The Dalles East Fishladder Auxiliary Water System
Emergency Operation Backup
Special FFDRWG Meeting
1-3 pm
May 9, 2011

FINAL MEETING NOTES

1. Introductions

Name	Agency	Email
Sean Tackley	USACE – Portland	Sean.c.tackley@usace.army.mil
Tammy Mackey	USACE – Portland	Tammy.m.mackey@usacea.army.mil
Bob Cordie	USACE – TDA	Robert.p.cordie@usace.army.mil
Jeff Ament	USACE – Portland	Jeffrey.m.ament@usace.army.mil
Randy Lee	USACE – Portland	Randall.t.lee@usace.army.mil
Steve Sipe	USACE – Portland	Steven.c.sipe@usace.army.mil
Gary Fredricks	NOAA	Gary.fredricks@noaa.gov
Ed Meyer	NOAA	Ed.meyer@noaa.gov
Trevor Conder	NOAA	Trevor.conder@noaa.gov
George Medina	USACE – Portland	George.j.medina@noaa.gov
Rick Reiner (on phone)	USACE – TDA	Richard.l.reiner@usace.army.mil
Natalie Richards (on phone)	USACE – Portland	Natalie.a.richards@usace.army.mil
Tom Lorz (on phone)	CRITFC	lort@critfc.org

2. Meeting Objectives (Tackley)
    a. Briefly review the TDA East Ladder AWS backup issue
    b. Review alternatives identified in the HDR brainstorm report
    c. Outline next steps for the design team, including update on ongoing work
    d. Identify biological considerations for various concepts

3. Background/History (Medina)
    a. Purpose is to have a backup system in the event of failure of both fish units
    b. Ongoing issue since mid-1990s
    c. Various design teams have studied alternatives that would provide 100% backup for AWS system, but these have been prohibitively expensive
    d. HDR hosted a brainstorming session to identify potential means to provide 1400 cfs through the AWS to run East Entrance only (as coordinated through FFDRWG); produced report summarizing alternatives discussed.
    e. Need to confirm that we're all on the same page regarding criteria of 1400 cfs (through the AWS).
        i. NOAA (Fredricks) confirmed this was the target.
    f. Team has identified a path forward toward implementation

4. Discussion of Brainstorm Alternatives (All)
    a. Alternative 1: Siphon to Fish Lock (from forebay)
        i. Key issues: Operational – priming and valve; maintenance – pump and valve; fish screens required?
        ii. Combine with other alternatives. Can get water into fish lock, but still need to reduce constrictions in system, pressurize fish lock, etc.
        iii. Ament noted that from an O&M perspective, biggest concern is the pumping required to prime the siphon (Ament).
        iv. Fredricks asked what the cost would be, without screening. HDR rated this as a relatively low cost alternative.
        v. **Actions:** Group agreed we should keep this as an alternative.
    b. Alternative 2: River wet tap
        i. Deep intake pipe supplies water to fish lock
        ii. Key issues: Construction (mining under dam, control valve, energy dissipation); dam safety; fish screens required?
        iii. Ament reiterated the dam safety concern. Meyer asked if we could use the concrete instead (on the other end of the powerhouse) if dam safety is a concern.
        iv. Reiner suggested that this concept could be used at the fish lock instead.
        v. Fredricks noted that this concept is desirable due to the simplicity and added that since the facility we develop is intended only to be used in a very rare emergency and its use would of limited duration, it makes sense to consider granting an exemption to our screening criteria.
        vi. **Actions:** Group agreed to keep this alternative.
    c. Alternative 3: Ice and trash sluice tap
        i. Key issues: Fish screens required; maintenance (fish screen debris); operations (high water velocities, energy dissipation, juvenile fish route)
        ii. **Actions:** Group agreed we should drop this alternative. Surface entrainment of juvenile fish and extensive screening requirements are problematic.
    d. Alternative 4: Fish lock direct tap to forebay
        i. Similar to Alternative 1
        ii. Key issues: Maintenance (control valves), dam safety.
        iii. Would have to be combined with other alternatives
        iv. **Actions:** Group agreed we should keep this alternative.
    e. Alternative 5: Concrete lid on fish lock approach channel
        i. Pressurizing provides higher discharges to AWS
        ii. Need to be combined with other alternatives
        iii. Constructability concerns – new stoplogs needed
        iv. **Actions:** Group agreed we should keep this alternative as a design feature rather than a true "alternative." It needs to be combined with other concepts.
    f. Alternative 6: Stop log modifications to Tainter Gate 23
        i. Modify or build new stop logs on Tainter Gate 23

ii. Bottom stop log would be modified to pass water to a conduit, then to the AWS
iii. Tackley noted that this seems highly infeasible, particularly from a screening perspective. Lee noted that there are dam operation concerns.
iv. **Actions:** Group agreed this alternative should be eliminated due to concerns about fish entrainment, screening, and feasibility.

