Appendix A

Agency Correspondence

Appendix A

This appendix is comprised of four parts. The first and second parts provide a summary minutes and meeting highlights for the project review meeting of November 15, 1999 (Attachment A.1), and a copy of the letter of notification to stakeholders for the review meeting of November 15, 1999 (Attachment A.2).

The third and fourth parts include copies of all written comments received from reviewers of the Final Draft Report (Attachment A.3), and the letter of notification requesting comments to the Final Draft Report (Attachment A.4).

A.1 Minutes of the Project Review Meeting, November 15, 1999.

The minutes of the project review meeting record are attached. This meeting provided a forum for discussing and commenting on the engineering feasibility and the preliminary channel design of the project located in the Westland / Ramos reach of the Umatilla River. The meeting was held at the Umatilla Field Office (U.S. Bureau of Reclamation) near Hermiston, Oregon on November 15, 1999.

Concept Review Meeting, November 15, 1999
Engineering Feasibility and Preliminary Channel Design
for Westland / Ramos Reach of the Umatilla River
9:45 A.M. to 12:15 P.M. at USBR Umatilla Field Office
1:45 P.M. to 3:00 P.M. Site Visit

Attendee

Name	Representing	Location
Dolly Ashbeck	Westland Irrigation District	Stanfield, OR
Craig Cooper	Harza Enginering Company	Bellevue, WA
Ron Costello	Harza Enginering Company	Bellevue, WA
Kate Ely	CTUIR	Pendleton, OR
Craig Garric	Harza Enginering Company	Bellevue, WA
Paul Gregory	USBR	Hermiston, OR
Patrick McGowan	USBR	Boise, ID
Frank Mueller	Westland Irrigation District	Stanfield, OR
John Ramos	Landowner	Echo, OR
Todd Shaw	CTUIR	Pendleton, OR
Aaron Skurvin	CTUIR	Pendleton, OR
Sam Stegeman	USBR	Hermiston, OR
Brandan Tuck	USBR	Boise, ID
Jan Zita	Landowner's daughter	Echo, OR

Purpose:

The primary purpose of the meeting was to review progress of the project and to derive direct comments on the feasibility study. The specific goals were:

- Review, explain and clarify the conceptual design for proposed improvements to the diversion dams and to the channel;
- Conduct a site visit with agency representatives and landowners; and
- Seek general agreement on outstanding issues of concern.

Meeting Record:

Generally, the meeting proceeded according to the attached agenda (Attachment A1.1). Notable exceptions to the agenda were: 1) deviation from the amount of time allotted to each item, and 2) little review given for the monitoring plan. The following comments provide a record of the meeting highlights and suggested follow up.

Introduction

The meeting began with an informal introduction of the participants. Craig Cooper presented a project history, project goals, and description of existing conditions in the study reach. Overhead

projections of plan-view drawings were used in describing the existing conditions. Project history and goals included development in 1998 of a restoration plan, selection of the plan's dam-notching alternative, and this study's investigation into the feasibility of notching the dams as a key element in meeting overall project goals. The primary goal of the restoration plan is to provide significant benefits to fish and fish habitat. The objectives of the feasibility study are to:

- Assess the engineering feasibility of the preferred restoration alternative (Plan Alternative 2) in providing a stable channel form and function for the specific benefit of significantly improving fish habitat;
- Assess mitigation of adverse effects to landowners and fish habitat from flood flows;
- Ensure that notching of the dams and placement of grade control structures will maintain diversion capacity to the Westland and Feed ditches; and
- Facilitate agreement between WID, HID, USBR, CTUIR, Oregon Department of Fish and Wildlife (ODFW), other resource agencies, and adjacent property owners for acceptance of implementing the preferred restoration alternative.

Design Review

Craig Cooper and Craig Garric used overhead projections of the feasibility draft report drawings to explain the preliminary designs for channel and dam improvements. Craig Garric. also provided photographs and explanation of the types of in-channel structures that are proposed for grade control, habitat and diversion. A summary of comments is provided in the Summary below.

Site Visit

The site visit was attended by everyone except D. Ashbeck, F. Mueller, A. Scurvin, T. Shaw and J. Zita. Discussions were held at the Feed Canal headworks and fishladder, and at the gravel spoils pile upstream of the headworks. Discussion focussed mainly on channel stability concepts and instream structures that would provide stability.

