

**Fish Passage on the Tongass  
May 3-5, 2005  
Juneau, Alaska**

**Index:**

Participants	Page 1
Decisions and Commitments	Page 1
<i>Day 1</i>	
Review Agenda & Meeting Purposes, <i>Jan Caulfield</i>	Page 3
Overview of Interagency Process to Date, <i>Julianne Thompson</i>	Page 4
Subgroup Report – BSI, <i>John McDonell</i>	Page 4
Subgroup Report – Recommendation Process, <i>Bill Hanson</i>	Page 5
<i>Day 2</i>	
Subgroup report – Clean Water Act Regulations and Mitigation <i>Chris Meade, EPA, Jack Oien, USFS, Jeff Koschak, COE, Randy Vigil, COE.</i>	Page 5
Introduction to Testing the Process - <i>Bill Hanson</i>	Page 8
<i>Day 3</i>	
Regroup – continued discussion of Mitkof culverts, leading to a discussion of MRs and assignments - <i>Jan Caulfield</i>	Page 8
Subgroup report – Monitoring <i>Kim Hastings</i>	Page 10
Discussion of possible final product of interagency work – including discussion of new process, pilot study, and mitigation subgroup – <i>Larry Dunham / Scott Snelson</i>	Page 13
Subgroup report – Information Needs <i>Don Martin</i>	Page 15
Brief Update on Changes to Red-Green-Gray Matrix: <i>Bob Gubernick</i>	Page 16

**Participants:**

Julianne Thompson, USFS, Mark Miles, AK DOT, Steve Albert, ADF&G, Larry Dunham, USFS, Bill Hanson, USFWS, Neil Stichert, USFWS, Mac McLean, AK DNR, John McDonell, USFS, Bob Gubernick, USFS, Scott Snelson, USFS, Ken Vaughn, USFS, Rod Dell'andrea, USFS, Jackie Timothy, AK DNR, Jack Oien, USFS, Jim Cariello, AK DNR, Kim Hastings, USFWS, Chris Meade, EPA, Mike Knapp, AK DOT, Mike Furniss, USFS, Buck Bryant, USFS, Dick Aho, USFS, Cindy Hartman, NMFS, Don Martin, USFS.

Facilitator - Jan Caulfield, Sheinberg Associates  
Note taker - Dan Cushing, USFWS

**Decisions and Commitments**

**Updated Management Recommendation (MR) definitions:**

- MR1:
  - o Objective: Remediate to provide full passage for aquatic organisms, subject to available funding and prioritization within the MR1s.
  - o This differs from MR-2 in that proposed action should be developed prior to the end of the service life, recognizing the high priority need to remediate MR1s.
- MR2 + MR3

- Objective: accept the existing passage for the service life of the structure. Achieve full passage ultimately, at the end of service life; in the meantime, avoid irreversible impacts to the population.
  - MR2a: No action is necessary to meet the objective
  - MR2b: May require temporary action, before end of service life, to achieve partial passage.
- These MR may be used in instances where the cost of full passage is high, and some temporary loss of productivity can be tolerated while still meeting the management objective.
- MR 4:
  - Objective: Accept existing condition forever, with mitigation.
  - MR4a – In situations without full blockage, maintain or improve existing passage conditions on-site when feasible and prudent. If not feasible and prudent, use offsite mitigation.
  - MR4b – Accept full blockage and mitigate.
  - Options for mitigation include
    - On-site in-kind
    - On-site out-of-kind
    - Off-site in-kind
    - Off-site out-of-kind.

### **Process recommendations and pilot project**

Recommendations will not be automated, but made by a team of people.

Work will begin with a pilot project, in which two teams analyze several watersheds and assign MR's to its culverts. These teams will consist of a FS Biologist, Hydrologist, and Engineer, and external people will be added. Another team, the mitigation subgroup, will come up with mitigation opportunities and create a generic sideboard of mitigation options. All will go forward and apply the mitigation to the recommendations. Process will culminate in a package for Corps of Engineers review.

