Columbia River hydroelectric system. Instead, this energy is treated as proxy for a "flat" round-the-clock energy capability of a powerplant such as a combustion turbine, or of a power purchase contract, which might operate between zero in August and up to its nameplate capacity of perhaps 600 MW in September in order to run the pumps as needed. Footnote #3 in table 4.12 has been changed as follows: "Represents the average annual MW required for the 18 years of 1981-1998. Computed by adding the monthly pumping requirements for each of the 18 years, dividing by 18, and further dividing by 12. "Monthly" means that all split-month data for April and August need to be averaged first as one full month number before adding it together with the other ten months of data each year."
ORG-0009-26	Field surveys and consultation with Tribes to identify historic properties and sacred sites are scheduled after selection of an alternative and prior to construction. Any such properties identified and evaluated as significant are mitigated through further consultation with the State Historic Preservation Officer, Advisory Council on Historic Preservation, and Tribes.
ORG-0009-27	This information has been corrected in section 1.6.1 in the Final PR/EIS.

Table 3 – Responses to individual comments.

Organizations

ORG-0009-28	Please see response to comment TRB-0001-20. A public comment period is being provided on the Final PR/EIS to take comments on the new information concerning seepage and seepage mitigation. We believe this addresses shortcomings; therefore, a revised Draft PR/EIS has not been prepared.
ORG-0009-29	Comment noted.
ORG-0009-30	One of the alternatives investigated by the State of Washington in the Draft PR/EIS was artificial groundwater storage. While it did not involve diverting high flows into wetlands, but rather into a constructed basin, it did investigate the option of storing surface water as groundwater by diverting it offstream. Since the State has now decided to separate from the Joint NEPA/SEPA process, that alternative has been included in the Final PR/EIS as a storage option that was considered but eliminated. The analysis in section 2.10 outlines why the alternative was eliminated from further consideration.
ORG-0009-31	Comment noted.
ORG-0009-32	Reclamation is currently implementing the Basin Conservation Program developed as part of the Yakima River basin. The program is implementing conservation measures throughout the Yakima basin.
ORG-0010-01	The Final PR/EIS looks at impacts from Black Rock reservoir on elk and greater sage-grouse movement and concludes greater sage-grouse movement will likely be adversely affected, while impacts to elk will not be significant.
ORG-0010-02	See response to comment FED-0004-04.
ORG-0010-03	See latter portion of response to comment ORG-0006-15.
ORG-0010-04	Reclamation agrees that water conservation is a primary aspect of effective water management. The Basin Conservation Program, authorized by the Congress in Title XII of the Act of October 31, 1994, provides for cooperative Federal, State, and local funding for improvement of existing irrigation systems to reduce water diversions, and it is included in the No Action Alternative. Conserved water realized through these water conservation measures is used to improve instream flows and for “firming up” the irrigated water supply in dry years. The Basin Conservation Program, however, is a voluntary program and is not mandated. Work conducted for the PR/EIS indicates that the study goals of improving instream flows for anadromous fishery, improving the dry-year irrigation water supply of junior water rights, and providing for future municipal water needs cannot be achieved solely by water conservation; additional stored water is required if these goals are to be realized. With respect to pricing irrigation water at its “real value,” the policy for irrigation water from a Federal Reclamation project has long been that the irrigators should pay in accordance with their “ability to pay” as determined through farm enterprise analyses.
ORG-0011-01	Comment noted.
ORG-0012-01	Comment noted.
ORG-0013-01	Modifying the authorization would take an act of Congress, which is outside of Reclamation's control.
ORG-0014-01	See response to comment TRB-0001-20.

Table 3 – Responses to individual comments.

Individuals

IND-0001-01	Comment noted.
IND-0002-01	Comment noted.
IND-0003-01	Comment noted.
IND-0004-01	Sedimentation into all of the reservoirs, with the exception of Rimrock, has not significantly impacted the ability to store water in them. With the exception of Rimrock, the Yakima Project reservoirs were lakes prior to dam construction. Consequently, there is a significant amount of water in the reservoirs below the outlet works that cannot be released. Sediment that makes its way into the lake generally settles in this deep pool so it reduces the volume of water in the reservoir, but not the volume stored above the elevation of the outlet works. In other words, the volume of the original lake is reduced, but not the volume of stored water. There might be a small amount of accumulated sediment at the delta that slightly impacts storage, but because the level of the lake is drawn down each year, this sediment is mostly transported into the deeper parts of the lake. A simple example shows that removing 10,000 acre-feet of sediment from a lakebed (less than 10 percent of the storage of Keechelus, which has the smallest amount of storage of the three) would cost at least $80,600,000. This is assuming a conservative $5/ton to haul the sediment. The unit cost is likely more, since the cost does not include the operator time and equipment to remove sediment. To put this sediment volume into perspective, it would take 1,524,600 trips of a 10-ton dump truck to remove this amount of sediment.
IND-0005-01	Comment noted.
IND-0006-01	Comment noted.
IND-0007-01	Reclamation has tried to keep the impacts to the YTC to a minimum with the alternatives selection. In addition to the impacts to the operations on the YTC, there would be more impact to shrub-steppe habitat with multiple reservoirs. The Service indicated in the CAR that any loss of shrub-steppe habitat would have to be replaced with the same amount of acreage. This proposal is included in section 2.10, "Other Alternatives Considered but Eliminated from Further Study."
IND-0008-01	Artistic treatment (e.g., mural, as suggested in the comment) of the eastern face of Black Rock Dam could be considered as part of future visual impact mitigation discussions. However, any such action would not be initiated or carried out by Reclamation. Such a measure would need to be proposed, and the costs borne, by others; and its feasibility or practicability would need to be demonstrated. Thus, the mural suggestion is not included as a formal mitigation measure in the Final PR/EIS.
IND-0009-01	The BCA was developed based on economic guidelines required for use by Federal water management agencies (*P&Gs*). Considerable effort went into the estimation of long-term benefits and costs for each proposed alternative by evaluating economic effects across a 100-year study period.
IND-0010-01	Comment noted.
IND-0011-01	Comment noted.
IND-0012-01	Comment noted.
IND-0013-01	Comment noted.
IND-0014-01	Comment noted.

Table 3 – Responses to individual comments.

Individuals

IND-0015-01	Comment noted.
IND-0016-01	Comment noted.
IND-0017-01	Comment noted.
IND-0018-01	Comment noted.
IND-0019-01	Comment noted.
IND-0020-01	The hearings were held to allow people to provide oral comments on the Draft PR/EIS, which included analyses on seven Joint and State Alternatives. A gravity east-west pipeline from the Columbia River near Wanapum Dam to the Roza Dam is not feasible. Wanapum Dam is at a considerably lower elevation than Roza Dam. The water would have to be pumped up from the Columbia River to convey it to the Yakima River in an east-to-west direction.
IND-0021-01	Comment noted.
IND-0022-01	Comment noted.
IND-0023-01	Comment noted.
IND-0024-01	See responses to comments TRB-0001-20 and FED-0002-05.
IND-0025-01	During the appraisal-level designs, Reclamation considered both a concrete-faced rockfill dam and a central core rockfill dam. The preferred design at this time is the central core rockfill dam. The proposed central core rockfill dam height of 755 feet is not without precedent. For example, there are two very large embankment dams in California that might be considered comparable to the proposed Black Rock dam. Oroville Dam, completed in 1968, is 754 feet high, 6,800 feet long, and contains approximately 78 million cubic yards of earth and rockfill. New Melones Dam, completed in 1978, is 625 feet high, 1,560 feet long, and contains approximately 16 million cubic yards of earth and rockfill. If the Black Rock Alternative is considered for final design, additional data and studies would be conducted to ensure the dam and its foundation would behave appropriately throughout their service lives.
IND-0025-02	See response to comment TRB-0001-20.
IND-0025-03	The Draft PR/EIS does include input from Ecology, the Service, and DOE. Also, see response to comment TRB-0001-20. Wells are included as part of the seepage mitigation plan.
IND-0026-01	See responses to comments TRB-0001-20 and FED-0001-05.
IND-0026-02	In the 2004 BIOP, NMFS concluded that the Mid-Columbia steelhead would likely trend toward recovery with implementation of the actions included there. That analysis included pessimistic assumptions about climate change and its impacts on salmon and steelhead survival. The Yakima Subbasin Fish and Wildlife Planning Board's *Draft Yakima Steelhead Recovery Plan* (2008) concludes that rather than going extinct, steelhead can be recovered in the Yakima basin. It appears unduly pessimistic, then, to assume for this study that steelhead and salmon will go extinct in the future as a result of actions outside of the basin, and that actions to assist with their enhancement or recovery are wasted efforts and without benefit.
IND-0026-03	Appropriate permits would be sought from the State of Washington if and/or when the application for appropriation of water is made. It does not appear that an interbasin transfer permit exists under Washington State law.