Summary and Discussion of Comments

The preliminary conceptual designs proposed by Harza for the channel and dam modifications were discussed with and acknowledged by all attendees. Overall, no major objections to the proposed design were made. Comments generally fell under one of three categories: design considerations, editorial suggestions to the report, and supplemental information to the report but related to the project as a whole. Comments germane to design considerations are listed below, preceded by commentor's initials. A response, in Italics, follows each comment.

<u>Design considerations:</u>

- (AS) Cautioned the group that the trend is to restore the system to a steady state that makes flow available for the production of fish and lamprey in the reach on a year-round basis. He cautioned against designing around a "no flow" scenario.
  The proposed design concept objectives are to maximize channel width to depth ratio within limits appropriate to the stable channel form. Reducing the width to depth ratio is intended to concentrate water in the channel during any low flow period.

- (KE) Wanted clarification that the design flood prone width does not impose limits on the actual width.

The proposed design flood prone width only imposes a lower limit; actual flood prone widths are allowed to exceed the minimum design calculation. The flood prone width roughly approximates the 50-year flood.

- (FM) Concern that large debris (trees) could hang up and cause damage at headgates of proposed diversions.

  W-weirs allow low flow water to spill toward the headgates (along what is effectively the channel bank), but low flows are not likely to move large debris. At flows high enough to suspend and mobilize large woody debris, the geometry of the W-weirs concentrate flows toward the center of the channel by inducing steep velocity vectors toward the center of the channel and away from the channel banks. Large woody debris would be attracted toward the high velocity flow. In addition, water moving within the diversion channel into the headworks will be moving relatively slowly.

- (PM) Explain sediment accumulation at HID headgate.

  The same explanation as above; W-weir geometry concentrates flow and large sediment transport through the center of the channel, and lower velocity flows move toward the gates. Small sized sediment may accumulate at the headgates, but can be easily flushed through the sluice gate.

- (KE) Pools have a tendency to develop on outside bends. What is the risk of that happening at the HID headgate.

  Risk is very low; a pool would not be constructed during excavation and shaping, and cross vane grade control structures at the dam notch and upstream should prevent pool development. Rather, they should maintain the planned riffle through the reach.

- (JR) Concern that the elevation of the right bank either side of the Feed headworks will permit overbank flood flow.

  The design bank elevation at the headworks is about 663 feet, same elevation as the headworks. This is a bank height of about 13 feet above the channel bed. That elevation is about twice the design bankfull depth, or roughly equivalent to the 50-year flood stage if the flood channel width was about 190 feet. The design flood channel width is about 400 feet, from the right bank at the headgate toward the left bank. Therefore, a flood much greater than the 50-year flood would be accommodated in the flood channel without spilling over the right bank.

- (PG) Does the in-channel diversion channel (between the diversion W-weir and the Feed headgate) have the capacity to deliver 250 cfs to the Feed canal.

  Assuming normal flow conditions, a depth of 2.3 feet and negligible backwater effects at the headworks, it was estimated that a trapezoidal channel with a 30-foot bottom width, 1.5:1 sideslopes, and a 0.0013 channel slope would have the capacity for the 245 cfs design diversion flow.

- (JR) What is the design scour depth.
- (KE) Is scour depth designed for bankfull flow.

  Design scour depth should be much deeper than scour at bankfull. The best way to know is to test (scour chains or other scour measure mechanism, or perhaps even boring to find depth to bedrock). We strongly agree with the idea of setting footer rocks to exceed depth of probable scour.

- (AS) Concern regarding velocity barrier and upstream passage through the structures at Feed dam area.

  Although core velocities through the W-Weir may exceed the swimming capabilities of upstream migrants during high flows, the cross-sectional velocity gradient of W-Weirs is characteristically steep. Therefore, perimeter velocities would remain low and navigable by the target species.

A.2. Notification of Review Meeting, dated October 21, 1999.

HARZA

HARZA ENGINEERING COMPANY

October 21, 1999

Westland Ramos Reach of the Umatilla River
Stakeholder Distribution List

File: 15227.110
Ser: 99-335

Subject: Notification of Concept Review Meeting regarding Engineering Feasibility and Preliminary Channel Design for the Westland / Ramos Reach of the Umatilla River

Dear Interested Party

As you know from our recent Memorandums of September 30 and October 18, a concept review meeting has been scheduled for November 15. This letter verifies the meeting place, time, attendees, tentative agenda, and purpose.