### **Potential pilot project team members**

#### *Biologists*

Kim Hastings  
Cindy Hartman  
Someone from DNR  
Dick Aho  
Don Martin

#### *Hydrologists*

Julianne  
Mike Knapp

#### *Engineers*

Bob Gubernick  
Rod Dell'andrea

### **Mitigation subgroup members**

Jack Oien  
Dick Aho  
Randy Vigil  
Chris Meade

Mac McLean

## **Assignments**

### **Process**

- tickler list, MR statements, MO's- *May 31*
- value consideration
  - i. Dick will consult with the regional economist – *soon*
  - ii. language added to emphasize it is NOT a traditional cost/benefit analysis. – an index/indicator, not an actual benefit.

### **BSI**

- marine derived nutrients
- Populate the full BSI
  - i. Depends on knowing where pilot effort will be.
  - ii. Done by end of FY05

### **Monitoring**

- work
- add group member – *2-weeks*

### **Mitigation**

- work
- currency, toolbox
- draft outline by end of May
- draft info by end of June

### **Larry, Scott**

- white paper – outline by end of June

### **Pilot Effort**

- select area - end of June
- Info base ready
- Teams

### **Information Needs**

- Now accepting new information needs.
  - o Send IN's to Don, Mack, Buck or Dick
  - o Website will be used as a tool to keep track of IN questions and results.
- Information Needs brought up during meeting:
  - o portion of impeded habitat in a watershed. At what point is watershed size a factor? When does a watershed population become at risk?
  - o Identifying the service life of the culvert (process info need)
  - o Identifying the maintenance level of the road (process info need)
  - o Are there circumstances, such as where the natural stream provides only partial passage, where we will allow partial passage without mitigation?

### **Bob**

- Let the group know the updated culvert numbers (from revised red/green/grey matrix)

### **Jack**

- Get CWA fish passage regulation information together and put it up on the website.

## **Day 1 – Tuesday, May 3**

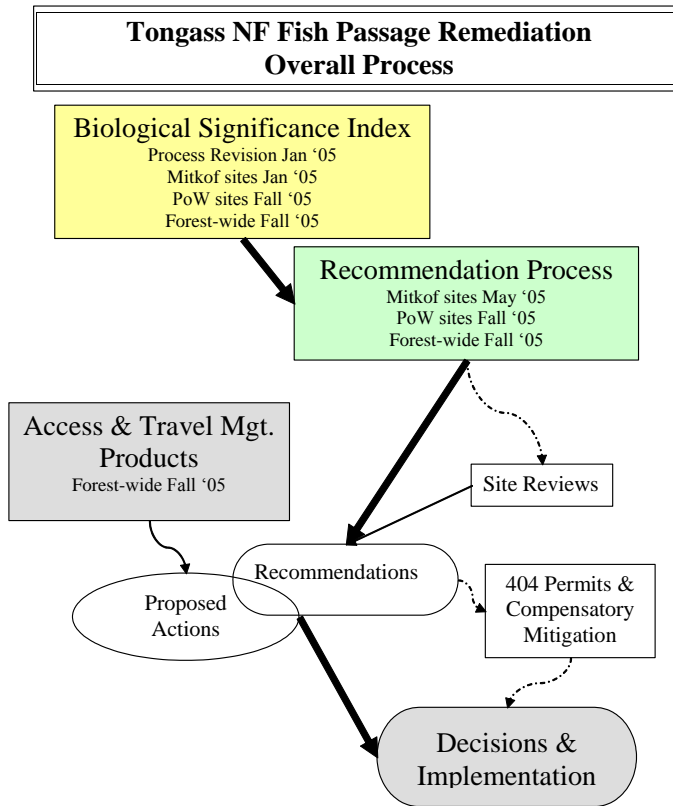
### **Review Agenda & Meeting Purposes, Jan Caulfield, Sheinberg Associates**

