Appendix E

Description of the Implementation Monitoring Data Base Program

By – Gery Ferguson & Bruce Bingham

Overview

An Oracle database with two front-end applications provides the underlying support to the Plan Compliance Monitoring System. A client server application provides administrator access, and a web interface provides a means for provincial team leaders to directly manage data relating to their own reviews. The database structure is modeled based on the relationships among the Standards and guidelines, project types or activities, and land-use allocations provided in the Record of Decision (ROD).

The field year starts with the Regional implementation monitoring team (RIMT) releasing a data call to provincial team (PIMT) leaders. The PIMT leader then enters all projects which meet the requirements of the data call via the web interface. The RIMT administrator then runs a random sample generator via the client server application to select candidate projects for the current year's review, or over multiple years if needed.

Using the web, the PIMT can view their respective projects and augment the Oracle database with additional details regarding the review. Once the details are entered, the PIMT can generate a hard copy of the appropriate questions for their review. Once the data are collected, the PIMT uses the web interface again to enter their responses and comments directly into the Oracle database. Reports generated from these answers are immediately available to the PIMT for his/her own province. Regional reports are generated by the regional monitoring team and are posted on the monitoring program website: www.reo.gov/monitoring.

Data collected since 1996 has been entered into the system. The database has been designed to support all business objects such as review questions and answers, projects, standards and guidelines , and historical as well as future mappings among these objects. Consequently, the system provides for real-time analysis of compliance from 1996 onward.

The first release of the application is scheduled for mid-summer 2003. For further information regarding the compliance monitoring database application, contact the project manager, Bruce Bingham (assistant Regional monitoring program manager). Phone 503-808-2251; email bbingham@fs.fed.us.

Specifics of Compliance Database
Northwest Forest Plan - Projects Only
Situation Prior to Database Development
• No repository for data storage
      o Pool of projects developed each year
      o No multi-year tracking of questions and relative standards and guidelines
      o No multi-year tracking of projects already monitored
• Many locations for data storage, many keepers of information, many formats of storage
• Hard copy files are not easy to locate
• Results, especially changes to responses not tracked well
• Annual Analysis of results done by hand, into spreadsheets, much time involved
• No analysis over multiple years

Objectives of Database
• Pool of projects developed each year remains in database
• Database has random generator for random project selection
      o Can be stratified by project / activity type
      o Can be stratified by Province or can run on entire area of Plan
• Historical Questionnaires and project tracking

• Questionnaire generation based on project parameters
• Provides repository for responses, including any changes and rationale why
• Provides analytical tool for annual analysis, multi-year analysis

Items Database Cannot Do
• Track accomplishment of projects for entire Plan
• Spatial tracking - by x:y coordinates only for 2003 and beyond, historical information not
  locatable with information provided in questionnaires (1996-2002)
• Accurate treatment acreage figures – early years did not track acres well

Elements of the Database
• Project pool maintained to future years, need only add projects completed since last update,
  includes information on:
        o LUA, project type, treatment type, acres (if provided)
        o Planning province location
• Maintains people records – tracks Review members and affiliation
• Randomly selects projects from pool identified, can be stratified if desired
• Web interface for PIMT access to:
        o Generate questionnaires based on project type, treatment type, location (BLM vs FS),
        LUA, etc. Most N/A questions will not show up in questionnaire.
        o Provide initial responses to questionnaires
        o Print hard copy of initial responses to take to field
        o Provide final PAC responses, immediate storage in database
• Ties questions to standards – can immediately access ROD reference if questions arise on
  interpretation
• Tracks historical questions regardless of question number over the years
• Tracks questions no longer asked and rationale for deletion
• Monitoring review information
        o Responses and comments (both initial & final PAC responses)
        o Review team composition (host unit, PAC members, others)
        o RIMT review of responses
• Analysis of results – canned reports, preparation of Annual reports, multiple years

Other possible uses for Database
• Implementation monitoring for RMPs, LRMPs
• Can set the stage for implementation monitoring at Regional Scale for issues beyond the
  administrative unit level, especially for Forest Plan Revision processes.

Appendix F

**Findings from the Northwest Forest Plan Implementation Monitoring Program
1996-2002**

Draft Report

A description of: the major findings, the significant work that has been done to address the findings, additional recommended actions and supporting documentation/analysis.

Principal Authors:
Candace Dillingham - FS R5 Representative to the Regional Implementation Monitoring Team
Gery Ferguson – FS R6 Representative to the Regional Implementation Monitoring Team
Liang Hsin – BLM OR/WA Representative to the Regional Implementation Monitoring Team

With Assistance from:
Dave Baker - Regional Implementation Monitoring Team Leader

August 2003

Introduction

The overall objective of Implementation Monitoring (IM) is to determine the level of compliance with the Standards and guidelines of the Northwest Forest Plan Record of Decision across 26 administrative units affected by the Plan.

It is important to conduct monitoring in such a way that it builds a relationship of understanding, trust and participation with interested parties such as the Provincial Advisory Committees (PACs).