Table 3 – Responses to individual comments.

Individuals

IND-0026-04	See response to comment ORG-0006-15.
IND-0026-05	Grant County Public Utilities District may have a different way of calculating their losses. However, Reclamation chose the HYDSIM modeling method as stated in page 4-43 of the Draft PR/EIS. This model is used by Federal agencies in many official purposes including BPA rate cases, ESA-NEPA studies, and power coordination studies of the Columbia River System.
IND-0026-06	Monthly power rates used by Reclamation were the rates developed by BPA for their 2003 rate case as stated in page 4-43 of the Draft PR/EIS. These are monthly averages achieved in simulating power marketing trends as influenced by month-by-month streamflow conditions of each water year of record. This is in contrast to just using current power prices and one marketing scenario. When the HYDSIM studies for this PR/EIS were performed, there was no rate-case-related need to produce an official rates analysis; hence, Reclamation resorted to the best available data at that time.
IND-0026-07	An additional paragraph has been added to section 4.25 of the Final PR/EIS to address this issue.
IND-0026-08	As noted in the paragraph referred to in response to comment IND-0026-07, additional energy demands from Black Rock could be met by fossil-fuel-based energy production, renewable energy production, nuclear energy, or conservation. Consequently, the potential increase in greenhouse gases is not considered an unavoidable impact. In all likelihood, new demands would be met by a combination of these approaches such that the increase in demand would not necessarily result in an increase in emissions.
IND-0026-09	The Priest Rapids intake structure was evaluated for its potential impact on biota. The intake screens' configuration and the pumping operations are designed to reduce entrainment to fish, aquatic invertebrates, and other biota. NMFS and Ecology have reviewed the proposed design and operation for its potential impacts to aquatic biota.
IND-0026-10	Comment noted. Additional text was added to the Final PR/EIS document (section 4.8.2.2) to acknowledge the potential for non-salmonid fish larvae and other creatures smaller than the screen mesh size to be entrained.
IND-0027-01	Comment noted. See response to comment TRB-0002-02.
IND-0027-02	The consultation process on the Columbia River has resulted in the establishment of target flows at various locations. Those consultations have included many listed stock of salmon and steelhead beyond those that occur in the Snake River. In those consultations, NMFS has indicated a concern about any diversions which might reduce flows when flows in the Columbia River are at or below target flows. The NRC reviewed Ecology's salmon and water management decisions (e.g., additional water withdrawals) specific to Columbia River, and stated that there is an increased risk to both Columbia and Snake River salmon downstream and migrants upstream in critical low-flow periods or years. Therefore, NRC's comments limiting water withdrawals in July and August and other low-flow periods coincide with the water withdrawal criteria used for the Draft PR/EIS. The NRC's comments were summarized in the executive summary of their document entitled, *Managing the Columbia River: instream flows, water withdrawals, and salmon survival* (NRC, 2004). In this document, they state, "Within the body of scientific literature reviewed as part of this study, the relative importance of various environmental variables on smolt survival is not clearly

Table 3 – Responses to individual comments.

Individuals

	established. When riverflows become critically low or water temperatures excessively high, however, pronounced changes in salmon migratory behavior and lower survival rates are expected."
IND-0027-03	Unfortunately, the USGS temperature report was not available at the release of the Draft PR/EIS. It has now been completed and is available at http://pubs.usgs.gov/sir/2008/5070/. It is acknowledged that application of a groundwater model component in conjunction with the temperature model would be beneficial. USGS is currently building a groundwater model for parts of the basin which, when completed, will help clarify this issue. If the two models were linked, perhaps we could better model the temperature effect associated with groundwater recharge using spring freshets. It should be noted that though the operations under the various alternatives did increase spring base flows, they did not result in significantly higher peak or flood flows.
IND-0027-04	The EDT model was used to estimate change in fish abundance, etc., between alternatives. Two-dimensional flow models were built for the Easton, Ellensburg, Lower Naches, Union Gap, and Wapato floodplains (considered the major reaches), specifically for the purpose of tracking changes in habitat types and amounts as a function of flow. These reaches were incorporated into the EDT model. This provided a method to track floodplain habitat changes with respect to flow in the EDT model and ultimately capture the biological changes in survival, etc., for each salmonid species modeled. Technical report TS-YSS-22 provides more detail of the modeling methods than was provided in the Draft PR/EIS.
IND-0027-05	See response to comment TRB-0002-02.
IND-0027-06	See response to comment ORG-0001-05.
IND-0028-01	Analysis of both reservoir-based and river-based recreation effects were included in the economic benefits for the Black Rock Alternative.
IND-0028-02	Comment noted.
IND-0028-03	Based on the biological analyses developed for the Black Rock Alternative, it is not clear that this alternative alone restores the salmon populations. Regardless of whether or not the costs of Black Rock would be forgotten over time, it is the obligation of Federal agencies to compare estimated project costs to estimated project benefits.
IND-0028-04	Reclamation must follow the *P&Gs* when developing economic analyses of proposed construction projects. The *P&Gs* do allow for a “futuristic view” by considering economic effects over a 100-year timeframe.
IND-0029-01	The cost for the Black Rock Alternative is provided in section 2.7.1.1, "Cost Analysis."
IND-0029-02	Irrigation water released from Black Rock reservoir would flow directly into the irrigation delivery systems (e.g., Roza and Sunnyside canals). Under current operations, operational spill (canal water released directly back to the river) varies from about 2 cfs in March to 30 cfs in August (see table 4.28, page 4-119, of the Draft PR/EIS.). This equates to about 0.05 percent of Black Rock water mixed with Yakima River water in March to about 1.6 percent in August. Since Black Rock water is released directly into the canal systems, and less than 2 percent of this water may find its way back to the Yakima River through direct operational spills, there would be no measurable effect on river water temperature.

Table 3 – Responses to individual comments.

Individuals

	The low percent of Columbia River water mixed with Yakima River water at the confluence to the Columbia River is not expected to result in a false attraction issue (see section 4.8.2.4 of the Final PR/EIS).
IND-0029-03	The Black Rock reservoir water quality would be of high quality since it is being pumped from the Priest Rapids Lake on the Columbia River, which is considered to be of higher quality than the middle and lower Yakima River. Irrigation water released from Black Rock reservoir would be released directly into the canal delivery systems; therefore, no influence (positive or negative) to Yakima River quality is expected. In addition, the amount of direct spill into the Yakima River from the Roza and Sunnyside Irrigation canals ranges from 0.05 percent to 1.6 percent (see response to comment IND-0029-02). Thus, it is expected that Yakima River water quality would not measurably change.
IND-0029-04	It is assumed that Black Rock reservoir water would initially have a higher water quality than that of Yakima River water diverted at Roza and Parker dams for the Roza and Sunnyside irrigation canals. However, it is anticipated that subsequent changes in water quality as a result of onfarm application and drainage (surface- and groundwater) back to the river would be comparable between the two water sources. In other words, the affect of cities, farms, pesticides and fertilizers on the water quality of both irrigation water sources would be comparable.
IND-0029-05	See response to comment ORG-0002-01.
IND-0030-01	The Storage Study was authorized by the Omnibus Appropriations Act of 2003 (Omnibus Act), Public Law 108-7. Section 214 of the Act of February 20, 2003 (Public Law 108-7), states, "*The Secretary of the Interior, acting through the Bureau of Reclamation, shall conduct a feasibility study of options for additional water storage in the Yakima River Basin, Washington, with emphasis on the feasibility of storage of Columbia River water in the potential Black Rock reservoir and the benefit of additional storage to endangered and threatened fish, irrigated agriculture, and municipal water supply*." The feasibility study was conducted as directed in the authorization. The Storage Study evaluated plans that would create additional water storage for the Yakima River basin and assessed each plan's potential to supply the water needed for fish and the aquatic resources that support them, basinwide irrigation, and future municipal demands. Plans that did not involve creating additional storage in the basin, such as the State Alternatives in the Draft PR/EIS, were not evaluated, as they fell outside of the purpose of the Storage Study, which was to comply with Public Law 108-7. As noted in the Final PR/EIS, this process is no longer a joint NEPA/SEPA process and the State of Washington is no longer a co-lead. As a result, the only alternatives that remain are those that involve options for creating additional water storage in the Yakima River Basin.
IND-0030-03	See response to comment TRB-0001-20.
IND-0031-01	See response to comment TRB-0001-20.
IND-0032-01	See responses to comments FED-0002-05 and FED-0002-07.
IND-0032-02	See response to comment TRB-0001-20.
IND-0032-03	See response to comment FED-0004-04.
IND-0032-04	See latter portion of response to comment ORG-0006-15.
IND-0032-05	See responses to comments FED-0002-08, FED-0006-08, and ORG-0010-01.