- Objective - moving forward towards implementation

- Refine proposed tools and process (biological significance index and recommendation process)
  - o Update on changes to the index and process since last meeting
  - o Test on Mitkof Island culverts
  - o Discuss final refinements
- Hear update on other subgroup work (monitoring, information needs)
- Understand Clean Water Act 404 regulations relevant to fish passage and mitigation options
- Discuss process and vehicle for representing interagency agreements
- Define next steps, tasks, assignments, schedule, what is left to do to put this work into practice

**Overview of Interagency Process to Date, *Julianne Thompson, USFS, TNF***  
 See PowerPoint “Fish passage remediation on the Tongass national forest”  
 Objective – provide grounding

- Process flow chart



**Subgroup Report – Biological Significance Index, *John McDonell, USFS, TNF***  
 See PowerPoint: BSI: A component of the Fish Passage Recommendation Process

- Passage standards along classified road – N = 3099
  - o Red culverts – 43%
  - o Green culverts – 14%
  - o Undetermined – 9%

- Removed Culverts – 17%
  - Bridges – 17%
    - Few Bridges have problems. Few removed culverts have problems
  - ~28% of crossings have less than 100 square meters of habitat upstream. 50% have less than 200 sq m.
- Sensitivity Analysis – address how each component of BSI independently influence score.
- **Potential Action: address our weighting of these factors in the sensitivity analysis.**

### **Subgroup Report – Recommendation Process, *Bill Hanson, USFWS***

See draft documents ‘recommendation process working group’ and ‘rp\_flow20050502.doc’, a RP flowchart.

#### Discussion

- Bob Gubernick - In a majority of our circumstances, retrofitting will not get us anywhere. Where we do have those opportunities we should use them, and are, but the majority cannot be fixed by retrofitting.
- Q for Bob: How do you get the initial cost estimate? A: Historic bid cost, with costs updated. Everything involved in a site. External costs not included are contract administration and monitoring. These external costs are difficult to quantify and vary greatly.
- **Potential Info Need: Are there circumstances where we will allow partial passage without mitigation**, such as streams where the natural stream provides only partial passage? If only fish of a certain size are going up a channel, then we should only have to provide passage for those size of fish?
  - Have we developed the ability to know the passage performance of the natural channel?
- Will the group include any weighting factor having to do with anadromous fish?
  - Chris – from a legal standpoint, the clean water act requires passage for all aquatic organisms. Having said that, one could make a compelling argument for anadromous fish, because our systems are nutrient poor. Anadromous fish provide nutrients to these systems.
  - Is this a level of expertise that we should try to add to the group in order to deal with this?
  - The smolt-generation calculator can be used to calculate the value of class 1 habitat. We can use the tool to distinguish relatively between pipes.
  - **BSI should consider and choose whether to leave with this assignment.**

### **Day 2 – Wednesday, May 4**

**Subgroup report – Clean Water Act Regulations and Mitigation**  
**Chris Meade, EPA, Jack Oien, USFS, Jeff Koschak, COE, Randy Vigil, COE.**

Outcome: Understanding of Clean Water Act requirements

**Jack will get CWA fish passage amendment and regulation information together and put it up on the website.**

For More Information/Direction:

- Steve Albert's webpage:  
[http://www.sf.adfg.state.ak.us/SARR/Fishpassage/FP\\_regs.cfm](http://www.sf.adfg.state.ak.us/SARR/Fishpassage/FP_regs.cfm)
- [www.poa.usace.army.mil/reg](http://www.poa.usace.army.mil/reg)
- COE Alaska region: [www.poa.usace.army.mil/reg](http://www.poa.usace.army.mil/reg)
- COE-EPA MOA on mitigation:  
<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/mitigate.htm>
- Section 404 Permit Application and instructions
- 404(b)(1) Guidelines
- Regulatory Guidance Letter Re: Compensatory Mitigation Projects for Aquatic Resource Impacts (No. 02-2, December 24, 2002)
- Exemption for road structures (with BMPs)

