

COMMENTS FROM CULVERT FISH PASSAGE PEER REVIEW WORKSHOP, YAKIMA, 5/25/00

These notes summarize comments and discussion from a guideline peer review workshop in Yakima on May 25, 2000. There were about 30 participants at the workshop representing federal, state, and local agencies and consultants in resource management, timber, tribes, transportation interests.

These workshop comments came from a variety of workshop participants. They will all be considered when we edit the guidelines. There was limited time for discussion at the workshop; just because an issue wasn't discussed there, it doesn't mean it's not significant and merits discussion. A tape recording was made of the entire workshop; it will be used to verify uncertainties in notes while we edit. In our original workshop notes, we've recorded who made each statement. We'll check back with the individuals that made specific comments if we feel we need more explanation. These notes were taken and reported by Julie Nelson, Pat Powers and Bruce Heiner and recorded on tape for verification.

Introduction

Guideline project overview
Guideline Peer Review Workshop
 Discussion and Input
 Big and contentious issues
 Buy-off
 Further comments

NMFS perspective on Guidelines

(Note; ESA management considerations will not be directly included in Guidelines other than to provide techniques and level of protection consistent with ESA needs.)

There are three ESA options

 HCP- 50 year agreement (language should instate fluidity)
 Section 7 consultation
 4(d)- general reference

NMFS will error on the side of the fish without science in place, and consultation is required again if new species are listed. Fish issues at same priority as engineering. Cost and risk may not be controlling factors. Long term vs. short term impacts are heavily impacted by take limitations

Which of 3 options are most flexible for adaptive mgmt with emerging technologies?

How does "take" relate to existing facilities?

Guiding Principles

- Channel profile adjustments should be a separate principle
- Can't replace habitat that culvert eliminates
- Channel evolution can impact the life of the project
- Does the statement "delay can not be mitigated" mean that passage will be required at all flows? If HPA HCP is approved there will be a limited level of take included.
- General guidelines would lead to culvert options being extremely limited. Culverts limited to a max stream size, and confined or incised channels. Retrofits might exceed these criteria until the end of the culvert life.
- Are culverts a problem if the productive capacity of the channel is not being fully utilized?
- Need to look at consolidating stream crossings, growth mgmt issues. (Example McAleer Cr. - 11% of channel is in culverts)
- Though delay and direct habitat loss can not be fully mitigated:

- Urban/ degraded streams can be improved
- Fish have been seen spawning in culverts
- Habitat can be mitigated to some extent.
- Include loss of floodplain; mammalian impacts
- Channel dynamics are important related to fish passage structures.
- Turbulence is an extremely important fish passage issue.

Culvert Issues

- Define the differences between mitigation and compensation.
- Define **Life** of the project.
 - Does it mean failure of the structure, changed streambed/ habitat? Life of the project should be considered in the context of habitat considerations.
 - Asking designers to state the life of the project; have to consider the channel and the structure for that time frame
- Consider cumulative impacts to habitat and their relationship to limiting factors in the system.
- High fills and related costs for repair and replacement should be included in design process.
- Construction - need guidance for removing and relocating fish. Handling fish will often trigger a Biological Opinion requirement.
- We are exposed to liability to regulations, flood plain regulations, etc. Flooding problems need to be considered in design.
 - In Oregon, the permit process would require a review of flooding potential.
 - Usually fish passage designs make culverts larger so flooding is not an issue.
- Explicitly state what the desired condition is.
- Methodology for selecting and prioritizing projects.
 - Include criteria for defining what is passable

New vs Retrofit Culverts:

- Define new and retrofit; difference between new structures and retrofits should be made clearer/ more explicit.
- Does it matter what is new or retrofit - do the standards vary?
 - Retrofits may not be most desirable but may be required in order to best spend restoration funds.
 - Need to do some interim repairs or retrofits because of the huge # of culverts that are barriers
- Definition of new and retrofit
 - Consider a culvert replacement as a new culvert
 - Define new by purpose of project? If it's for fish passage, it might be a retrofit. If it's for life of the project, it's a new project.
 - Need some level of fix while figuring out good passage requirements
- There should be different criteria for new vs retrofit structures.
- During a retrofit the **Life** of the project should be determined.
- Interim definition needs to be clear to avoid band-aid fixes