Sam Stegeman, Office Manager at U.S. Bureau of Reclamation's Umatilla Field Office, graciously extended an offer to use their conference room. The Umatilla Field Office is located at 32871 Diagonal Road near Hermiston (directions included with attached agenda). The meeting will begin promptly at 8:45 AM. Attached is a list of invited participants and tentative agenda. We will have the opportunity at the start of the meeting to consider modifying the agenda.

The purpose of the review meeting will be to explain or clarify design concepts, address submitted comments, and to discuss concerns or suggestions that may arise during the day. Our intent is to seek general agreement on outstanding issues of concern before the meeting is adjourned. All stakeholders are encouraged to forward their comments on the draft report to me by November 8th, so that we can prepare to address them at the meeting. Comments received from this meeting will be compiled into the final report document.

We look forward to your participation. If you have any questions or suggestions, please do not hesitate to call me.

Very truly yours,
Harza Engineering Company

Craig Cooper
Project Manager

Enclosures: Agenda
Distribution List

cc: Ron Costello; Project File

2353 – 130th Avenue, N.E., Suite 200 Bellevue, Washington 98005 Tel: 425.602.4000 Fax: 425.602.4020 Web: www.harza.com

Engineering Feasibility and Preliminary Channel Design
Concept Review Meeting
Westland / Ramos Reach of the Umatilla River

Monday, November 15, 1999

Proposed Meeting Agenda

8:45 – 9:15	Introductions Purpose for the meeting Review overall study objectives
9:15 – 9:45	Review design criteria (channel, hydrology, diversion operations)
9:45 – 10:30	Review of diversion dam improvement alternative
10:30 – 10:45	Break
10:45 – 11:30	Review of channel improvement alternative
11:30 – 12:15	Review monitoring plan
12:15 – 1:45	Break for lunch (on your own), and drive to project site at Feed Dam
1:45 – 2:30	Site tour, beginning with Feed dam and headworks, and ending with overview of proposed diversion canal site
2:30 – 3:00	Final group discussion of projects, and review morning list of concerns after site observation
3:00	End of scheduled meeting. Harza will remain on site as required to address any additional questions

Directions to USBR Umatilla Field Office

From downtown Hermiston, go east (away from Highway 395) on Main Street (Highway 207). Follow Highway 207 about 3 miles to the Umatilla Field Office, which will be on the left. (You will pass a gas station at about 2.5 miles from Hermiston). Park in front and find the conference room inside.

Address: 32871 Diagonal Road, Hermiston, OR 97838

Phone: (541) 564-8616

Stakeholder Distribution List
Westland / Ramos Reach of the Umatilla River,
Engineering Feasibility and Channel Design Services,
Umatilla River, OR

Name	Organization/Address	Phone number	Fax number/e-mail
Dolly Ashbeck (Manager), Mike Wick (Chair)	Westland Irrigation District PO Box 416 100 W. Coe Stanfield, OR 97875	(541) 449-3272	(541) 449-1239
Chuck Wilcox (Manager)	Hermiston Irrigation District 366 E. Hurlbert Hermiston, OR 97838	(541) 567-3024	
Kent Wilett, CED	USDA FSA Umatilla Co. FSA Office 1229 S.E. Third Street Pendleton, OR 97801	(541) 278-8049 ext. 2	(541) 278-8048
Walt Fite Kate Puckett	Yakima Project Office US Bureau of Reclamation P.O. Box 1749 1917 Marsh Road Yakima, WA 98907-1749	(509) 575-5848 ext. 205	(509) 454-5611
Robert Hamilton Resources Management Coordinator and Activity Manager	U.S. Bureau of Reclamation Pacific Northwest Regional Office 1150 North Curtis Road, Suite 100 Boise, Idaho 83706-1234	(208) 378-5087	(208) 378-5066 rhamilton@pn.usbr.gov
Sam Stegeman, Office Manager, and Paul Gregory	U.S. Bureau of Reclamation Umatilla Field Office 32871 Diagonal Road Hermiston, OR 97838	(541) 564-8616	sstegeman@pn.usbr.gov
Jon Germond (Fish Biologist)	ODFW 73471 Mytinger Lane Pendleton, OR 97801	(541) 276-2344	
Aaron Scurvin Kate Ely	CTUIR DNR Water Resources Program PO Box 638 73239 Confederated Way Pendleton, OR 97801	(541) 276-3449	(541) 276-3317
Larry Swenson	National Marine Fisheries Service 525 NE Oregon St., Suite 500 Portland, OR 97232-2737	(503) 230-5448	(503) 231-2318 larry.swenson@noaa.gov
Timmie Mandish Fish and Wildlife Biologist	USFWS 2600 SE 98th Ave, Suite 100, Portland, OR 97266	(503) 231-6179	
John Ramos (landowner)	PO Box 188 Echo, OR 97826	(541) 376-8394	
Shauna Mosgrove (Executor)	Alta Cunha Estate La Grande, OR	(541) 963-0836	(541) 963-3141