Routes for Compliance with Section 404:

- 404 Exemptions
  - Specific to silvicultural activities.
  - If meet Best Management Practices, spelled out in EPA and Corps regulations, no 404 permit required.
    - One of these BMPs provides for the passage of all aquatic organisms.
- General 404 Permits – may be applicable in some circumstances, but do not cover work after the fact. Not likely a possibility for these culverts.
- Individual 404 Permit – most likely route to follow for after-the-fact 404 permits
- Compliance agreement – negotiated with agencies with responsibility to implement 404 (EPA, Corps) to remedy noncompliance
  - This could come into play in situations where there would not be a 404 permit processed by the Corps, but the culvert is in non-compliance with the Clean Water Act. Compliance agreement would include specified actions [potentially including compensatory mitigation] and a schedule for actions.
  - There may be legal vulnerabilities, even if the COE does not permit for internal reasons. 3<sup>rd</sup> party lawsuits under the CWA. The next best alternative in terms of legal vulnerability would be to enter into a compliance agreement with the EPA.

404 Permit Application Package & Processing:

- Need to determine whether and how to “batch” the culverts in manageable groups. Likely is important to base this on watersheds, for consideration of cumulative impacts in decisions regarding permitting and mitigation (see below)
- Information to include:

- See 404 Permit Application and 404(b)(1) guidelines
- When was culvert installed?
  - Culverts installed prior to 1977 may not need a 404 permit, since pre-date the regulations (Chris Meade will check that date).
  - If culvert installed more than five years prior, the Corps would generally not pursue an enforcement action against the after-the-fact situation and may not require a 404 permit, depending upon their case-by-case assessment of ongoing impacts and other considerations.
- Resource assessment and impacts
  - Aquatic resource populations and habitat (anadromous, resident, other) – quantity and quality
  - Cultural resources
  - Wetlands
  - Consequences of not carrying drainage (flooding impacts)
  - Other
- Corps' Section 404 permit application review and approval process involves public notice and consideration of comments from public and federal agencies.
- 404(b)(1) guidelines – no permit shall be issued if it will cause or contribute to significant degradation. The corps will have to determine that cumulatively, there is no significant degradation. The applicant can include compensatory mitigation to make it acceptable.

### **Section 404 – Mitigation Sequence**

- Avoid impacts
- Minimize impacts
- Mitigate for impacts – compensatory mitigation (Regulatory Guidance Letter No. 02-2). There is not a “formula” applied to determine appropriate compensatory mitigation, nor to determine a threshold of impact below which mitigation is not required. Determined based upon Corps' professional judgment, in consultation with other agencies and public review. Mitigation should focus on functional value. It will be important to consider the cumulative effects of culvert treatments in determining appropriate mitigation. Priority given to:
  - On-site / In-Kind
  - On-site / Out-of-Kind (e.g., other stream restoration on-site)
  - Off-site / In-Kind (e.g., fish passage improvement elsewhere)
  - Off-site / Out-of Kind (e.g., other stream restoration elsewhere)
  - Fee-in-lieu of compensatory mitigation is least preferred, but is done

There is a precedent for older culverts being fixed to compensate for newer ones.

Question of whether mitigation would be required for temporary non-compliance (e.g., the remaining life of the structure) would include consideration of the length of time, the lasting impact (if any) of the temporal loss of fish passage, quantity and quality of resources and habitats affected, cumulative effects, etc.)

Moving Ahead with 404 Compliance Process – USFS & interagency group should present a package to the Corps of Engineers, that makes the case for the 404 approval:

- 404 Permit Application – for culverts being addressed
  - o Management recommendation for each culvert (proposed action)
  - o Background information for each culvert
  - o Documentation / rationale for management recommendation(s)
  - o Mitigation proposed, if any, and rationale

### **Introduction to Testing the Process - *Bill Hanson, USFWS***

See document – ‘testing the process, mitkof island culverts’.

Objectives - I.D. Information Needs, obtain comfort with MR’s.