Table 3 – Responses to individual comments.

Individuals

IND-0032-06	See response to comment ORG-0008-16.
IND-0032-07	See response to comment IND-0029-01. Also, regarding the source of the power, it is assumed the power required to pump water from the Columbia River to a Black Rock reservoir would come from the FCRPS. The average annual $50 million cost in the Draft PR/EIS reflects the estimated market value based on information used by BPA in its 2003 rate case. As noted on page 2-102 of the Draft PR/EIS, an allocation of project costs to reimbursable and nonreimbursable purposes was not made and repayment requirements not determined. Thus, there is no analysis of who would pay the pumping power costs.
IND-0033-01	See response to comment TRB-0001-20.
IND-0034-01	Comment noted.
IND-0035-01	Comment noted.
IND-0036-01	See responses to comments FED-0002-05 for and FED-0002-07.
IND-0036-02	See response to comment TRB-0001-20.
IND-0036-03	See response to comment FED-0004-04.
IND-0036-04	See response to comment ORG-0008-16
IND-0037-01	This comment expresses concern related to land and shoreline use impacts along the Yakima River due to increased flood hazard caused by one or more of the alternatives (the comment does not center on a specific alternative but does focus on the Benton City area). Neither the No Action Alternative nor any of the Joint Alternatives would result in increased flooding or flood potential along the Yakima River.
IND-0038-01	The Draft PR/EIS did include an Enhanced Water Conservation Alternative as one of the State Alternatives. This alternative included all forms of water conservation that might be used in the basin. Water conservation is currently being pursued by water-using entities in the basin through various programs. The State of Washington is pursuing water conservation as one of many issues to be addressed in their Final EIS.
IND-0038-02	In addition to agriculture and fisheries, another purpose of the Black Rock Alternative is to provide municipal water, so presumably, water for any potential development around the reservoir could come from the reservoir. Any beneficiary of the water would have to pay the appropriate costs associated with that benefit. With regard to economic development, Reclamation has no control over land uses outside of its own lands. Also, see response to comment ORG-0007-37.
IND-0038-03	See latter portion of response to comment ORG-0006-15.
IND-0039-01	See response to comment FED-0002-05.
IND-0039-02	See response to comment TRB-0001-20.
IND-0040-01	Comment noted.
IND-0041-01	The rationale for eliminating the Bumping Lake Enlargement Alternative as a viable alternative is outlined in section 2.10 of the Final PR/EIS.
IND-0042-01	Comment noted.
IND-0043-01	Comment noted.

Table 3 – Responses to individual comments.

Individuals

IND-0044-01	Comment noted.
IND-0045-01	Comment noted.
IND-0046-01	See response to comment TRB-0001-20.
IND-0046-02	See response to comment ORG-0008-16.
IND-0047-01	See responses to comments FED-0002-05, FED-0002-07, and ORG-0009-10.
IND-0047-02	See response to comment TRB-0001-20.
IND-0048-01	Comment noted.
IND-0049-01	Comment noted.
IND-0050-01	Section 6.3.1 describes the two Government-to-Government meetings that were held with the Yakama Nation. Section 6.1.3.2 lists additional meetings held with Tribal staff. It should also be noted that the Yakama Nation, at the staff level, was a participant in the Roundtable meetings described in section 6.1.3.4. Finally, the "List of Preparers" for the Final PR/EIS identifies two authors of sections of the document from the Yakama Nation.
IND-0050-02	See response to TRB-0001-20.
IND-0050-03	It is inaccurate to state that Reclamation has never built any storage facility the size of Black Rock. Storage facilities along the Colorado River, including Hoover Dam (28.5 maf) and Glen Canyon Dam (27 maf), easily exceed the 1.3 maf storage capacity at Black Rock. If the Black Rock Alternative were selected for final design, Reclamation would investigate design-build and other options to determine economical methods for designing and constructing the features.
IND-0050-04	See response to comment IND-0050-01.
IND-0051-01	Comment noted.
IND-0052-01	The No Action Alternative is identified as the Preferred Alternative in the Final PR/EIS and acquisition is not contemplated under that alternative. Should an action alternative be implemented, acquisition would occur. Reclamation's policy on acquisition is outlined in the "Land Acquisition Directives and Standards" in the *Reclamation Manual* at http://www.usbr.gov/recman/lnd/lnd06-01.pdf. That Directive and Standards states the Reclamation policy is to acquire mineral rights when the location and removal of those minerals have a potential to cause adverse effects on the uses for which the lands are acquired. Instead of acquisition, the mineral interests may be subordinated (ranked below the rights of the surface owners) so those interests do not interfere with any project operations. Also, the policy states that the mineral owners are to be adequately compensated for any restrictions placed on them through subordination. This policy would be applied on a case-by-case basis during any land acquisition process.
IND-0053-01	Reclamation addressed these issues in TS-YSS-2. This report is available on the Storage Study Web site. Also, see response to comment FED-0002-05.
IND-0053-02	See response to comment TRB-0001-20.
IND-0054-01	See response to comment TRB-0001-20.
IND-0054-02	See response to comment TRB-0001-20. In addition, impacts from the seepage mitigation measures are addressed in chapter 4, and section 4.7.2.3 addresses

Table 3 – Responses to individual comments.

Individuals

	changes to vegetation associated with the seepage.
IND-0054-03	See response to comment FED-0004-04.
IND-0054-04	See response to comment FED-0006-06.
IND-0054-05	See response to comment FED-0004-04.
IND-0054-06	Water pumped from the Columbia River would be stored in Black Rock reservoir and delivered directly to the Roza and Sunnyside canals. Very little of the water would spill directly into the Yakima River. Under average conditions, the amount of spill directly from the Roza and Sunnyside canals into the Yakima River would peak in August at about 1.6 percent of the total riverflow. This would have no measurable effects on water quality.
IND-0054-07	The possibility exists that chemicals within the Columbia River may exceed State and Federal standards at some point in the future. There is no evidence to support the mobilization of heavy metals from the Kellogg Superfund Site and the Canadian Smelter to the Priest Rapids Dam. The Upper Columbia River Remedial Investigation and Feasibility Study conducted above the Grand Coulee Dam by the Environmental Protection Agency has identified several heavy metal contaminants. Many of the contaminants are the same as those found upstream of the Priest Rapids Dam. Although it appears the contaminants may be coming from these superfund sites, the possibility of this occurrence decreases with the number of reservoirs and dams between the sites. The water that would be pumped from the Columbia River into the Black Rock reservoir will be surface water. The heavy metals of concern are found in the bottom sediments of the river and would most likely not be lifted into the reservoir.
IND-0054-08	Economic impacts are defined in section 4.14, "Socioeconomics." The costs of running the Priest Rapids pumping plant is shown in table 2.16, "Annual OMR&E costs-Black Rock Alternative." Annual energy costs for pumping are $50 million. The electricitiy would come from BPA. There would be enough power for both the Hanford Site's vitrification facility and Priest Rapids pumping plant.
IND-0055-01	See responses to comments FED-0002-05 and FED-0002-07.
IND-0055-02	See response to comment TRB-0001-20.
IND-0055-03	Section 2.2.6.3 discusses the water withdrawal granted by the State of Washington to Reclamation from the Columbia River. The grant withdraws from further appropriation the unappropriated water of the Columbia and its tributaries until December 2008, to allow for any potential future appropriation by Reclamation resulting from the Storage Study. The withdrawal would serve as the basis for a water right application if an alternative were to be chosen, authorized, and funded that requires a diversion from the Columbia River. Reclamation has requested that Ecology grant an extension of the withdrawal until December 2011, but has not received confirmation as of this printing.
IND-0056-01	See responses to comments ORG-0008-16 and IND-0038-02.
IND-0056-02	Black Rock will not be a closed system. If motorized vehicles are allowed to enter the reservoir, chances of adding pollutants increases. The possibility exists that those pollutants may be discharged from the reservoir and eventually be used for irrigation or municipalities. This is not unlike many other reservoirs within the

Table 3 – Responses to individual comments.