Stakeholder Distribution List
Westland / Ramos Reach of the Umatilla River,
Engineering Feasibility and Channel Design Services,
Umatilla River, OR

Name	Organization/Address	Phone number	Fax number/e-mail
Jeff Spikes (landowner)	PO Box 8 Echo, OR 97826	(541) 376-8480	
Rolland Holeman (landowner)	PO Box 113 Echo, OR 97826	(541) 376-8165	
Patrick A. McGowan	U.S. Bureau of Reclamation Pacific Northwest Region 1150 North Curtis Road, Suite 100 Boise, ID 83706-1234	(208) 378-5219	(208) 378-5171 pmcgowan@pn.usbr.gov

A.3 Copies of Written Comments to The Final Draft Report Received from Reviewers

Responses to the following comments for the most part have been incorporated within the text of the Final Report. Some comments that were received after the requested deadline have not been specifically incorporated within the report text. For some of these comments, short responses are provided and follow the comment communication. All comments should be reviewed and considered as part of the progression into the project design phase.

DEPARTMENT of
NATURAL RESOURCES

Water Resources
Program

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation
P.O. Box 638
PENDLETON, OREGON 97801
Area code 541 Phone 278-5297 FAX 276-3317

December 15, 1999

Mr. Ron Costello
Senior Scientist,
HARZA Engineering Co, Western Division
2353 130th Avenue, NE Suite 200
Bellevue, WA 98005

SUBJECT: Comments re: final draft report for Westland/Ramos pilot project.

Dear Ron:

The final draft report, *Engineering Feasibility Study and Preliminary Channel Design for the Westland/Ramos Reach of the Umatilla River, November 30, 1999*, prepared by HARZA for the Westland Irrigation District is very well written. It is comprehensive in scope and adequately addresses the feasibility of implementing a pilot restoration plan for the reach of river between the Feed Canal Dam and Westland Diversion Dam. If implemented, this project should provide considerable benefits for fish together with improvements in stream-channel morphology, water quality, and riparian habitat.

Enclosed are copies of two draft reports prepared by HARZA (dated Oct 18, 1999 and Nov 30, 1999) with a compilation of edits/comments from Tribal staff noted in the text and margins of each report. This format is easy for identification of minor corrections. Tribal staff from the Fisheries and Water Resources programs of the Department of Natural Resources also have provided the following general comments:

1. The Umatilla Basin Project target flows are not the same as "recommended minimum" flows. The target flows as documented in the EIS planning report (USBR 1988) were developed to assist in the restoration of salmonids in the basin and are not necessarily the recommended flows needed for fish passage (migration) or any other stage. Therefore, we recommend changing any reference to recommended minimum flow to target flow if used in the context of the Umatilla Basin Project.

2. Concern that the relatively high cost to implement the project may exceed the availability of funds which, in turn, may defeat the goals of actually breaking ground

on this worthy restoration project. We need to have a project that can and will be implemented.

3. Separate the costs to implement/monitor the project from the work related to remodeling of the diversion structures, e.g., grade-control structures, excavating/lining of ditches for the new point of diversion, notching, etc. This will help to discern the added cost of dam notching and reconfiguration from other types of watershed-restoration work that do not have instream structural impediments.

4. Perpetual easements are needed to provide "long term" protection of the proposed improvements. This especially true since it takes a considerable amount of time to re-establish floodplain connection and riparian habitat.

5. Under the monitoring described under 5.4 Methods and Procedures, HARZA needs to continue monitoring channel characteristics because of their familiarity with the design and their engineering expertise. Tribal staff in the Department of Natural Resources can utilize procedures described in 5.4.2 *Fish and Fish Habitat* and 5.4.3 *Riparian Habitat* to conduct post-project monitoring. This will require close coordination with HARZA to obtain baseline data and specific monitoring methodology.