- Discussion: should a standard reflecting the lowest acceptable amount of passage be applied, or a standard that accepted no backsliding?
- Q – Retrofit cost for partial passage - Bob – If the current conditions allow for partial passage, to get it back to partial passage is likely affordable. From a technical standpoint, if the structures have passage currently, what would be replaced would be something similar with some small modifications, but not costing something far greater than what the original cost. It’s not an excessive operational obstacle to achieve the same amount of passage or even increase it some amount.

Discussion: preference to retain habitat in-place, rather than mitigating elsewhere, if it could be done at low cost.

- **Information Needs:**
  - o **‘watershed factor’ the portion of impeded habitat, whether a stock is jeopardized, how that is represented in the BSI.**
  - o **Identifying the service life of the culvert**
  - o **Identifying the maintenance level of the road.**

Adjourn Day 2

### **Day 3 – Thursday, May 5**

**8:00 a.m. Regroup – Review goals for the day - *Jan Caulfield***

Tipping points:

- 2) – ‘no backsliding’ vs. lowest acceptable passage
- 3) weight: cost? Habitat benefit?
- 4) Retain diversity on site?



5) Is service life a consideration?

Process/ Info needs

- 1) Service life
- 2) Maintenance level/intent
- 3) Habitat utilization
- 4) Retrofit cost
- 5) Proportion impeded in watershed
- 6) characterization of upstream gradient

Want to see decisions made on these or have these referred to subgroups.

**Proposal - that the recommendations are not automated, but made by actual people.** Have a group spending 5 minutes on each culvert. There can be a 'tickler list' questions for the group to think about. Discuss watershed factors, cost/benefit and retrofit possibilities, genetic diversity, and service life.

Watershed factors.

- a map showing relationships between culverts in a watershed needs to be available.
- want to explicitly recognize that we are prioritizing diversity.
- Downstream natural barriers
  - o Explicitly recognize that isolated resident populations are not expendable.
    - If you split an isolated population in half, you've dramatically cut the likelihood of persistence for both halves. There are populations that are already isolated; then there are populations that we are isolating. This population has been isolated for 10,000 years, and the population is different.
- do culverts a watershed at a time, giving you a chance to integrate cumulative effects.
- **I.N. – at what point is watershed size a factor? When does a watershed population become at risk?**
- Should we assign these to the process group to provide guidance for the gray areas?
  - o It is a process group task.
  - o the derivation of the data that will populate the watershed factors – that needs to come from the Forest Service.
  - o **Assigned to process group to draft.**
- **improved, partial passage was also frequently a request**

**Discussion of MR's**

- need to look at our long-term goals – and isolated populations where we are concerned with long-term persistence. If this is our full objective, adult passage may be what we need to achieve this. Or if less than full passage is enough to achieve this, then that would achieve our goals. But what you are getting back to is your management objective – and that is maintaining your genetically distinct stock. I think when we're talking about resident stocks, where we're not talking about economic gains, we're talking about other social values; we've met our social obligation if we maintain the genetic viability of the stock.
- Need objectives with these. And that would work well with our ideas of packaging within watersheds. And watersheds may have different objectives.

## Updated Management Recommendation (MR) definitions:

- **MR1:**
  - **Objective:** Remediate to provide full passage for aquatic organisms, subject to available funding and prioritization within the MR1s.
  - This differs from MR-2 in that proposed action should be developed prior to the end of the service life, recognizing the high priority need to remediate MR1s.
- **MR2 + MR3**
  - **Objective:** accept the existing passage for the service life of the structure. Achieve full passage ultimately, at the end of service life; in the meantime, avoid irreversible impacts to the population.
    - **MR2a:** No action is necessary to meet the objective
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- **MR 4:**
  - **Objective:** Accept existing condition forever, with mitigation.
  - **MR4a –** In situations without full blockage, maintain or improve existing passage conditions on-site when feasible and prudent. If not feasible and prudent, use offsite mitigation.
  - **MR4b –** Accept full blockage and mitigate.
  - **Options for mitigation include**
    - On-site in-kind
    - On-site out-of-kind
    - Off-site in-kind
    - Off-site out-of-kind.