Individuals

	region that are used for recreation, irrigation, and by municipalities.
IND-0057-01	See response to comment TRB-0001-20.
IND-0057-02	As noted in section 4.3.2.3 of the Final PR/EIS, increased pore pressures due to reservoir seepage into the steeply inclined basalts and interbedded sediments could reactivate or initiate new landslides along the reservoir rim. Further studies to mitigate such stability issues would need to be completed prior to final design of Black Rock dam.
IND-0057-03	See response to comment FED-0002-05.
IND-0058-01	See response to comment TRB-0001-20.
IND-0058-02	See response to comment IND-0055-03.
IND-0058-03	The proposed resort referred to is not part of the Black Rock Alternative.
IND-0059-01	Comment noted.
IND-0060-01	Comment noted.
IND-0061-01	Comment noted.
IND-0062-01	Comment noted.
IND-0063-01	Comment noted.
IND-0064-01	The source of project funding has no influence upon a BCA. The objective of a BCA is to simply compare project benefits to project costs, regardless of who pays the costs. Given the wide range of public investments available to the Federal Government, the intent is to try to make sure that the Federal Government is investing in projects with positive net benefits from a national perspective. As noted in the NED versus RED discussion in section 2.8, “Comparative Evaluation of Alternatives,” economic benefits are measured in terms of net values (e.g., profitability, net willingness-to-pay or consumer surplus), whereas regional economic impacts are presented in terms of gross measures (e.g., revenues, wages). Gross measures simply show the amount of money changing hands – whereas business revenue or personal wages reflect income from the business/employee perspective, they simultaneously reflect expenditures or costs from the purchaser/business perspective. As a result, the “local economic benefits” (e.g., economic development-based increased gross property values) suggested for the Black Rock Alternative in reality reflect a regional economic impact. Also see response to comment ORG-0002-01. In addition, the national benefits estimated for the Black Rock Alternative in most cases reflect both a national and regional benefit since they occur within the local area (with the exception of certain fishery benefits which occur outside the local area). In some cases, this national/regional benefit may even have been overestimated in the Draft PR/EIS (e.g., recreation benefits which did not take into account possible substitution effects both inside and outside the region).
IND-0064-02	The RED, EQ, and Other Social Effects (OSE) results are more prominently displayed in the Executive Summary of the Final PR/EIS. It should be emphasized that RED, EQ, and OSE results cannot be combined into the NED BCA. First, the EQ and OSE results are not measured in dollars. In addition, many of the EQ effects in particular provide inputs to the NED benefits (e.g., water supply, fish populations/harvest), so even if the EQ effects could be measured in dollar terms, combining them into the NED account would reflect

Table 3 – Responses to individual comments.

Individuals

	double counting. As noted in the response to comment IND-0064-01, while RED effects are measured in dollars, the RED account estimates economic impacts in terms of gross revenues/wages as opposed to NED benefits which are estimated in terms of net values. Therefore, RED effects cannot be included within the NED benefit-cost comparison.
IND-0064-03	The NED account sometimes gets more emphasis than the RED, EQ, and OSE accounts. This is because it is the only required account according to the *P&Gs*. Note that the intent of the RED analysis is to display the economic impacts on the regional economy and not to provide a benefit-cost comparison. Also, see response to comment ORG-0002-01.
IND-0064-04	This comment appears to center on the potential synergistic benefit the Black Rock Alternative would have on existing salmon recovery efforts being expended in the Yakima basin (though the term "northwest" is used). Any habitat restoration actions implemented in the Yakima basin should benefit other Columbia Basin recovery actions that affect Yakima salmon and steelhead. See subsection, "Rationale for Flow Versus Fish Abundance," in section 4.8.2.4 in the Final PR/EIS. This section provides the reader with some items to consider regarding the Yakima basin's potential to produce salmon and steelhead in the context of recovery.
IND-0064-05	The Storage Study includes a qualitative discussion of hydrologic, water supply, and water resources impacts associated with climate change (see section 4.2.2.6, subsection "Global Climate Change," subheading "Potential Climate Change Impacts on Regional Water Resources"). The comment describes impacts that are expected under a warming-only condition; however, information provided (see figures 4.4 through 4.7) illustrates that considerable uncertainty exists on projected precipitation change, and that the majority of contemporary climate projections indicate wetter future conditions over the Yakima and Upper Columbia Basins.
IND-0064-06	Regional impacts were calculated for the four-county area. These are not considered NED benefits. See response to comment ORG-0008-19.
IND-0064-07	The likelihood of such economic development has been called into question given there have been other reservoirs in similar settings constructed in the region where such development did not materialize (e.g., Desert Aire); the questionable scenic beauty of the Black Rock site; and the amount of reservoir water level fluctuation expected for Black Rock (especially during the high recreation months of July and August when withdrawals from the Columbia River would not be made). Despite its speculative nature, a qualitative discussion of the potential for resort and residential/commercial development around the reservoir has been added to the RED section of the Final PR/EIS. As stated in response to comment IND-0064-01, the potential economic development around the reservoir is a regional economic impact as opposed to a national benefit. Also, see response to comment ORG-0002-01.
IND-0064-08	The study included hydropower losses and benefits that accrue from diversion of water from Priest Rapids forebay and the return of water (in a different monthly shape compared to what was diverted from Priest Rapids) into the McNary forebay. For this PR/EIS, Reclamation did not perform a study that is influenced by climate change. There has not been enough regional consensus on what the plausible scenarios are for hydro-system studies.
IND-0064-09	Employment impacts stemming from farm production are considered in section 4.14., "Socioeconomics."

Table 3 – Responses to individual comments.

Individuals

IND-0065-01	See response to comment IND-0030-01.
IND-0065-02	See response to comment IND-0030-01.
IND-0065-03	Groundwater storage was one of the State Alternatives included in the Draft PR/EIS. In the Final PR/EIS, it is discussed as an alternative considered but eliminated from further study in section 2.10.5.
IND-0066-01	See response to comment TRB-0001-20.
IND-0067-01	Comment noted.
IND-0068-01	Comment noted.
IND-0069-01	Comment noted.
IND-0070-01	See response to comment TRB-0001-20.
IND-0071-01	Comment noted.
IND-0072-01	See response to comment FED-0002-05.
IND-0072-02	See response to comment TRB-0001-20.
IND-0073-01	Estimated reservoir evaporation and seepage losses were included in the volume of water pumped from the Columbia River to a Black Rock reservoir. Model results for the period 1981-2005 indicate that, on average, about 15 percent of the water pumped would be lost to seepage and evaporation.
IND-0073-02	The RiverWare model that was used to evaluate storage alternatives is not sensitive, in its structure, to future climates. However, the inputs to this model (i.e., assumptions on water supply, water demand, operational constraints) would be sensitive to climate, as discussed in section 4.2.2.6, subsection "Global Climate Change," subheading "Potential Climate Change Impacts on Regional Water Resources."
IND-0074-01	This comment suggests that water use in the Yakima basin should be limited to that water which is available in an extremely dry year and the most appropriate way of accomplishing this is the purchase of presently irrigated lands and associated water rights. To a large extent, the water rights in question are already held by the United States for the Yakima Project on behalf of the Project irrigation districts and their water users. To accomplish the goal outlined would likely involve renegotiation of the contracts with some of the Project water users to reduce the service areas. These contracts can generally only be renegotiated with the consent of both parties. This undoubtedly would be controversial from legal, social, economic, and institutional perspectives. This potential solution is beyond the scope of the Storage Study, which is looking at ways to provide additional water storage in the Yakima basin.
IND-0074-02	Section 4.2.2.6 summarizes contemporary climate projection information for the region and provides discussion on the qualitative implications for hydrology and water resources in the region given these climate possibilities.
IND-0075-01	Attempts were made to estimate the economic benefits to salmon, recreation, proratable water supply, and municipal water supply in the Storage Study. What was excluded from the benefit-cost analysis was the incorrectly labeled “local economic benefits” associated with potential resort, residential, and commercial development around the reservoir. Also, see response to comment ORG-0002-01.
IND-0076-01	Comment noted.
IND-0077-01	Comment noted.
IND-0078-01	Comment noted.