An additional objective of the Implementation Monitoring program is improvement in both implementation of projects and the monitoring process. The reasons for non-compliance, when these situations occur, can be examined. Any ecological effects may need to be addressed through effectiveness monitoring techniques or elsewhere for analysis. These results should be conveyed to the appropriate staff in the land management agencies to facilitate the adaptive management process. The PACs should be kept aware of any changes in the land management processes resulting from Implementation Monitoring as a means of encouraging and recognizing their involvement in monitoring.

The first two objectives of Implementation Monitoring are accomplished through annual field reviews and reports. In order to fully accomplish the third objective, it is important to periodically assess the findings from annual monitoring reports in aggregate. An individual year yields useful project specific and Northwest Forest Plan (Plan) regional performance information. Examining the accumulated reports from multiple years provides further information on how the monitoring program has performed overall, identifies primary issues of concern and provides recommendations on how the program may be improved. Assessing patterns and trends that have occurred over time provides the context and basis for adjustments to the process. In addition to establishing the feedback loop to the Implementation Monitoring Program, this review will begin forward linkages from Implementation Monitoring to Effectiveness Monitoring and Management. These are essential ingredients for adaptive management.

This document presents the key findings from the Northwest Forest Plan Implementation Monitoring Program for the period 1996-2002. The findings were compiled from the recommendations and conclusions sections of the draft 5 Year Assessment (A), draft 5 Year Strategy (S), draft Action Plan 96-99 (AP), and the 2000, 2001 and 2002 Annual IM Reports. Appendices A - Monitoring Results Summary 1999-2002 and B - Recommendations Summary from Annual Reports are included as support documentation. The findings are categorized as follows: **Findings Where Action Has Occurred Or Is Ongoing; Findings Where Action Is Recommended To Be Undertaken; and Findings Recommended For Deferral To The 04 Interpretive Report Or To Be Addressed Elsewhere.** Each category is further divided into Compliance with Standards and Guidelines and Process Improvement sections with accompanying recommendations or actions taken to address each finding.

Findings Where Action Has Occurred Or Is Ongoing

Compliance with Standards and Guidelines (standards and guidelines)

Findings

1. Information from 1996-2002 reviews indicates that although overall compliance is very high (95%) for the projects that were monitored, field units have encountered difficulty in the interpretation and implementation of the standards and guidelines that relate to the following topics (See Appendices A and B):
   o Coarse Woody Debris (CWD) – Concerns relate to how to apply CWD guidelines for partial harvests, salvage sales, and where CWD is non-existent.
   o Riparian Reserves (RR) – Concerns surround delineation and mapping in various treatment types and for small areas and interpretation between default and site tree buffers.
   o Snags – Issues identified include understanding cavity nesting habitat, and what to do when snags are non-existent or present hazards.
   o Green Tree Retention – Issues are tied to differences between BLM and Forest Service guidance, and how to apply guidelines in thinnings, individual tree harvest, and group selection treatments.
   o Fuel breaks and high risk fuel treatment areas - Difficulties are related to meeting CWD, Green Tree Retention, Aquatic Conservation Strategy (ACS) and snag guidelines.
   o Non-native species - Application of guidelines related to meeting ACS and Late-Successional Reserves (LSR) objectives.
   o Application of programmatic requirements on a project basis – Application of guidelines arising from programmatic Biological Assessments.
   o Campgrounds and roads - Application of guidelines for existing and proposed projects in LSRs and RRs.

   Action taken:
   o Continued collection and compilation of data from the annual monitoring reports used to identify the most frequently occurring areas of concern and where standards and guidelines were not met.
   o Invited LSR Working Group participation in FY2002 & 2003 field reviews
   o Invited S&M participation in FY2003 prescribed fire field reviews
   o Invited Fire Management participation in FY2004 prescribed fire field reviews

2. A Regional Bat Protocol has not been developed. Therefore it is impossible to meet the s&g. (AP, 2000, 2001)

   Action taken:
   o Survey and Manage EIS/ROD page 38 provides new direction.
   o The question covering this s&g has been dropped from the project questionnaire.

Process Improvement

Findings

1. There is the need to continue Implementation Monitoring (A, S, 2001)

   Action taken:

- o The Agency Executives, their representatives on the Monitoring Program Managers Group, field unit managers, et al have repeatedly stated their commitment for the continuation of implementation monitoring.
- o An annual Implementation Monitoring Report has been published from 1996-2002.
- o The annual reports have been distributed to the Monitoring Program Managers Group and to the agency units. They have also been posted on a monitoring web page. (A, AP, 2001)

2. Use agency leaders/PACs input in the identification of activities. (All)

Action taken:
Actions taken in response to annual feedback are listed below:
- o Monitor implemented actions (A, AP, 2000, 2001, and 2002).
  In 2001, a selection criterion was included that required projects had to be implemented rather than merely scheduled or planned.
- o Monitor a broader range of activities and programs (restoration, recreation, grazing, mining, Rx fire)* (A, S, AP, 2000)
  Timber sales   1996-1999, 2001
  Roads   1997, 2001, 2002
  Watersheds   1998 (Pilot year), 1999-2003
  Project and WA combination   2001-2003
  LSR density management   2002-2003
  Other*   1997, 2001-2003

3. Standardize the report format.

Action taken:
- o Development of the report format into recommendations in four categories: management direction, clarification of standards and guidelines, clarification of when standards and guidelines apply, and improvements to the monitoring process.
- o Development of a database program that includes an analytical tool which produces a standardized format. (See response to #5 on the following page).