I hope these comments are helpful in finalizing the feasibility study for the Westland/Ramos pilot project. Again, a very well done report.

If you have any questions please call me at (541) 278-5297.

Sincerely,

Kate Ely

Kate Ely
Umatilla Basin Hydrologist

Cc: Dolly Ashbeck, Westland Irrigation District
Aaron Skirvin, Gary James, and Todd Shaw, CTUIR
Craig Cooper, HARZA Inc.
Sam Stegemen, U.S. Bureau of Reclamation

Enclosures: 1. Copy of first draft report, October 18, 1999
2. Copy of final draft report, November 30, 1999

Subject: [Fwd: WESTLAND/RAMOS FEASIBILITY STUDY COMMENTS]
Date: Mon, 20 Dec 1999 07:04:30 -0800
From: "Craig M. Garric" <cgarric@harza.com>
Organization: Harza Engineering Company
To: "Craig E. Cooper" <ccooper@harza.com>

Subject: WESTLAND/RAMOS FEASIBILITY STUDY COMMENTS
Date: Fri, 17 Dec 1999 12:08:00 -0700
From: "Paul Gregory" <pgregory@pn.usbr.gov>
To: <CGARRIC@HARZA.COM>
CC: "Kathryn Puckett" <kpuckett.1yak1100.ibr1dm20@pn.usbr.gov>,
"E. Samuel Stegeman" <sstegeman.1UMA1100.ibr1dm20@pn.usbr.gov>

COMMENTS:

1. Kate Puckett, UCAO Fisheries Biologist, commented that there is no temperature data and to what extent will the water temperatures be affected by the project.
2.It appears in Fig. 3.4.1 that Feed Canal diverts in Sept and Oct which they cannot legally do
3. Section 3.4.2, Para. 1 HID's water right is 350 cfs not 320 cfs.
4.Section 4.3.2, paragraph 2, line 4 .. Misquote on Feed Canal... current capacity is 220 cfs not 250 cfs

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Craig Garric <cgarric@harza.com>
Civil Engineer
HARZA Engineering Company
Fisheries Engineering

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Civil Engineer <cgarric@harza.com>
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Additional Information:
Last Name Garric
First Name Craig
Version 2.1

Response to Comment No. 1 (Kate Puckett, UCAO Fisheries Biologist)

Reporting of specific water temperature data was not addressed as part of the scope for this phase of the project, except to note that the project area is within the reach of river that is Clean Water Act 303(d) Limited due to high water temperatures during the months of June through September. As part of biological monitoring, Harza installed a continuous water temperature monitor (Optic StowAway) at the downstream end of the reach in May of 1999, and collected point measurements at the upstream and downstream reaches in the spring and summer. This data has not yet been analyzed but will become part of project monitoring.

Through most of the reach of river between McKay Creek and Echo, water temperatures presently are affected by a narrow and broken band of riparian vegetation and by an over-wide channel that carries shallow flow during summer months. This restoration project may improve water temperature locally by expanding the riparian width in size and density, and by narrowing the channel. A narrower channel would enhance temperature by carrying a deeper depth of flow and reducing exposure of flow to direct sun. In addition, the creation of substantially greater number of pool habitat would also locally enhance water temperature by providing water depths of between about 8 and 18 feet.

On the other hand, water temperature is also influenced from the reach of river upstream of the project reach. Efforts to improve riparian density along the entire reach of river should be encouraged.

HERMISTON IRRIGATION DISTRICT

FACSIMILE COVER SHEET

366 E. Hurlburt Ave.
Hermiston, OR 97838
Phone (541) 567-3024
Fax (541) 564-1069

DATE: 1/6/00

TO: Craig Cooper

FAX #: 425-602-4020 PHONE: _____

FROM: Chuck Wilcox

MESSAGE: One correction is necessary on page 12 section 3.4.2 in the first sentence. It should read "dates back to 1905" not 1906. Other wise the Westland/Romos study appears to be correct as far as HID is concerned.

Thanks

SENDING 1 PAGE(S), INCLUDING THIS COVER SHEET
If you do not receive all pages, please call.

Subject: Comments on Westland/Ramos Final Draft
Date: Tue, 11 Jan 2000 13:16:43 -0800
From: Larry Swenson <larry.swenson@mercury.akctr.noaa.gov>
Organization: National Marine Fisheries Service
To: "Cooper Craig" <ccooper@harza.com>

Craig -

Here are my comments on the subject report.