Table 3 – Responses to individual comments.

Individuals

IND-0079-01	See response to comment FED-0002-05.
IND-0079-02	See response to comment TRB-0001-20.
IND-0080-01	Comment noted.
IND-0080-02	See response to comment FED-0002-05.
IND-0080-03	See response to comment TRB-0001-20.
IND-0080-04	Comment noted.
IND-0081-01	Comment noted.
IND-0082-01	See response to comment TRB-0001-20.
IND-0083-01	See response to comment TRB-0001-20.
IND-0084-01	Comment noted.
IND-0085-01	Comment noted.
IND-0086-01	See response to comment TRB-0001-20.
IND-0087-01	Comment noted.
IND-0088-01	Comment noted.
IND-0088-02	A water availability study was conducted early in the appraisal design of the Black Rock Alternative to size the Black Rock reservoir. The writer is referred to the report, *Preliminary Appraisal Assessment of Columbia River Water Availability for Potential Black Rock Project* (TS-YSS-1) (Reclamation, 2004d), which can be found on the Storage Study's Web site for specific information regarding this issue.
IND-0088-03	Reclamation analyzed the enlarged Bumping Lake Alternative in TS-YSS-8. Our decision after that analysis was to drop the Bumping Lake Enlargement Alternative from further consideration due to the negative impacts that storing excess flows would have on the hydrograph of the Bumping and Naches Rivers. Other adverse impacts from the Bumping Lake Enlargement include inundation of creeks and streams that are used by the threatened bull trout and adverse impacts to old growth forest.
IND-0088-04	While a qualitative discussion of the potential for economic development around the reservoir has been included in the RED section, language has also been added as to its speculative nature in light of the expected water level fluctuation.
IND-0088-05	Because earthquakes have the potential to damage man-made structures, the design standards for dams and appurtenant structures are very high to prevent deformation of the structure due to earth movement. However, there is always the potential for a change in seepage conditions due to earth movement, and mitigation and/or repair would be required in the event of a large earthquake.
IND-0088-06	Because earthquakes have the potential to damage man-made structures, the design standards for dams and appurtenant structures are very high to prevent deformation of the structure due to earth movement and to prevent dam failure. This is of the utmost importance in order to prevent human loss and environmental degradation. Reclamation has studied the potential seepage impacts from the Black Rock reservoir (see section 4.2.2.2 in the Final PR/EIS). Mitigation of the seepage has also been studied to analyze the impacts of the proposed mitigation features (see section 2.4.1.1). The purpose of the mitigation is to reduce and capture seepage from the potential Black Rock reservoir and prevent significant impacts to the Hanford Site.
IND-0089-01	Comment noted.

Table 3 – Responses to individual comments.

Individuals

IND-0090-01	Because earthquakes have the potential to damage man-made structures, the design standards for dams and appurtenant structures are very high to prevent deformation of the structure due to earth movement and to prevent dam failure. This is of the utmost importance in order to prevent human loss and environmental degradation. No additional site-specific seismic analysis has been completed to date. Additional seismic studies, including the potential for lubrication of the fault zone and for reservoir-induced seismicity, have been recommended in the Final PR/EIS to be completed before final designs are complete and a project cost ceiling is established. The resources required to accomplish a seismic analysis are estimated and shown in the Final PR/EIS along with other tasks to establish a project construction ceiling for congressional authorization.
IND-0090-02	See response to comment TRB-0001-20.
IND-0090-03	Losses from evaporation were considered and accounted for in the model.
IND-0090-04	Regional scale model data were refined where local scale data were available. All available data were used in the modeling process.
IND-0091-01	Table 4.25 and section 4.8.2.5 in both the Draft and the Final PR/EIS discuss the anadromous fisheries results for the Wymer project. The 1945 Consent Decree did not allocate water; it determined diversion priorities for a group of diverters. Wymer reservoir would be operated to divert flows currently available for approriation during the winter and spring, and deliver them as part of the Yakima Project water supply.
IND-0091-02	The discussion in the document adequately addresses the status of anadromous fish in the Yakima basin and those portions of the Columbia River potentially affected by the proposed actions. Threatened and endangered species potentially affected by the proposed actions are addressed in section 4.2.8.6. The proposed actions are not likely to affect fish hatcheries in the area so these have not been addressed.
IND-0091-03	See table 2.13, "Crop acres by district," in the *Economics Technical Report for the Yakima River Basin* (Reclamation, 2008g) (TS-YSS-23) for the crops grown in the Yakima Project. The structure of the economic analysis is such that the market for crop sales is not relevant to the analysis. The carbon footprint associated for transporting crops was not computed for this analysis. Any change in the carbon footprint resulting from proposals in this study would only be for the additional crops produced by the added water storage during drought years. The water conservation actions that are expected to occur in the future are outlined in the No Action Alternative in section 2.3.1.1. These actions will be undertaken by irrigation districts, not individual irrigators. Some actions have been completed and others are authorized and funded, but not yet completed. Irrigation districts are charged for repayment of the capital costs of facilities and for the operation and maintenance costs to deliver water to the districts according to the terms of the water service contracts that they sign. Kittitas, Kennewick, and Roza Divisions still have some contract costs to be paid. The other districts and divisions have paid their water service contract obligations. An analysis of “true costs” of irrigating crops was not performed for the Draft

Table 3 – Responses to individual comments.

Individuals

	PR/EIS. On average, wine grapes in the basin use 36.7 inches per acre per year. Because the analysis only focused on wine grapes grown inside the Yakima Project, we do not have data on vineyards throughout eastern Washington.
IND-0091-04	Runoff for the RiverWare hydrology model was estimated using existing conditions. Model runs were not made based on possible future conditions reflecting possible changes in forest management direction. Such changes were not within the scope of the Storage Study, nor were they included in the cumulative effects analysis as they did not appear to be reasonably foreseeable.
IND-0091-05	The daily evaporation is calculated from the water surface area and the annual evaporation curve. The annual evaporation curve is derived from pan evaporation (ET) data collected from the closest proximity Public Access Weather Service (Moses Lake), which has a maximum annual evaporation of 51.5 inches.
IND-0092-01	Comment noted.
IND-0093-01	Comment noted.
IND-0093-02	See response to comment ORG-0008-16.
IND-0094-01	Section 2.4.1.1. of the Final PR/EIS describes mitigation measures to deal with seepage from Black Rock reservoir and their efficacy. Analyses of the impacts of those measures, including impacts to the Hanford Reach National Monument, are included under various resources in chapter 4. These impacts include surface flows in reaches of Dry Creek, but not Cold Creek or Rattlesnake Springs.
IND-0095-01	The study accounts for potential future climate change by providing a review of completed studies on potential climate change impacts to water resources in the Columbia River Basin and Yakima Subbasin, a summary of contemporary climate projection information for the region, and a qualitative analysis of what these projections would imply for water resources in the region.
IND-0096-01	See response to comment FED-0004-04.
IND-0096-02	See response to comment FED-0002-05.
IND-0096-03	For the recreation visitation portion of the comment, see response to comment ORG-0008-16. For the recreational resort portion of the comment, see responses to comments IND-0064-07 and IND-0088-04.
IND-0096-04	See response to comment TRB-0001-20.
IND-0097-01	Comment noted.
IND-0098-01	Comment noted.
IND-0099-01	See response to comment TRB-0001-20.
IND-0099-02	See response to comment IND-0041-01.
IND-0100-01	Comment noted.
IND-0101-01	See response to comment FED-0002-05.
IND-0101-02	See response to comment TRB-0001-20.
IND-0102-01	See response to comment ORG-0006-15.
IND-0102-02	At this early stage of design, Reclamation typically does not assemble an

Table 3 – Responses to individual comments.