4. Establish sample locations and schedules earlier in the Fiscal Year. (2000)

Action taken:
- o 1996-2001 - June or later for locations and schedules
- o 2002 - May for locations and June for schedules
- o 2003 - February for locations. Schedules are anticipated by June.
- o 2004 - September 2003 is target for locations. Schedules will follow.

5. Improve database management and analysis (All)

Actions taken:
- o Development of a database management and analytical tool was initiated in 2002 in order to track and analyze the data accumulated from each year's sample projects.

6. Continue to refine the questionnaire, providing better accuracy, ease of use, and as a feedback mechanism to elevate Provincial concerns. (AP, 2000, 2001)

Actions taken:
- o Each year the questions are reviewed by the Regional Implementation Monitoring Team (RIMT) for clarity, accuracy in stating the s&g, and their relevance based upon feedback.
- o Beginning in 1999, direction was provided that allowed respondents to provide a narrative explanation for their responses.

- o Clarification and education has been provided at annual workshops for questions regarding Met/Not Met/Not Applicable responses and standard definitions for terms used in the questionnaires (e.g. decommissioning).
- o Development of the database tool will allow the elimination of the need to view and answer most not-applicable questions.

7. Address ways to minimize monitoring costs. (AP, 2001)

   Actions taken:
   - o Data on costs has been compiled since 1996. The results are reasonably consistent. Costs appear to be reasonable.
   - o Ways to minimize costs of field reviews are discussed at annual workshops.
   - o Development of the database and analytical tools are expected to reduce the costs of data reporting and analysis.

8. Continue the educational/feedback/tech transfer/adaptive management
   component of monitoring. Educational and technology transfer elements of the program provide feedback for adaptive management.

   Actions taken:
   - o Workshops have been conducted annually for Provincial Implementation Monitoring Team leads.
   - o RIMT members have participated in field reviews and provide perspective on the range of interpretations of standards and guidelines.   The RIMT has made a commitment to have a representative at as many field reviews as possible. Since 2001, the RIMT has had a representative at about 75% of the reviews.
   - o In 2002 and 2003, members of the Late-Successional Working Group were invited to participate in reviews where the focus was Density Management Projects. Members were able to clarify s&g interpretations, LSR assessment questions, applicability of standards and guidelines, etc. They were also able to gather information on barriers to density management from the administrative units and regulatory agencies.
   - o In 2003, members of the Survey and Manage group were invited to participate in prescribed fire project reviews to assess the viability of large woody debris.

Findings Where Action Is Recommended To Be Undertaken

Compliance with Standards and Guidelines

Findings

1. Addressing the consistency of interpretation and application of standards and guidelines and the expected allowable range of variations in the Plan region in the local context is considered necessary and provides needed critical leadership guidance to the field to both employees and external constituents.

Recommendation:
Expand the educational/feedback/technological transfer/adaptive management component of monitoring by:

- RIMT invite specific parties to participate on projects where an identified issue, described below, is known to exist. In particular, invite members of the appropriate Effectiveness Monitoring module as well as subject matter specialists. Include discussions on interpretation in local context for such issues as tree size requirements, fire regime, landscape function and stand structure.
- Have subject matter specialists post identified issues and their discussions and resolutions on the monitoring website under these topics:
  - Coarse Woody Debris (possible participants include Northern Spotted Owl (NSO) or Late-Successional Old Growth (LSOG) Effectiveness module leaders or other subject matter specialist(s) yet to be identified)
  - Riparian (RR Effectiveness module lead or other subject matter specialist(s) yet to be identified)
  - Snags (NSO or LSOG Effectiveness module leaders or other subject matter specialist(s) yet to be identified)
  - Green Tree Retention (NSO or LSOG Effectiveness module leader or other subject matter specialist(s) yet to be identified)
  - Fuel breaks and high risk fuel treatment areas. (NSO or LSOG Effectiveness module leader or Fuels Management Specialist or other subject matter specialist(s) yet to be identified)
  - Non-native species introduction. LSR working group member or other subject matter specialist
  - 15% Late-Successional Reserves by 5th field watershed. (NSO or LSOG Effectiveness module leaders or LSR Working Group member or other subject matter specialist(s) yet to be identified)
  - Watershed Assessment contents and usage. (Subject matter specialist(s) yet to be identified)
  - Maps (Regional Ecosystem Office mapping specialist)
  - Application of programmatic requirements on a project basis – Application of guidelines arising from programmatic Biological Assessments. (Subject matter specialist(s) yet to be identified)
  - Meeting ACS and LSR objectives in campgrounds, roads and other facilities in Riparian Reserves and LSRs. (RR or LSOG Effectiveness module leaders or LSR Working Group members or other subject matter specialist(s) yet to be identified including Recreation Managers).