g. Alternative 7: New third fish turbine
   i. Provide 5,000 cfs
   ii. Key issues: Construction (cost, time, disruption to operations), fish screens required
   iii. Would be screened to meet NOAA criteria (an advantage)
   iv. **Actions:** Group agreed this alternative should be eliminated. This alternative is outside the scope of this design team, as it is a replacement for the existing AWS system.
h. Alternative 8: Pipe(s) to AWS culvert
   i. Construct large diameter pipes (4-7 ft)
   ii. Connect to existing fish lock intake and discharge directly into AWS culvert
   iii. Maintenance of fish screens (if required) is a concern
   iv. May require modification to fish lock system.
   v. **Actions:** Group agreed to keep this alternative and combine with Alternatives 11 and 15.
i. Alternative 9: Remove flow restrictions on current fish lock system
   i. Use in combination with other alternatives
   ii. Not likely to provide required AWS backup flow
   iii. TDA project staff are identifying some of these restrictions
   iv. Cordie added that there is a bottleneck in existing system. Reiner: two 8' x 8' conduits reduce down to 36-in. Could make it a single large conduit/penstock.
   v. **Actions:** Group agreed this is actually a design component for the various fish lock alternatives. Need to keep.
j. Alternative 10: Single pumphouse on east side (cul-de-sac)
   i. Used in combination with other alternatives (9)
   ii. Single pump (Q = 600 cfs)
   iii. Key issues: Construction (cofferdam needed); maintenance; sturgeon considerations; screening.
   iv. Fredricks is concerned about O&M. Mackey noted that maintenance may not get funded due to O&M budget problems and other priorities.
   v. Meyer: Makes sense to put pump in the fishway approach channel. May reduce screening needs and shorten run of pipe.
   vi. Meyer: At Baker, 1000 cfs pump system (4 pumps). Can we apply this same concept here?
   vii. **Actions:** Group agreed to keep this alternative for now, though O&M and reliability is big concern for all.
k. Alternative 11: Upstream intake tower with siphon
   i. Discharge directly into AWS via siphon

ii. Could be used with other alternatives or stand alone
iii. Maintenance (gates and valves) is a concern
iv. Tackley noted that concern about this and other intakes is juvenile fish impacts, etc.
v. **Actions:** Group agreed that this should be combined with Alternatives 8 and 15.

l. Alternative 12: Floating pumping plant in cul-de-sac
i. Similar to Alternative 10
ii. Fredricks and Tackley agreed that this would not be good for juvenile fish, in addition to O&M concerns
iii. **Actions:** NOAA advised to drop this alternative due to O&M concerns and potential juvenile fish impacts. Group agreed.

m. Alternative 13: Fish turbine running speed-no-load
i. Operate on turbine at speed no load
ii. 10-20% of the fish turbine operational flow
iii. Combine with other alternatives
iv. Operational issue - cannot be used for long term (up to one year)?
v. Conder asked if it is possible to pull turbine out and let water flow freely through system. This is not feasible and would pose dam safety concerns. Takes approx. 3 months to disassemble unit as well.
vi. **Actions:** Corps advised that this alternative should be dropped due to operational issues. Group agreed.

n. Alternative 14: ITS intake channel tap and diversion
i. Bulkhead between units to divert flow
ii. Key issues: debris handling, construction (modification to concrete structures for new pipes), energy dissipation
iii. Fredricks – this is unacceptable impact on juvenile fish.
iv. **Actions:** Group agreed this alternative should be dropped.

o. Alternative 15: Siphon with entrance at fish ladder exit to AWS conduit
i. Similar to Alternative 1
ii. Discharge directly to AWS conduit (better constructability)
iii. Key issues: fish screens, possible energy dissipation issues, O&M (priming, valve)
iv. **Actions:** Group agreed that we should combine with Alternatives 8 and 11 as "forebay intake" alternative.

p. Alternative 16 (*not in report*): Equalizing headers
i. Pulls water from scroll cases to fill others (at 14 main units)
ii. Small piping (4-in) only used to drain units, but may be able to modify to supply AWS.
iii. Needs further analysis; need to include fish entrainment questions
iv. **Actions:** Group agreed to keep this alternative, though it would need to be combined with others.

5. Other discussion points
a. Fredricks reiterated concerns for not having a backup system. North ladder is not effective backup, particularly for smaller fish and at higher flows.

b. Group prefers alternatives with fewest components, such as a direct forebay tap for fish and O&M reasons
c. Group discussed the possibility of deploying rental pumps. Not likely to work, unless used in conjunction with other alternatives and if we only needed to deliver a small portion of the 1400 cfs needed.
d. Deep intakes – how deep should we make intakes?
    i. Can use data from other projects. Need to consider juvenile lamprey as well.
    ii. Fredricks: Since the facility we develop is intended only to be used in a very rare emergency and its use would of limited duration, it makes sense to consider granting an exemption to our screening criteria.
    iii. Lorz: consider eliminating or reducing night operation to avoid lamprey impacts.
    iv. Intake velocity (10 ft/s is concern)
    v. Trash rack screen criteria. Standard is 2 ft/s, likely based on ability to effectively rake. Need a trash rake.
    vi. Is it possible to float debris off the siphon at night by shutting it off? Meyer: Not likely, as deep debris is neutrally buoyant.

6. Ongoing Activities
    a. Currently building 3D CADD model (S. Sipe) to evaluate alternative configurations. Sipe demonstrated the model for the group.
    b. Modifying existing numerical model to allow investigation of alternatives (K. Kuhn)
    c. Confirming flows from various sources
        i. Existing fish lock system
        ii. Equalizing header system
    d. Working on position document - essentially an update on where we are and where we're heading, including decisions made at today's meeting. Complete around June 2011.

7. Next Steps
    a. Eliminated several alternatives and consolidated others into 6 alternatives, based on feasibility, fish impacts, and complexity issues.
    b. Medina reviewed timeline
        i. Brainstorm report (completed)
        ii. Position document (June 2011)
        iii. Alternatives report phase through Winter 2011-12.
        iv. DDR and Plans & Specs phases through mid-2013.
        v. Construction in late 2013, assuming funding is provided.
    c. Fredricks noted that we've compromised in getting 1400 cfs for the system rather than 5000 cfs to get this accomplished, and there may be additional room (such as screening) for compromise. We need a backup system in place. Wants active coordination of planning and alternatives evaluation.
    d. Tackley will schedule meeting for August-September to check in. PDT will update FFDRWG as work evolves.