Individuals

	independent Board of Consultants to review our designs. If the Black Rock Alternative were selected for final design, Reclamation would form an independent Board comprised of experts from universities and/or the private sector with the appropriate expertise to objectively review our designs. The purpose and scope of the Department of Energy study includes far more fields of inquiry than the potential seepage from Black Rock and is on a separate schedule for completion. They have coordinated with Reclamation to provide us information about their detailed modeling to meet our Final PR/EIS schedule.
IND-0102-03	See responses to comments FED-0002-05 and FED-0002-07.
IND-0102-04	See response to comment IND-0030-01.
IND-0103-01	See response to comment FED-0002-05.
IND-0103-02	Because earthquakes have the potential to damage man-made structures, the design standards for dams and appurtenant structures are very high to prevent deformation of the structure due to earth movement and prevent dam failure. This is of the utmost importance to prevent human loss and environmental degradation.
IND-0103-03	Black Rock would place an additional demand on the energy in the Northwest as a result of pumping water from the Columbia. However, the HYDSIM model compensates for such loss of energy by increasing the generation from Federal reservoirs as long as those reservoirs are not yet constrained by their operating requirements for higher priority uses.
IND-0103-04	See response to comment IND-0055-03.
IND-0104-01	Additional information has been added to chapters 2 and 4 of the Final PR/EIS concerning the potential seepage from Black Rock reservoir and the impacts that it could have on contaminants on the Hanford Site. Section 2.4.1.1 outlines the mitigation measures that would be taken to reduce or control seepage, and section 4.3.2.3 discusses the efficacy of those measures. The final document meets the requirements of NEPA and is issued as a Final PR/EIS.
IND-0105-01	See latter portion response to comment ORG-0006-15.
IND-0105-02	See responses to comments FED-0002-05 and FED-0002-07.
IND-0105-03	See response to comment TRB-0001-20.
IND-0105-04	See responses to comments ORG-0008-16 and IND-0038-02.
IND-0106-01	Comment noted.
IND-0107-01	Reclamation was directed to look at storage alternatives in the Storage Study. There are many issues with water rights on Federal projects that make this proposal difficult to implement. Portions of the Yakima Project authorization provide for the development of facilities and delivery of water to lands within the Roza Irrigation District (RID). The lands identified in the Horse Heaven Hills are not authorized under Federal law to receive Yakima Project water. However, your proposal is being forwarded to the State of Washington as they proceed with a SEPA process separate from this Storage Study. As noted in the Executive Summary and section 1.1 of the Final PR/EIS, the State of Washington has decided not to proceed further with a joint NEPA/SEPA process. Rather, they are continuing the SEPA process independent of the NEPA process to look at a broad range of solutions to water resource problems in the Yakima River basin. The State envisions this effort as the next phase of YRBWEP and has asked Reclamation to be involved in this effort. As a consequence, the State Alternatives have now been dropped from the Final PR/EIS. The State will respond to

Table 3 – Responses to individual comments.

Individuals

	comments on the State Alternatives in its separate SEPA Final EIS.
IND-0108-01	Comment noted.
IND-0109-01	See response to comment ORG-0008-30. The project operations, maintenance, replacement, and power costs are paid in full by the project beneficiaries. Each is allocated their share based on the cost-allocation process.
IND-0109-02	See response to comment TRB-0001-20.
IND-0110-01	Comment noted.
IND-0111-01	See responses to comments FED-0002-05 and FED-0002-07.
IND-0111-02	See response to comment TRB-0001-20.
IND-0111-03	See response to comment ORG-0008-16.
IND-0111-04	See response to comment IND-0091-05. Also, leakage rates were obtained from the Reclamation's preliminary seepage study results, which suggested using 74 cfs/day when under steady-state conditions (before mitigation).
IND-0111-05	The pumping impact to the Pacific Northwest region in terms of average megawatts and costs are presented in table 4-13. In this table, a negative megawatt number is the average impact in each month of all water years simulated by HYDSIM. It is the average net loss of power for the month due to pumping. Power loss is the difference in generation between the pumping scenario and the no-pumping base case. Pumping operations alter reservoir operations in the current and subsequent periods. Hence, there are power losses not only in the month that pumping occurs but also in future periods when reservoir drafting is altered. The analysis assumes that BPA's cost for its power losses are the monthly dollars tabulated under FCRPS in table 4.13. This cost is reflected in the cost-benefit analysis in section 2.7.1 in the Final Draft PR/EIS.
IND-0112-01	Comment noted.
IND-0113-01	See response to comment TRB-0001-20.
IND-0113-02	See responses to comments FED-0002-05 and FED-0002-07.
IND-0113-03	See response to comment IND-0102-02.
IND-0113-04	Comment noted.
IND-0113-05	See responses to comments ORG-0007-37 and ORG-0008-16. While mountain lakes have the advantages of superior scenic beauty and cooler summer temperatures, advantages of the Black Rock location would be larger reservoir size and a longer high-use recreation season.
IND-0114-01	Comment noted.
IND-0115-01	See responses to comments FED-0002-05 and FED-0002-07.
IND-0115-02	See response to comment TRB-0001-20.
IND-0115-03	The average monthly costs to pump from the Columbia River are shown in table 4.14. These costs are in addition to the cost of net power losses that are shown in table 4.13. The Final PR/EIS acknowledges that there will be power losses and gains on the mid-to-lower Columbia River hydroelectric projects due to pumping diversion at Priest Rapids and, due to some later return of water, into McNary

Table 3 – Responses to individual comments.

Individuals

	Dam, respectively.
IND-0115-04	See response to comment IND-0055-03.
IND-0115-05	See response to comment ORG-0010-04.
IND-0115-06	See response to comment TRB-0002-02. In addition, Reclamation is currently conducting a fish passage feasibility study for upstream/downstream passage at Cle Elum and Bumping dams (see http://www.usbr.gov/pn/programs/ucao_misc/fishpassage/index.html).
IND-0116-01	Seepage estimates from the Black Rock reservoir change with time from reservoir filling, as shown in table 4.10, section 4.3.2.3.
IND-0116-02	See response to comment TRB-0001-20.
IND-0116-03	Reclamation is involved in both studies mentioned. We have provided the data and results of both our groundwater and seepage mitigation modeling efforts to the DOE staff at the Hanford Site for their use in modeling of contaminant plumes and cleanup efforts at the site. Reclamation is also involved in the mid-Columbia seismic study as a participating agency at the request of FERC and has provided available seismic reports and information to that study, including the PSHA report, which was prepared for the Storage Study.
IND-0116-04	See responses to comments TRB-0001-20 and FED-0002-05.
IND-0116-05	See responses to comments ORG-0007-37 and ORG-0008-16.

Table 3 – Responses to individual comments.

Business Entities

BUS-0001-01	Comment noted.
BUS-0002-01	The Draft PR/EISs include references to previous reports in which as many as 35 potential reservoirs were analyzed. None of the previous reports recommended further study of any of these potential reservoirs in the upper watersheds. The analyses in the Storage Study used the results of these reports as a starting point for water storage alternatives to minimize duplication of effort.
BUS-0003-01	Comment noted.
BUS-0004-01	Salmon recovery in the Yakima basin is a complex issue that involves more than water deficiency; therefore, it is difficult to specify a water quantity. To some extent, changes to existing river operation protocol would benefit salmon and steelhead. Habitat restoration and preservation of existing high-quality habitat, both in the tributaries and mainstem stream reaches, needs to be a major component of salmon recovery in the basin.
BUS-0005-01	Comment noted.
BUS-0005-02	Comment noted.
BUS-0006-01	Mitigation measures to contain and control seepage from Black Rock reservoir are outlined in section 2.4.1.1. The measures involve collecting the seepage in Dry Creek and piping it to the Yakima River. Consequently, arid lands in Cold Creek

Table 3 – Responses to individual comments.