Process Improvement

Findings

1. There is the need of a process for timely responses to repetitive
   findings/recommendations in annual reports and issues raised by the field units.
   In addition, there is the need to identify contacts for questions regarding standards and guidelines
   and to post/identify locations of current direction, memos, etc. (This would also address Adaptive
   Management concerns) (A, S, AP, 2000)

   Recommendation:

   ▪ Have subject matter specialists post responses to identified issue topics (CWD, RR, Green Tree
     Retention, snags, etc.) and contacts on the website in a library for these topics. RIMT refer
     Provincial Implementation Teams to the website during workshops and during project reviews.
   ▪ RIMT add tracking items to the database (identified by Effectiveness Monitoring module Leaders
     and Quality Assurance/Quality Control team members) to quantify and clarify the issues further.
     (frequency, geographical extent).
   ▪ Agencies should consider bringing back the Brain Book concept.

2. Distribution of annual reports below the Forest Service (FS) Supervisors Office and the Bureau of
   Land Management (BLM) District Office level has not reached all interested parties. (A, AP,
   2000)

   Recommendation:
   ▪ National Forests and BLM Districts include findings from Plan Implementation Monitoring projects
     reviews in the FS and BLM annual monitoring reports when a sample project has occurred on a
     Forest or BLM District in that year along with host unit recommendations and follow up. Also
     include a reference to the website address, www.reo.gov\monitoring for the full Plan Monitoring
     Report.

3. Field review team makeup would be strengthened by including the participation of line officers,
   contract administrators, Tribal, non-agency PAC members, and representatives from all signatory
   agencies of the Record of Decision (ROD). (AP, 2000, 2001, 2002)
   Many of the key participants necessary to provide a full discussion and resolution
   of issues are often not present during the review. This can result in an inability to   distinguish
   whether compliance issues are in the interpretation, the design, or the   implementation phase of
   the project. PAC members and regulatory agency reviewers provide the "objective"
   determination of consistency with the Plan. PAC member and regulatory agency participation
   increases the knowledge base, facilitates technology transfer, and builds credibility and trust
   between the regulatory agencies and land management agencies. In addition, PAC members
   communicate with their constituents the results of the review, thus building credibility of the land
   management agencies externally as well. Areas where PIMTs provide a stable link to PAC
   members and where line officers participate seem to have the best participation and resolution.

   Recommendation:

   ▪ RIMT document participants and their affiliations in the database and provide this as
     feedback in the annual reports. Include in the Forest or BLM District annual monitoring report
     when a sample project has occurred on a Forest or District in that year.

- Ask Designated Field Officers (DFOs) to maintain the same PIMTs from year to year i.e. do not change each year or provide for mentoring for new PIMTs.
- Ask DFOs to personally invite the PAC representatives to participate in the field reviews.
- PIMTs should be made aware of the opportunities for reimbursing PAC members.
- Continue to emphasize PAC participation at the annual PIMT workshops.
- Plan Monitoring Program Manager should attend PAC meetings for those provinces where participation has waned.
- Members of the Monitoring Program Managers (especially regulatory agencies) should encourage their field personnel on PACs to attend the reviews.

4. Many units view Plan Implementation Monitoring (IM) as an unfunded and unplanned mandate. (AP, 2001)

Recommendation:
- The RIMT should make data calls and select projects in the fiscal year prior to the one in which the monitoring will occur. Earlier selection will allow field units to include monitoring in their work plan development.
- Land management agency headquarters should also address Plan monitoring in their annual work plan directives to the field offices.

5. There are no reportable units of accomplishment for Plan Implementation Monitoring.   (AP)

Recommendation:
- Forests and BLM Districts should include Plan IM in the FS Monitoring Report and BLM Annual Program Summaries. Some Forests are having difficulty accomplishing their annual reports. This will provide them with a minimum accountable item.
- Agencies should consider establishing Plan monitoring targets and reportable units in their annual work planning process.

Findings Recommended For Deferral to the 04 Interpretive Report Or To Be Addressed Elsewhere (Future Action Items or Out Year Strategy)

Compliance with Standards and Guidelines

Findings

1. Difficulty in interpreting and assessing (pre ROD, implemented, and planned) program/project compliance with meeting ACS and LSR objectives. (A, AP, 2000, 2001)

Recommendation:
- See the recommendation 1 on page 5 of this report. Compliance with ACS objectives for planned projects will be covered by the ACS Strategy Team, but a process to cover existing projects needs to be formulated by the Agencies.

2. Units are complying with the standards and guidelines to identify priority restoration projects in Watershed Analysis, but funding is often not adequate to cover the highest priority projects. Insufficient funding compromises the intent of the s&g. (AP, 2000)

Recommendation:
- The BLM and FS should further investigate this issue and provide a response.

Process Improvement

Findings

1. Strengthen links between IM and Effectiveness and IM and Local Unit monitoring efforts (A, S, 2000, 2001)

Recommendation:
- Look for ways of doing this as part of the future program strategy stemming from the 04 Interpretive Report.