Culvert Removal

When replacing culvert with a bridge, need design for channel width, x-sec and bed materials

Maintenance Issues

- RCW is tool in WA to get passage. Once project is built it is hard to change design. Maintenance concerns may drive the design
- Require the designer to include maintenance in the design
- Designer is opposed to being responsible for estimating maintenance
- Need a limited maintenance frequency identified
- Trash racks should not be allowed
- Identify maintenance for fish passage vs hydraulic function
- Once a project is constructed there is no way to track maintenance.
 - Require owner to make annual reports. That approach did not work in storm water regulation.
 - New law would be needed to extend control of the project beyond the initial HPA time frame
- Access for maintenance (physical, seasonal, etc.) is important. Methods and timing of maintenance is important. The effects of maintenance and construction activities on water quality need to be considered.

No Slope Design Option

- Be wary of Ano-brainer@ designs; streams are more complex than that
- Define the streambed that will be placed in the culvert
- Why zero slope? Experience has shown that no-slope has seldom created a problem
- Potential problems with a steep channel coming into a flat culvert
- Even no-slope option may not meet ecological connectivity needs

Hydraulic Design Option

- Summer temperature refugia and winter food foraging behavior need to be considered for designing fish passage for juveniles.
- Guidelines need strong wording of potential problems and failures of baffles. They are very short term.
- Six (6) inch fish may not be best design fish (default)
- Hydraulic option should be used as a special circumstance.
- Make a recommendation to have a natural bottom in the pipe.
- EDF suggested for use in baffled culverts and roughened channels in culverts.
 - There should be no accumulation of energy through a fishway.
 - Definition of EDF (energy dissipation factor), criteria, etc. needs to be made more explicit.
 - Does EDF vary as a function of depth? How do you account for volume?
 - Did we look at EDF in stream simulation design? No; we assume it's as passable as the stream it simulates.
 - EDF criteria should not be different than pool and weir. We should deal with energy dissipation rather than bring judgement into the picture.
 - You can also get energy at a friction slope.
 - Do you check EDF everywhere in the culvert? Is EDF overall average?
 - What is average velocity?
- Can you look at baffles as fishways like pool and weir? Yes, at low flow when they satisfy EDF requirements for fishways.

Stream Simulation

- We need to clarify what should be looked at for determining streambed width.
- Is part of the justification including other animals?
- Are the rock weirs grade controls? No; they are for bed retention and simulate natural step-pool function. Instead of bed retention sills, just put in a bigger pipe.
- There is no problem adding rock sills for passage.
- Many culverts recently constructed with "natural" beds are not stream simulation size.
- Project in Skagit Co. failed because rock was placed on top of sand. Need a mix of large and small.
- Are there problems with low flow and sealing?
- There are no target fish, just stream hydraulics.
- Clearly differentiate the difference between roughened channel and stream simulation. In both of these types of fish passage treatment, the stability of placed material should be considered, as well as turbulence and bed porosity.

Stream Simulation has been revised since last mail out. WDFW will send out copies of updates to help review.

Channel Grade Controls

- Are log weirs bed retention sills, and will they be exposed? Have Vee controls been used (i.e. upstream facing)? Sloped angled logs have been used, but mainly straight across logs for culverts for elevation control.
- Boulder controls need high quality control during construction to work.
 - Rock weirs are not recommended downstream of culvert to control elevation.
 - Use upstream where they can gradually fall apart
 - Structures should not be put into fail. Should be treated as needed.
 - Boulder controls are used mostly downstream of culverts in California.
 - Rock weirs should be looked at as baffles (i.e. temporary)
 - The historical failure rate of rock controls is high.
 - The main issue is how rock weirs are built. They are too often looked at as a cheap way to build, and can build in water.
- Have log weirs experienced large floods (50 to 100 years), and do they still have a life span?

- Key to successful rock/log placements is no channel constrictions.