Business Entities

	will be preserved.
BUS-0006-02	Numerous seepage prevention and collection measures are included in the Black Rock design to minimize, control, and collect reservoir seepage before it reaches the Hanford Site. The reference to failure of American Falls Dam appears to be inaccurate. The original American Falls Dam, completed in 1927, consisted of a long concrete gravity structure with embankment abutment sections at each end. Because of severe concrete deterioration from alkali-aggregate reaction, the dam was replaced in 1978. This comment may refer to Teton Dam, which was upstream of American Falls Dam. There is really no comparison between the Teton Dam design and the Black Rock dam design. Black Rock contains many defensive design measures that were not included in Teton, and, thus, would be a much safer dam. However, if the Black Rock Alternative were considered for final design, a downstream inundation study would be conducted during the concept stage to identify consequences of dam failure. The final design of Black Rock dam would then include features that would limit risk of failure and annual failure probability to acceptable levels while considering the downstream consequences. It is important to note that these types of features are already included in the appraisal design.
BUS-0006-03	See response to comment IND-0090-01. Also, reservoir leakage into the foundation, including the fault zone, would occur under the head conditions of a Black Rock reservoir. However, testing at the damsite completed to date has shown that the hydraulic conductivity of the fault zone is lower than that of the adjacent bedrock units. Reclamation is not aware of any contaminants present in the Black Rock Valley within the footprint of the reservoir that could affect local aquifers.
BUS-0006-04	See response to comment BUS-0002-01. From a cursory look at the drainages to the north of Sunnyside, it appears the storage capacity would be small and the operations would be more complicated. It would also involve more infrastructure to deliver water.
BUS-0006-05	There is very little active water capacity to be gained by excavating material from Lake Easton.
BUS-0006-06	The active capacity of Lake Keechelus has not been significantly reduced over the years due to sedimentation (based on a 2003 sedimentation survey). Any materials excavated would need to be hauled away and disposed of. The current design for the segment of I-90 along Keechelus Lake will generate excess material that will need to be disposed of offsite, so depositing excavated materials from Keechelus Lake for this project is not an option. Designs for the I-90 project do call for the excavation of specific construction materials from a borrow site within the reservoir, but because of fills to be placed below the ordinary high water mark along portions of the alignment, the project has no net affect on reservoir storage. In addition, Keechelus Dam has recently been rehabilitated for dam safety reasons and additional materials are not needed on the downstream face of the dam.
BUS-0006-07	The valley on the Moxee side of Black Rock Valley is not as conducive to a damsite as the present location. The Moxee side of the valley widens out closer to Yakima and would require a larger dam to create the same water storage capacity. While the water delivery to the irrigation demand would be shorter, the tunnel to deliver the water to the reservoir would be longer, so very little cost savings is

Table 3 – Responses to individual comments.

Business Entities

	apparent.
BUS-0007-01	See responses to comments ORG-0002-01 and ORG-0008-19.
BUS-0007-02	See responses to comments ORG-0008-23 and ORG-0008-24.
BUS-0007-03	The value of the power to pump groundwater was not calculated due to the many variables involved, such as depth to water, volume of water pumped, and the number of people who use their wells on any given year. A qualitative discussion of this power benefit is included in chapter 2 of the Final PR/EIS. The analysis of the alternatives includes estimates of population growth to the year 2050. In that analysis, it was not assumed that some municipal growth would be at the expense of irrigated lands and the water rights for those lands would be used to serve the municipal demand.
BUS-0007-04	Anadromous salmonid fishery benefits (abundance) was based on use of the Yakima EDT model, which is currently the best available tool to integrate flow and habitat quantity and quality to assess the numeric fishery benefit to a particular species. Furthermore, the EDT model has been reasonably calibrated to match current salmon and steelhead abundance. Therefore, increased abundance observed for each alternative is based on improvement to the No Action Alternative. One must realize that the flow regime was the only parameter manipulated in the EDT model for each of the Joint Alternatives. Therefore, the gain of up to 37 percent under the Black Rock Alternative seems plausable; given no other habitat restoration actions comprised any of these alternatives. In section 4.8.2.4 of the Final PR/EIS there is a discussion about the relationship between flow and fish abundance. This section attempts to explain why near-historic levels of anadromous fish abundance are not likely, irrespective of the alternative type. With respect to water temperature, the interaction of flow volume and the resulting water temperature is complex, and one cannot assume that more streamflow will necessarily result in a decrease in river temperature. Modeling done for this project (discussed in section 4.6.2.3) indicates that, with the Black Rock Alternative, maximum water temperatures in the middle reaches of the Yakima River would be affected little.
BUS-0007-05	Reclamation has taken this evidence into consideration (see section 4.2.2.6, "Global Climate Change").
BUS-0007-06	Global markets are reflected in the commodity prices used in the analysis. Agricultural products are part of a diverse global market. The price of a commodity is impacted by the supply and demand for the commodity in the global market. Therefore, the economic analysis does take into account the global economy in the sense that it is reflected in the price of the commodity. The regional analysis did not include regional economic impacts stemming from activities that take place outside of the four-county study area. The impacts that are produced from shipping commodities out of the Port of Seattle, for example, were outside the scope of this analysis. These impacts are not considered NED benefits and, therefore, would not be included in the feasibility study as a benefit to the Nation.
BUS-0007-07	See response to comment BUS-0007-06.
BUS-0007-08	See response to comment BUS-0007-06.

Table 3 – Responses to individual comments.

Business Entities

BUS-0008-01	See latter portion of response to LOC-0002-01.
BUS-0008-02	As described in the Final PR/EIS, the Yakima Project facilities do supply water for irrigation in an average (normal) water supply year. One of the goals of the Storage Study is to determine if additional storage in the Yakima basin will help provide water for the proratable, or junior, water right holders. Currently, target flows required by Title XII (YRBWEP) are met, as are the Yakama Nation's instream flow rights for fish, which is senior to the Yakima Project water rights. The ability of the various alternatives to enhance fishery flows was investigated in the modeling done for the Storage Study. In water-short years, the shortage affected the various uses including irrigation, municipal, and fish. As a result, the ability to enhance fish flows was reduced in those years. It is difficult to predict future mandated fish flows in the river. To date, people in the basin have worked together to develop flow targets that share the shortages among all the users. That process can work in the future to resolve current and future water issues.
BUS-0009-01	Many factors influence land values; therefore, water rights cannot be isolated when analyzing land values, as they are not the sole determinate of land values.
BUS-0010-01	See response to comment BUS-0009-01. In addition, Water rights transferred in Washington hold the priority date of the existing water right when transferred.
BUS-0011-01	Under each alternative, an effort was made to improve the flow regime in the Yakima River by more closely mimicking the natural flow regime, at least in some reaches and during some portions of the year. This did result in fishery benefits which are included in the evaluation of each alternative in chapter 2. To varying degrees, each alternative investigated did assist in meeting the objective of improving anadromous fish habitat.
BUS-0012-01	The assumption was made that the municipal water districts could obtain water at wholesale prices as opposed to retail prices. The $235-per-acre-foot price reflects the average wholesale price of recent water exchanges for the Yakima Project indexed to April 2007 dollars.
BUS-0012-02	It is unlikely that all of the major features required for the Black Rock Alternative could be constructed in a 4-year window, and such an accelerated schedule would not have a significant impact on the actual noncontract costs incurred during the development of this alternative. The 35-percent noncontract cost estimate noted in table 2.29 in the Draft PR/EIS is not an "overhead charged by the BOR." Noncontract costs include costs for preparing final designs and specifications, land acquisition, regulatory compliance and permitting activities, environmental mitigation and monitoring, and construction contract administration and management. At this level of design, these costs are typically estimated to be from 20 to 35 percent of the estimated field construction costs. Accelerating the construction schedule would only have a significant effect on the construction administration and management cost portions of the noncontract costs. If the Black Rock Alternative were considered for final design, a more detailed estimate of construction and noncontract costs based on preliminary construction schedules and durations would be completed during the concept design stage.
BUS-0013-01	It is unclear how the estimate of $18 per acre for land was derived. The estimated benefits to agriculture displayed in chapter 2 for each alternative are reasonable based on the additional water supplies to be generated for agriculture in proratable water years.
BUS-0014-01	Comment noted.

Table 3 – Responses to individual comments.

Business Entities

BUS-0015-01	The benefit-cost analysis conducted for the Storage Study includes benefit estimates for increased fish harvest in the Yakima River basin and downstream.
BUS-0015-02	See response to comment ORG-0002-01.
BUS-0015-03	See responses to comments ORG-0002-01, IND-0028-04, and BUS-0015-01.

Table 3 – Responses to individual comments.