## Assignments Discussion

- Economic Benefit Factor should have language added to emphasize it is NOT a traditional cost/benefit analysis. – an index/indicator, not an actual benefit.
  - concerns about its misinterpretation
  - call it an ‘anadromous value consideration’
  - Bring in regional economist – USFS, NMFS, FSL
- BSI – two issues from yesterday - sensitivity analysis and should the BSI be adjusted relative to marine derived nutrients?
  - **Sensitivity Analysis will not be done now that the group is not using an automatic process.**
  - **BSI group will discuss marine derived nutrients.**

## **Subgroup report – Monitoring *Kim Hastings, USFS***

- See Powerpoint presentation – “monitoring” discussion outline’
- Corvallis meeting recap
  - Organize and frame monitoring questions
  - Monitoring subgroup charter and membership

- Synchronization between Information Needs subgroup and Monitoring subgroup
- Meeting: The Biology of Assessment, Monitoring, and Research of Aquatic Organism Passage at Culverted Road-Stream Crossings - USFS PNW Research Station Corvallis Oregon 16-18 February 2005
- Presentations:
  - M.D. Bryant: Movement in High Gradient Streams
  - J.B. Dunham: Fragmentation and Invasive Species
  - B. Hansen: Ecological Criteria for Culvert Prioritization
  - K. Hastings: Effects of Long-Term Population Isolation
  - M. Hudy: Passage Issues in Eastern U.S.
  - M. Love: Culvert Effectiveness Monitoring in N. CA.
  - C. May: Culvert Test Bed Status
    - movies available on web
  - T. Castro-Santos: Volitional Movement Through Culverts
- [www.fsl.orst.edu/geowater/PEP/bioshop/](http://www.fsl.orst.edu/geowater/PEP/bioshop/)
- FishXing three (beta)
  - <http://www.fsl.orst.edu/geowater/FX3/BetaOne>
- Implementation monitoring – BMP implementation monitoring
  - Was culvert installed as designed? (as-builts)
  - Fish passage BMPs
  - Other needs?
  - Discussion:
    - we have a forestwide program of BMP implementation monitoring – came up with a list of recommendations that we think need to be addressed with these fish passage projects.
    - many red culverts resulted from unidentified fish streams – it would be inexpensive monitoring to determine if fish streams are being correctly identified.
    - where those have been identified, we want to put a lot of energy into modifying the contract to get it done right
- Effectiveness Monitoring
  - Full passage installation
  - Accept partial blockage
  - Accept complete blockage
  - Passage improvement (retrofit)
  - Offsite mitigation
  - Discussion:
    - where do you put passage prior to the structure being installed?
    - We need to determine which culverts cause which types of blockage.
    - did we pick good standards to begin with?
- Full passage installation
  - Is stream simulation functioning hydrologically?
  - Are all aquatic organisms able to pass?
  - Discussion:

- are we really meeting that assumption that the stream simulation is functioning as a stream over time (bedload)
  - aquatic organisms don't necessarily have to pass through the same culvert as your fish passage culvert.
  - there may be situations where you can't do stream simulation, where you're doing a hydraulic design or some other type of culvert, is their monitoring people want to do for that?
  - does temporary partial blockage have an irreversible impact?
  - at what length of time you begin to see what effect?
  - can you, by monitoring a site, determine what is irreversible?
  - you have to design what you look for before you design your monitoring
  - would that specifically be for genetically isolated pops? Large downstream pops?
  - no, you could see an effect anywhere you reduce connectivity, but these might not be equally weighted questions.
  
- Accept partial passage
  - Decreased utilization upstream by some species or life stages?
  - Does utilization decline over time?
  - How do different culvert characteristics translate to different kinds of partial blockage (species, life stages, flow stages)?
  