2. Reassess the 1995 IM protocol. (S)

Recommendation:
- This is being handled elsewhere with the assistance of Dr. Craig Palmer. This is now ongoing.

3. Interpretation barriers continue to exist between agencies (e.g. FS, Fish & Wildlife Service, and National Marine Fisheries Service). (2001)

Recommendation:
- Units should refer to Level 1 Consultation teams or provide training/workshop

4. Develop a tracking mechanism for status of recommendations and follow up monitoring.

Recommendation:
- RIMT look at possibility of incorporating into database.

5. Socio-economic monitoring items need to be developed from the goals in the Plan. (2001)

Recommendation/Status:
- The socio-economic monitoring module is handling the development of monitoring needs and questions.

6. Expand QA/QC development.

Recommendation/Status:
- A Quality Assurance/Quality Control (QA/QC) Plan is being developed. It will be completed after the 04 Plan Interpretive Report and will incorporate QA/QC concerns into the development of the sampling stratification and selection of projects.

7. Need to define agency institutional structure for elevation and resolution of issues.

Recommendation/Status:
- A Process is being developed as part of 04 Report for all Monitoring Modules

Appendix A
Monitoring Results Summary Table, 1996-2002 by Land Use Allocation Category
(Met, Not Met, Not Capable, and % compliance)

FY 1996- **Compliance by individual categories identified in the project review questionnaire**

Categories in the Questionnaire	Number of Responses			Percent Compliance**
	Met	**Not Met**	**Not Capable***	
All Land Use Allocations	165	1	0	99
Late Successional Reserves and Managed Late Successional Areas	82	4	0	95
Aquatic Conservation Strategy, watershed analysis, and riparian reserves	211	13	0	94
Matrix	341	19	6	95
Adaptive Management Areas	29	0	0	100
Research	5	0	0	100
Species	53	2	0	96
Total of the 42 projects reviewed	**886**	**39**	**6**	**96**

* Not Capable: Physical site limitations prohibit true compliance or meeting the Standard and Guideline (e.g. – no existing snags or lack of sufficient material for coarse woody debris).

** Percentage Compliance = (number MET + number NOT CAPABLE) / (number MET + number NOT CAPABLE + number NOT MET) x 100%. Responses of MET and NOT CAPABLE were considered to have met the compliance criteria (from a biological perspective) associated with Record of Decision Standards and Guidelines.

FY 1997 **- Compliance by individual categories identified in the project review questionnaire**

Categories in the Questionnaire	Number of Responses			Percent Compliance**
	Met	**Not Met**	**Not Capable***	
All Land Use Allocations	206	0	0	100
Late Successional Reserves and Managed Late Successional Areas	109	2	0	98
Aquatic Conservation Strategy, watershed analysis, and riparian reserves	268	19	0	93
Matrix	144	7	8	96
Adaptive Management Areas	94	4	0	96
Research	7	0	0	100
Species	172	9	11	95
Total of the 39 projects reviewed	**1000**	**41**	**19**	**96**

* Not Capable: Physical site limitations prohibit true compliance or meeting the Standard and Guideline (e.g. – no existing snags or lack of sufficient material for coarse woody debris).

** Percentage Compliance = (number MET + number NOT CAPABLE) / (number MET + number NOT CAPABLE + number NOT MET) x 100%. Responses of MET and NOT CAPABLE were considered to have met the compliance criteria (from a biological perspective) associated with Record of Decision Standards and Guidelines.

FY 1998 **- Compliance by individual categories identified in the project review questionnaire**

Categories in the Questionnaire	Number of Responses			Percent Compliance**
	Met	**Not Met**	**Not Capable***	
All Land Use Allocations	98	3	0	97
Late Successional Reserves and Managed Late Successional Areas	11	6	0	65
Aquatic Conservation Strategy, watershed analysis, and riparian reserves	196	5	0	98
Matrix	160	12	4	93
Adaptive Management Areas	33	0	0	100
Research	3	0	0	100
Species	122	6	11	96
Total of the 24 projects reviewed	**623**	**32**	**15**	**95**

* Not Capable: Physical site limitations prohibit true compliance or meeting the Standard and Guideline (e.g. – no existing snags or lack of sufficient material for coarse woody debris).

** Percentage Compliance = (number MET + number NOT CAPABLE) / (number MET + number NOT CAPABLE + number NOT MET) x 100%. Responses of MET and NOT CAPABLE were considered to have met the compliance criteria (from a biological perspective) associated with Record of Decision Standards and Guidelines.

FY 1999 **- Compliance by individual categories identified in the project review questionnaire**

All Land Use Allocations	81	1	0	99
Late Successional Reserves and Managed Late Successional Areas	61 (69)	3 (3)	0 (0)	95 (96)
Aquatic Conservation Strategy, watershed analysis, and riparian reserves	178	0	0	100
Matrix	154	9	7	95
Adaptive Management Areas	23 (20)	0 (0)	0 (0)	100 (100)
Research	0 (3)	0 (0)	0 (0)	(100)
Species	133	1	15	99
Total of the 24 projects reviewed	**630 (638)**	**14 (14)**	**22 (22)**	**96 (98)**

* Not Capable: Physical site limitations prohibit true compliance or meeting the Standard and Guideline (e.g. – no existing snags or lack of sufficient material for coarse woody debris).