Public Hearings

PUB-0001-01	Benefits of Recreation Development--Section 4.14.2.1, subheading "Potential Economic Development Around Black Rock Reservoir," a qualitative discussion of the potential for resort, residential, and commercial development around the proposed Black Rock reservoir, has been added to section 4.14, "Socioeconomics" of the Final PR/EIS. Also, see response to comment ORG-0002-01. Benefits to Salmon Recovery--Attempts were made to estimate harvest-based fishery benefits, including Tribal subsistence values. Benefits of Constructing Black Rock--In the NED benefit-cost analysis, the construction of Black Rock reservoir represents a cost to the Nation. The in-region costs of construction do reflect a positive economic impact to the local economy due to the creation of jobs, income, etc. This element has been included in the RED analysis. Agricultural Benefits--The agriculture benefits estimated the effect of bringing proratable water rights holders up to 70 percent of their full water right in dry years. Treaty Rights Benefits--It was unclear what the comment referred to. Economic Benefits related to Recreation & Tourism--Recreation benefits have been estimated for the proposed reservoirs and existing reservoirs and rivers. Economic Benefits related to generation of Energy--Hydropower benefits were included in the analysis, but pump generation was not, since BPA indicated it was not financially viable. Effects of Climate Change--Climate change was addressed qualitatively in the analysis, but no benefits were assigned, since possible impacts could not be quantified.
PUB-0001-02	See response to comment ORG-0008-32.
PUB-0001-03	Decision to use offstream storage facilities--In essence, the benefits of using offstream storage were included. If onstream storage options had been considered, they would have been assigned certain negative effects (e.g., fish passage problems would have been reflected in lower fish populations and harvests). By not assigning the negative effects to the offstream reservoirs, the benefits of the offstream locations have been included in the analysis. Also, see response to comment ORG-0008-09.

Table 3 – Responses to individual comments.

Public Hearings

	Creation of more normative flows--The benefits of more normative flows were reflected in the fish populations and harvests and ultimately the fishery benefits. Decision not to bring new acreage into production--Irrigation project water supply has been established based on project boundaries and, as a result, no new acreage will be brought into production under the proposed alternatives. This is a basic assumption of the Storage Study analyses and changing this assumption would be beyond the scope of the Storage Study. Creation of a reliable water supply, not a new water supply--Since the irrigation project water supply has been established, the proposed alternatives simply increase the reliability of the water supply as opposed to providing new water supply. This is a basic assumption of the Storage Study analyses and changing this assumption would be beyond the scope of the Storage Study.
PUB-0001-04	See response to comment ORG-0007-03.
PUB-0001-05	The analysis in the Final PR/EIS does show how the economy is improved in each drought year by showing how well the alternatives could provide a 70-percent water supply in any year. The 70-percent irrigation water supply goal was taken from the *Watershed Management Plan* and was acceptable to the irrigation districts during the Storage Study process. See also response to comment ORG-0007-03.
PUB-0001-06	See response to comment LOC-0002-01.
PUB-0001-07	The multiplier effect pertains to regional economic impacts, and not economic benefits. The multiplier was used in the calculation of regional economic impacts in the RED section.
PUB-0001-08	The EQ account has been modifed in the Final PR/EIS (section 2.8.1) to refect mitigation for seepage. No modification of the OSE account was necessary.
PUB-0001-09	The comment did not provide enough detail to respond.
PUB-0001-10	Comment noted.
PUB-0001-11	Comment noted.
PUB-0001-12	Comment noted.
PUB-0001-13	The Bumping Lake Enlargement Alternative was considered but eliminated. The rationale for that is explained in section 2.10.1.
PUB-0001-14	See response to comment TRB-0001-67.
PUB-0001-15	Instream flow targets for the Columbia River have been established. The study withdrew water from the Columbia River only when flows above the targets were available. Therefore, there would be times, sometimes months long, when there would be no water to pump during the irrigation season. Storage would be needed at these times.
PUB-0001-16	See response to comment TRB-0001-67.
PUB-0001-17	See response to comment TRB-0001-67.
PUB-0001-18	See response to comment TRB-0001-67.
PUB-0001-19	A response cannot be formulated because the comment does not identify the inadequacies of the analysis as outlined in section 4.2.2.6, subsection "Global Climate Change," subheadings "Treatment of Climate Change in this Draft PR/EIS" (renamed "Treatment of Climate Change in the Storage Study" in the

Table 3 – Responses to individual comments.

Public Hearings

	Final PR/EIS) and "Potential Climate Change Impacts on Regional Water Resources."
PUB-0001-20	Comment noted.
PUB-0001-21	Comment noted.
PUB-0001-22	Comment noted.
PUB-0001-23	Comment noted.
PUB-0001-24	Any volume of water not used during the irrigation season would be part of the carryover capacity for the next year. There are years in the Yakima Project when there is carryover in the five existing reservoirs. It is then available for use the next year for instream flows or irrigation supply. There will be no new acres irrigated from additional water storage. The irrigation districts will continue to irrigate the same amount of acres as they do now.
PUB-0001-25	A qualitative discussion as to the potential for resort, residential, and commercial development has been added to the RED analysis. Language has been included as to the speculative nature of these development concepts.
PUB-0001-26	The analyses in the Draft PR/EIS were completed using the three identified goals--irrigation, fish, and municipal water supply, as the authorized purposes for the water. Other benefits, recreation and hydropower, were calculated as coming from using that water to achieve those goals. The fluctuations of the reservoirs would be quite large in some years and would probably not enhance recreation or commercial development.
PUB-0001-27	A water availability study was conducted early in the appraisal design of the Black Rock Alternative to size the Black Rock reservoir. See TS-YSS-1 for specific information regarding this issue. This report can be found on the Storage Study's Web site.
PUB-0001-28	Reclamation typically completes downstream inundation studies due to dam failure during the concept stage of final design and not during the appraisal or feasibility stages of design. Black Rock dam has been designed to withstand very large floods and earthquakes, as well as to operate safely during normal operations; as such, it is considered to have a low potential for dam failure. During higher level design studies, Reclamation would conduct risk analyses to verify the low potential for failure. If the Black Rock Alternative is considered for final design, a downstream inundation study would also be conducted to identify consequences of dam failure. The final design of Black Rock dam would include any features necessary to limit risk of failure and annual failure probability to acceptable levels while considering the downstream consequences.
PUB-0001-29	Comment noted.
PUB-0001-30	Comment noted.
PUB-0001-31	The water operation scenarios used to determine if water was available to fill Black Rock reservoir included meeting target flows in the Columbia River, estimates for seepage and evaporation from the reservoir, and not pumping water in July and August. More information is available in section 2.4.2.
PUB-0001-32	Comment noted. The current model is not designed to quantify the humidity effects of evapotranspiration.
PUB-0001-33	The modeling of potential seepage from the Black Rock reservoir predicts a rise of aquifer water levels, especially in the immediate area of the reservoir and

Table 3 – Responses to individual comments.

Public Hearings

	diminishing with distance from the reservoir. The increased head would not be consistent throughout all areas or basalt layers and is influenced by variations in the rock properties.
PUB-0001-34	See response to comment TRB-0001-20.
PUB-0001-35	See response to comment PUB-0001-33.
PUB-0001-36	Comment noted. See responses to comments FED-0002-05 and FED-0002-07.
PUB-0001-37	The water in the reservoir is the same quality of water that is in the Columbia River. Water is withdrawn by the City of Richland from the Columbia River for drinking water. The water is treated by direct infiltration and ultraviolet light before being distributed for use. The water in the reservoir may need to be treated in this same manner before use, which is the case with drinking water distributed by municipalities. The withdrawal of water from the river into the reservoir will come upstream of the Priest Rapids Dam, whereas the City of Richland withdraws water downstream of the Hanford Site.
PUB-0001-38	See latter portion of response to comment ORG-0006-15.
PUB-0001-39	See responses to comments FED-0002-08 and ORG-0010-01.
PUB-0001-40	Effects on shrub-steppe corridors were evaluated by the U.S. Fish and Wildlife Service in their CAR. The Service utilized Habitat Evaluation Procedures (HEP) for analysis of the shrub-steppe ecology of the project areas. The CAR is available on the Storage Study Web site.
PUB-0001-41	Comment noted.
PUB-0001-42	Comment noted.
PUB-0001-43	See responses to comments TRB-0001-20 and ORG-0009-28.
PUB-0001-44	Water rights are administered under State law not Federal law. Current State law provides for parties, including those listed, to utilize water rights held by them for instream flow purposes or to place them in trust with the State of Washington. It does not appear that changes in State law are required to undertake the actions outlined.
PUB-0001-45	See response to comment ORG-0009-17 and FED-0002-08.
PUB-0001-46	See responses to comments ORG-0006-15 and ORG-0009-30.
PUB-0001-47	See response to comment ORG-0009-18.
PUB-0001-48	Mitigation has been proposed and would be included should the Black Rock Alternative move forward; however, the Preferred Alternative identified in the Final PR/EIS is the No Action Alternative.