- Accept complete blockage
  - Does utilization of isolated habitat decline over time?
  - Which isolated populations are lost, how quickly, and from what proximate causes?
  - Is it important that at least some headwater habitat in a watershed remain accessible?
  
- Passage improvement (retrofit)
  - Must define what kind of passage (species/life stage/flow was intended to be improved
  - Increased # of species above culvert?
  - Increased # of life stages above culvert?
  - Increased habitat utilization above culvert?
  
- Off-site Mitigation
  - Was mitigation cost-effective?
    - Did it cost less than remediating the culvert?
    - Was the benefit equal or greater?
    - Did benefit of mitigation last at least as long as culvert remediation benefit would have?
  - Discussion:
    - Ken – was the mitigation effective? Within that, cost-effective is a subset.
  
- Monitoring Subgroup Charter
  - List and organize culvert restoration objectives
  - Identify metrics for measuring progress
  - List testable hypotheses

- Prioritize hypotheses (by urgency to managers)
- Conceptual study designs (one pagers)
- Rough cost estimate, time required, lead person
- Submit recommended monitoring program
- Once we have objectives, then we can look at what metrics we measure to access progress
- Monitoring Subgroup Members
  - Kim Hastings
  - Buck Bryant
  - John McDonell
  - Eleanor Oman
  - Julianne Thompson
  - Decision maker? [to focus monitoring efforts on things decision makers need to know]
- Discussion:
  - In the context of monitoring you would be going to the management objectives as goals.
  - a primary goal is cost-effectiveness, that we should capture that within the monitoring.
  - a part of this should be implemented immediately. It would be nice to have before and after information on culverts you're actually investing in – some kind of immediate implementation of effectiveness monitoring.
  - is the group's focus going to be implementation or effectiveness?
  - make sure that when we do the monitoring that we do the biological end.
  - look at the implementation monitoring as:
    - is it being done?
    - Is it being done correctly?
  - and their process for BMP implementation monitoring.
  - it sounds like the engineers are doing the as-built monitoring, and they'll ask if they need help, and they're doing BMP monitoring, so the main focus is on effectiveness monitoring.
  - if you don't have good implementation data, then your effectiveness monitoring will be hobbled – you want them to dovetail –
  - the whole idea is to provide Information Needs to the decision maker in the monitoring subgroup – should we include one to make sure we provide the right information to them
  - Kim – requests feedback and information about what people would like to see monitored.

***Larry Dunham / Scott Snelson, USFS***

Outcome: Discussion of possible final product of interagency work, the “vehicle” that would be used to represent agreement (e.g., MOU?), how to obtain agreements, etc.

Larry –

- The next step - take a representative subset and do a test run.
  - Perhaps take two teams and replicate, compare notes between two teams.
    - A Biologist, Hydrologist, and Engineer.

- Then get a ranking.
- And then Scott and I can develop a white paper.
- Then take it back to the leadership team that has charged us to find a defensible and economical way to address this issue.
- From a timeline perspective, I would see that field test by the end of this field season.
  - That's also the same time as significant portions of our ATM are coming together.
- is there a timetable for when this would be done by the teams? And how does that fit in with the access plans?
  - by January, the assessment of the travel plans should be done so we can start using this kind of information to weigh decisions. That should start telling us what kind of money we have and what the need is. There will have to be a lot of interaction between resource groups. And this, and other tools will help us move forward in a more cost-effective manner. It is our hope to be making the as best use of our funds as possible.
  - and the white paper would take this into account?
  - that is the intent, so people up the line can see how this fits in.

Bill –

- I have suggested in our organization that we bring down a key person from our RO and familiarize them with our operations in SE and more detail about this process.
- Outside of that, I really think that the next step is taking this to a particular landscape unit and trying to apply it.
  - Trying to get a pilot test done on one or two landscape units, at least several adjacent watersheds.
  - And try to get through the entire package all the way through mitigation, and that would be the best way to demonstrate within our organization what were talking about, and to the districts.
  - We made a lot of changes in the process, and as a test, and coming out of the uncertainty, I would much rather be seeing two independent teams hitting the same culverts.