** Percentage Compliance = (number MET + number NOT CAPABLE) / (number MET + number NOT CAPABLE + number NOT MET) x 100%. Responses of MET and NOT CAPABLE were considered to have met the compliance criteria (from a biological perspective) associated with Record of Decision Standards and Guidelines.

FY 2000 – no projects reviewed, only watershed assessments monitored.

FY 2001 - Compliance by individual categories identified in the project review questionnaire

Categories in the Questionnaire	Number of Responses			Percent Compliance**
	Met	Not Met	Not Capable*	
All Land Use Allocations	95	1		99
Late Successional Reserves and Managed Late Successional Areas	85	4		96
Aquatic Conservation Strategy, watershed analysis, and riparian reserves	312	2		99
Matrix	54	2	3	97
Adaptive Management Areas	18	1		95
Research	6			100
Species	28		4	100
Total of the 21 projects reviewed	**598**	**10**	**7**	**98**

* Not Capable: Physical site limitations prohibit true compliance or meeting the Standard and Guideline (e.g. – no existing snags or lack of sufficient material for coarse woody debris).

** Percentage Compliance = (number MET + number NOT CAPABLE) / (number MET + number NOT CAPABLE + number NOT MET) x 100%. Responses of MET and NOT CAPABLE were considered to have met the compliance criteria (from a biological perspective) associated with Record of Decision Standards and Guidelines.

FY 2002 - Compliance by individual categories identified in the project review questionnaire

Categories in the Questionnaire	Number of Responses			Percent Compliance**
	Met	Not Met	Not Capable*	
All Land Use Allocations	135	1	1	99
Late Successional Reserves and Managed Late Successional Areas	275	7	18	98
Aquatic Conservation Strategy, watershed analysis, and riparian reserves	344	6		99
Matrix				N/A
Adaptive Management Areas	4			100
Research	12			100
Species	67	1	15	99
Other Project Questions	28	2		93
Total of the 32 projects reviewed	**865**	**17**	**34**	**98**

* Not Capable: Physical site limitations prohibit true compliance or meeting the Standard and

Guideline (e.g. – no existing snags or lack of sufficient material for coarse woody debris).

** Percentage Compliance = (number MET + number NOT CAPABLE) / (number MET + number NOT CAPABLE + number NOT MET) x 100%. Responses of MET and NOT CAPABLE were considered to have met the compliance criteria (from a biological perspective) associated with Record of Decision Standards and Guidelines.

Appendix B
Recommendations Summary Table from Annual Reports by Categories (1996-2002)

Year							Recommendations	
								Category - Management Direction
96	97	98	99	00	01	02	#	Emphasize direction, training, and information distribution to address the following:
x							1	Provide explicit direction on the need to, and procedures for, accessing information on Survey and Manage species and Protection Buffer species.
x							2	Provide direction, training, and information to clarify identification of small, intermittent waterways and refine direction for Riparian Reserves requirements in areas difficult to identify, or where professional judgment differs.
	x	x					3	Meeting the Riparian Reserves requirements of the ROD and its standards and guidelines .
		x					4	Meeting the Aquatic Conservation Strategy requirements of the ROD and its standards and guides.
	x	x	x				5	Meeting the coarse woody debris requirements of the ROD and its standards and guides (principal FY 1999 finding).
	x	x	x				6	Meeting green tree retention requirements of the ROD and its standards and guides.
x							7	Strengthen compliance with management efforts aimed at controlling non-native species in seed mixtures and mulch.
x							8	Strengthen Forest Service/BLM oversight of purchaser/contractor actions to ensure implementation of standards and guides.
	x	x	x				9	Improved coordination between project planning staff/decision-makers and contract administrators to ensure that planned actions are fully communicated and carried out as on-the-ground implementation.
	x	x	x				10	Meeting the snag requirements of the ROD and its standards and guides.
	x	x	x				11	Distribution of the Regional FY Implementation Monitoring Report to field offices with direction to adopt procedures and recommendations as appropriate.

96	97	98	99	00	01	02	#	Recommendations
x	x	x					12	Evaluate regional timber sale databases for opportunities to improve compatibility, usefulness, and accuracy.
			x				13	Establish if there is a requirement in the ROD to separately evaluate existing roads, mining, recreation and grazing activities or projects in order to determine their consistency with the Aquatic Conservation Strategy Objectives. Must such an analysis of consistency be included in the watershed analysis, or do evaluations for the pre-1994 projects reside outside the watershed analysis? Also, if the latter occurs, how are Aquatic Conservation Strategy consistency evaluations to be supported by the findings of the analysis?