My main concern stems from the idea that the report may have skipped a step (or at least doesn't discuss it) in the analysis of the stability of the reach. That is: is the reach aggrading, degrading, or does it transport all the sediment supplied to it? And a follow-on idea: do we need to force this channel into a Rosgen B4c type channel or would it make more sense to stabilize it in its present plan form - using vanes and weirs, etc?

My sense from the report is that you are trying to improve the transport capacity of the reach. If the reach is not aggrading, is that the appropriate solution?

Will the proposed actions increase sediment transport? You are proposing to significantly increase the sinuousity (decrease channel slope) and add a lot of roughness in the form of vanes and weirs. How will this improve sediment transport, especially at Q > Q bankfull?

Westland Dam already has a large notch on the left side. Has this not been effective in moving sediment? How will adding another notch on the right side of the ladder improve this?

How will this project affect the performance of the Westland ladder? That ladder accumulates gravel in its present configuration. We need to make
sure that under the new scheme there is less potential for gravel accumulation near/in the ladder. What about using inflatable rubber dams instead of flash boards on either side of the ladder?

During the low flow months, will there be enough water in the river to support the propsed vegetation?

Is the sought-after riffle-pool sequence intended to be a by-product of the construction of the vanes and weirs? Will the initial plan form and riffle-pool sequence shown in Drawings 6 and 7 be excavated into the river during construction? Is the idea that the vanes will maintain the riffle-pool sequence and plan form after construction? Why won't the river try to go back to its present sinuousity? How do we know the pools will not fill up with gravel after initial construction? Why not use vanes to maintain the present plan form of the river?

The valley slope is about 1/10th of those shown as representative for a B4c channel. Does the representative grain size distribution of the reach match the appropriate grain size distribution for a B4c configuration at the given valley slope?

I'm concerned that after the Feed Canal dam is notched, the irrigators may feel the need/justification to get in the river with earth moving

equipment to add more material to the upstream-most W-weir in order to get more water/head. This would adversely affect adult and juvenile passage. We need to make sure the new W-weir and diversion channel berm are stable, impermeable (?), and always provide fish passage and the legally required diversion flow rate.

Referring to Drawing 9, the sluice gate discharges to the back side of a W-wier where it would accumulate. Assuming the flow through the sluice gate moves any sediment, would it be feasible to discharge the sediment into a location in which the flows in the main channel can move it away?

Larry Swenson, P.E. <Larry.Swenson@noaa.gov>
Hydraulic Engineer
National Marine Fisheries Service
Northwest Region - Hydro Division

Larry Swenson, P.E.
Hydraulic Engineer <Larry.Swenson@noaa.gov>
National Marine Fisheries Service
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525 NE Oregon Street Suite 500 Fax: 503-231-2318
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Additional Information:
Last Name Swenson
First Name Larry
Version 2.1

Response to Larry Swenson (NMFS) Comments

No definitive evidence was found to suggest that the channel is aggrading or degrading through the reach. What is evident, based on present conditions and review of historical aerial photography, is that the reach stores sediment between the dams and upstream of the Feed dam. It is likely that sediment pulses through the reach, that storage equalizes at some holding maximum, and that on net sediment outflow is roughly equal to sediment inflow. The storage of volumes of sediment in the reach does influence channel stability, and many banks show evidence of erosion. The historic channel shifts through the reach and the split flow morphology are directly influenced by accumulation of sediment.

Stability in place is not the preferred alternative to restoration in this reach. Based on natural stability concepts, the channel presently does not mimic a stable form due to a high width to depth ratio and very low sinuosity.

Improving transport capacity is part of the solution to maintaining a natural stable form (see above).

Sediment transport capacity will be increased for several reasons. First, reducing the width to depth ratio increases the depth, which is an important component of critical shear stress. Second, the specific design elements of the proposed weirs and vanes concentrate flow energy toward the channel thalweg and increase flow velocity. Third, channel design for the bankfull flow and provision of flood prone area accounts for flow conditions that maximize sediment transport capacity.

The notch at Westland does not meet the design dimensions of the bankfull geometry. WID presently expends considerable time and energy to maintain gravel near their headgates and accumulations at the fish ladder. Gravel accumulates due to the present structure and dimension. Notching on the right side of the ladder is necessary to meet the proposed design bankfull dimension.