**There is a consensus agreement from the participants on the tools, the MR's and the process up to date. People are comfortable enough to try it out on a trial area.**

**Mitigation is an open question.** It requires functional equivalency.

- Maintaining the credibility of the entire process will hinge on how the mitigation portion is set up, packaged, and implemented.
- the purpose of the white paper and the pilot is to pull it together to show the organization, and to identify mitigation, and allows someone to see all the ways this addresses the problem in a cost-effective way. And these all come together to convince people that this is the way to go. The overarching goal is to try to achieve functional equivalency with the broadest possible tools and the lowest possible cost.
- **A different team or subgroup going forward with mitigation. One team come up with MRs, another team coming up with mitigation opportunities – creating the generic sideboard – and both teams could go forward and apply the mitigation to the recommendations.**

### **Mitigation subgroup – Jack, Dick, Randy, Chris, Mac**

Objective: Create the mitigation toolkit.

- Jack – the mitigation group will come up with the currency and the tools, and it will be up to the project how to use them.
- Timeline – Larry – after ATM is finished - probably winter, with perhaps a product coming together by spring.

### **Potential team members for pilot**

#### ***Biologists***

**Kim Hastings  
Cindy Hartman  
Someone from DNR  
Dick Aho  
Don Martin**

#### ***Hydrologists***

**Julianne  
Mike Knapp**

#### ***Engineers***

**Bob Gubernick  
Rod Dell'andrea**

**There will be two teams. These will consist of a FS Biologist, Hydrologist, and Engineer, and external people will be added.**

### **Subgroup report – Information Needs *Don Martin, USFS***

Status of 5 previously identified Information Needs:

- 1) Amphibians
  - a. we don't need more info
    - i. in states with threatened or endangered amphibians, they determined culverts were not problems.
    - ii. In many cases, amphibians use streams to move downstream, and go terrestrial to go upstream.
- 2) Seasonal use of habitat in higher gradient streams
  - a. The Hobo Creek project has provided good information
    - i. in what kind of gradients do fish only go upstream as adults .
    - ii. and this project is beginning to yield results.
- 3) Look at real fish in real culverts
  - a. provided can get past funding limitation, can get information we need.
- 4) Verifying assumptions of red-green-gray
  - a. Hobo Creek project
  - b. Buck's proposal to look at fish assemblages above and below culverts
    - i. Buck is still interested in input.
      1. Buck:
        - a. There has been no prior empirical evaluation of abundance below and above red and green culverts

- b. I would also look at whether abundance above culverts correlates with actual measurements we use
  - c. Develop shades of red in the model, tie back into BSI
  - d. See buck for copy of proposal.
  - e. Bill – presented the thought of using the Mitkof sites as possibilities for Buck’s proposal.
    - Mark Hudy has looked at diversity above and below culverts.
- 5) We need to understand importance of small isolated stocks – at what point do culverts impact them?
- a. A discussion between Don and Kim will answer this need.

IN subgroup is now accepting new information needs. **Website will be used as a tool to keep track of IN questions and results.** Send IN’s to Don, Mack, Buck or Dick

**Brief Update on Changes to Red-Green-Gray Matrix: *Bob Gubernick, USFS***  
**Handouts – juvenile fish passage criteria matrix, fish passage evaluation criteria**

- Changes:
  - o Changed bridges, hydraulic designs to green or gray
  - o Changed perch definition from control to surface to avoid false red pipes, especially with backwatered pipes.
  - o Changed natural gradient criteria.
- Mac – both the FS and the State have been independently looking at this and coming up with revisions, and they are in synch, a good cross-check.
- Cindy – where are you going with this now – are you going to re-run?
  - o Bob –we already have – provides statistics.
- Kim – what do we do with gray culverts now?
  - o Bob – run them through fishXing

**Bob will let the group know the updated numbers.**