Year								Recommendations
96	97	98	99	00	01	02	#	**Category - Clarification and Improvements to the ROD and its standards and guidelines** A number of standards and guidelines were cited as being ambiguous and difficult to understand and interpret. There is room for improving and clarifying standards and guides to reduce multiple interpretations at the field level, and to increase field unit efficiencies.
x							1	Develop specific Province-level guidance for coarse woody debris, snags, and green tree retention as recommended in the ROD (page C-14).
	x	x	x				2	Hazard tree removal
x							3	Clarify the standards and guides dealing with snag retention in young stands being thinned (ROD, C-46).
	x	x	x				4	Snags (requirement)
x							5	Clarify the application of coarse woody debris standards for small projects and partial harvest and salvage sales, including the opportunity to substitute standing timber when down material is not present at the desired levels, or as a substitute for existing coarse woody debris removed as part of sale volume.
	x	x	x				6	Coarse woody debris (principal FY 1999 finding)

	x	x	x				7	Riparian Reserve establishment for wetlands of less than one acre
	x	x	x				8	How to maintain legacy trees given the constraints of operational needs and safety concerns.
x							9	Clarify green tree retention patch size (ROD, page C-41) differentiating between areas less than and greater than 2.5 acres.
		x	x				10	Resolve differing interpretations of how trees are selected under BLM Green Tree Retention guidelines.
		x	x				11	Appropriate silvicultural treatments in Riparian Reserves
x							12	Clarify what constitute modification of site treatment practices to minimize soil and litter disturbance concerning harvest methods and the use of fire and pesticides (ROD, page D-11).
				x			13	Clarify that recreational activities in Late-Successional Reserves, such as all-terrain vehicles trail systems, be neutral or beneficial to creating and maintaining late-successional habitat (C-17).
				x			14	Clarify the scale (site versus watershed) and time frame (short-term versus long-term) for meeting the ACS objectives.
						x	15	Evaluation and clarification of riparian reserve standards and guides to specifically identify the types of projects and activities for which reserve establishment is or is not necessary.

				Year				Recommendations
96	97	98	99	00	01	02	#	**Category - Clarification of When standards and guides Apply** Some standards and guides are allocation specific, others agency specific and others time specific in terms of applicability. Personnel need clear guidelines on what standards and guides are applicable to specific allocations and when they go into effect.
x							1	Clarify the hierarchy of land use allocations regarding the application of specific standards and guides (e.g., campground salvage in RRs and LSRs).
	x	x	x				2	Provide explicit guidance to the field on meeting standards and guides for actions relating to programmatic versus project requirements.
	x	x	x				3	Provide explicit guidance to field units on how to apply standards and guides for green tree retention, snags, coarse woody debris, and Aquatic Conservation Strategy objectives in areas designated for fuel breaks or risk reduction efforts.

96	97	98	99	00	01	02	#	
		x	x				4	Provide guidance for green tree retention requirements for group selection and individual tree selection.

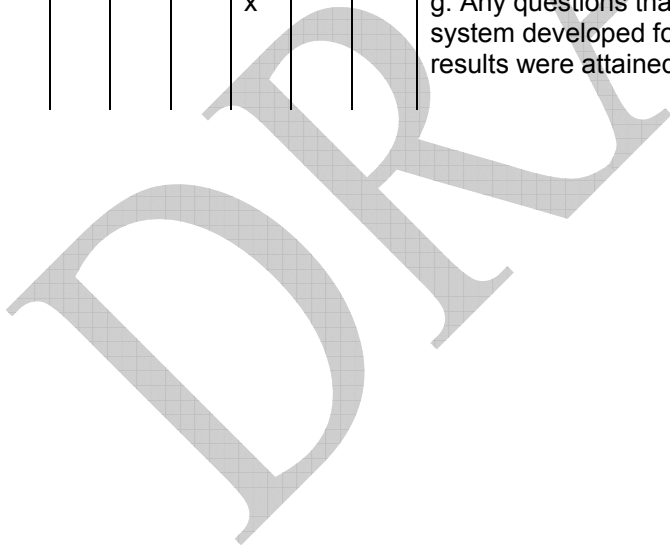|			**Year**					**Recommendations**
96	97	98	99	00	01	02	#	**Category - Improvements to the Monitoring Process**
	x	x	x				1	**Monitoring Objectives** a. Continue project-level reviews of key activities recommended by the PACs. b. Continue to develop implementation monitoring to assess standards and guides that address programmatic functions and planning issues in landscape-level and watershed-level contexts. c. Conduct program-level monitoring such as for roads, grazing, special- use permits, and hazardous fuels treatments. d. Establish monitoring program locations and schedules early in the fiscal year. e. Evaluate need to continue the program based on 5-year results. f. Six years of monitoring have resulted in a reasonable assurance of consistency with the Northwest Forest Plan – Move forward to evaluating whether the goals and objectives of the Northwest Forest Plan are being met from an effectiveness monitoring standpoint. g. Would like to see EAs, WAs and BEs before the field review. h. Develop a tracking system for small Green Tree Retention patches i. Add a mechanism to evaluate the project as it relates to its NEPA document. There were some cases where the project was not implemented as documented yet there was no way to incorporate that into the questionnaire. j. Provide the supporting documents associated with the project to be reviewed. k. One team recommended to develop a watershed condition overview presentation for the Resource Advisory Committees to inform them of relative watershed needs. Encourage the committees to participate in priority-setting. l. Grazing allotment review should have all annual operation permits for the last 5-10 years so problems and their remedies could be tracked.
				x x	x x x x x	x x x x		(a. x x x → 97,98,99) (b. x x x → 97,98,99) (c. x → 00) (d. x → 00) (e. x → 01) (f. x → 01) (g. x → 01) (h. x → 01) (i. x → 01) (j. x → 02) (k. x → 02) (l. x → 02)
x	x	x	x	x			2	**Training and Orientation** a. Continue the one-day, pre-season workshop for PIMT leaders and capitalize on the experiences of past years' leaders. b. Continue to provide more detailed (or to improve) guidance on how to answer questions.
x		x	x					