Inflatable rubber dams or collapsible ramp-type dams are a viable alternative to flash boards. At this stage of planning, we considered flash boards due to their simplicity and cost. These options can be revisited as part of the project design phase.

Riparian establishment and survival during low flow periods is an important concern. Until roots are established, extra care will likely be required. Options include sprinkler irrigation, “instant water” (a relatively recent innovation that is reportedly 300 percent more efficient than drip irrigation, it is a plasmic water buried with the root bole).

Construction of vanes and weirs is integral to the design morphology to restore a riffle-pool sequence. Following construction, the river would not have a tendency to return to its present sinuosity. As it is, the river is presently in a continual state of adjustment to restore more sinuosity (hence, part of the reason for channel shifting that presently occurs). With appropriate design and good execution during implementation, pools would not fill in with gravel. Empirical data supports the concept of restoring rivers to their natural stable form using stable channels of the same stream type as the template for design. In their natural stable form, channel dimension, plan and profile are maintained over time.

No, the valley slope is not 1/10 of those shown as representative for a B4c (Rosgen 1996) channel, although that may be so for a B4 channel and associated valley type. A B4c channel is an appropriate design candidate for this valley type (see Section 4.1.2).

We agree that care should be taken in the design to ensure that the diversion structures are stable and will deliver the flow necessary to meet both diversion and basin flow requirements.

On Drawing 9, flow through the sluice gate is delivered to the low-point apex of the right side of the W-weir. This effectively functions as would a cross vane at that point, and sediment should not accumulate. In addition, the W-weir at the diversion flow invert from the main channel, in combination with the cross-sectional profile of the channel at that point, is designed such that the majority of bedload is moved through the main channel and not into the diversion channel.

A.4 Copy of Letter Requesting Comments to the Final Draft Report

December 1, 1999

Westland / Ramos Reach of the Umatilla River
Stakeholder Distribution List

File: 15227.132
Ser: 99-377

Subject: Final Draft Report: Engineering Feasibility and Preliminary Channel Design for Westland / Ramos Reach of the Umatilla River

Dear Participant:

On behalf of Westland Irrigation District, Harza Engineering Company is pleased to provide the enclosed Final Draft Report for your review and comment.

This study assesses the engineering feasibility of notching the Feed and Westland dams to provide a stable channel for the specific benefit of improving fish habitat, and ensuring that notching of the dams and placement of grade control structures would maintain diversion capacity of the Feed and Westland ditches. The report also outlines a 5-year monitoring plan and provides planning level cost estimates for project implementation and monitoring.

This report incorporates comments and review received at the stakeholder comment and review meeting that was held November 15. A Final report will be submitted by January 31, 2000.

The District is requesting your comments on the feasibility study. In order to consider them, comments must be received by December 16, 1999. Please send your comments to Ms. Dolly Ashbeck, Manager, at the address below:

Ms. Dolly Ashbeck, Manager
Westland Irrigation District
P.O. Box 416
100 West Coe
Stanfield, OR 97875

Very truly yours,
Harza Engineering Company

Ron Costello

Ron Costello
Corporate Sponsor

Encl: Final Draft Report
Report Distribution List

Stakeholder Distribution List
Westland / Ramos Reach of the Umatilla River,
Engineering Feasibility and Channel Design Services,
Umatilla River, OR

Name	Organization/Address	Phone number	Fax number/e-mail
Dolly Ashbeck (Manager), Mike Wick (Chair)	Westland Irrigation District PO Box 416 100 W. Coe Stanfield, OR 97875	(541) 449-3272	(541) 449-1239
Chuck Wilcox (Manager)	Hermiston Irrigation District 366 E. Hurlbert Hermiston, OR 97838	(541) 567-3024	
Kent Wilett, CED	USDA FSA Umatilla Co. FSA Office 1229 S.E. Third Street Pendleton, OR 97801	(541) 278-8049 ext. 2	(541) 278-8048
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Stakeholder Distribution List
Westland / Ramos Reach of the Umatilla River,
Engineering Feasibility and Channel Design Services,
Umatilla River, OR

Name	Organization/Address	Phone number	Fax number/e-mail
Jeff Spikes (landowner)	PO Box 8 Echo, OR 97826	(541) 376-8480	
Rolland Holeman (landowner)	PO Box 113 Echo, OR 97826	(541) 376-8165	
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