x	x	x	x					5	**Cost Containment** a. Continue to limit project selection to the highest priorities identified by the PACs, the field units, and the RIEC.
x	x	x	x						b. Continue to address monitoring cost efficiency (e.g., concurrently monitoring timber sales, roads, and restoration projects). Monitoring system should be designed to avoid duplication of efforts.
		x	x						c. Keep cost accounting requirements to those of past years' programs.
	x								d. Do not escalate cost reporting requirements for next year.
					x				e. Be sure that future year funding is adequate to cover all monitoring envisioned in the project plan.
x	x	x	x					6	**Communication** a. Field units need ongoing information sources and contacts for specific applications, changes, updates, guidance, and clarification on the ROD and it's standards and guides (e.g., protocols for Survey and Manage species surveys).
					x				b. USFWS and the Forest has been working together for years to find ways to streamline the consultation process. Even though substantial progress has been made (e.g., a comprehensive programmatic biological assessment), there is room for additional change. The team hopes the two agencies will continue to pursue effective strategies for reducing consultation roadblocks, especially in the case of projects that provide considerable positive environmental effects.

								7	**Follow-Up**
x	x	x	x						a. Agencies should inform field units about specific monitoring concerns so that corrective actions can be taken.
x	x	x	x	x					b. Continue to use (implementation) monitoring as a tool to extend the useful life cycles of BLM and FS land management plans.
				x					c. Implementation monitoring in the same watersheds should be repeated over several years to allow for an evaluation of the full range and scope of activities conducted in priority and other watersheds. Long-term implementation monitoring (versus a one-time evaluation) results will provide project implementation trends in a watershed; this information should be of benefit to future effectiveness and validation monitoring.
					x				d. For some projects a return visit to the completed project would likely be very constructive. Teams from previous years have also expressed this sentiment on other projects. Perhaps some form of standardized process for returning to previously monitored activities could be incorporated into the NFP implementation monitoring program.
					x				e. Revisit coarse woody debris a year or two after the monitoring trip. A common project design features or mitigation measure is the future recruitment of down wood by trees falling sometime in the future. Monitor: did it happen; does the amount of down wood meet standards?
					x				f. The agencies need a long-term look at the down wood requirement. The suggestion was made to the PIEC to select several sales that are 5-7 years old where the plan was to fell trees 3-5 years after logging and see if that work has been completed and if the standard has been met.
					x				g. Any questions that require future monitoring should have a system developed for alerting BLM/FS to go out and see if desired results were attained.

								8	**The Questionnaire**
x	x	x	x	x					a. Continue to refine questionnaires (and final report formats) based on PIMT critiques.
x									b. Modify questions to improve the correspondence of a negative answer indicating noncompliance with the standards and guides.
x	x	x	x						c. Continue to provide opportunities for the PIMTs to identify and help clarify monitoring questions (or the associated standards and guides) that are unclear, ambiguous, or of questionable biological value.
x	x	x	x						d. Continue to improve the annual workshop for PIMTs that is aimed at achieving better question response consistency.
x									e. Require a narrative explanation for all "fails to meet" and "fails-not capable" responses. This narrative should provide an assessment of the extent of the situation and the impact of noncompliance.
x									f. Clarify procedures for responding to questions on timber sales using multiple silvicultural methods (e.g., thinning and regeneration units in the same sale).
x									g. Provide a mechanism for the PIMTs to identify questions for which the team did not reach consensus on response.
x									h. For groups of questions pertaining to specific land allocations or topics, an introductory question would help frame the entire set and make the list seem less daunting.
x									i. Consider the inclusion of capstone question as to whether the project met overall compliance requirements of the ROD and its standards and guides.
					x				j. Add monitoring questions related to funding of restoration projects on National Forests and BLM Districts.
					x				k. Modify monitoring questions for activities in Late-Successional Reserves so they address whether the activity is neutral or beneficial to creating and maintaining late-successional habitat.
						x			l. There is a noticeable lack of socio-economic monitoring in the questionnaires. The questionnaires do a great job of monitoring the biological and ecological components of the Northwest Forest Plan, however, there is a need to focus on socio-economic objectives in the Plan also.
						x	x		m. The number of questions on the forms was somewhat cumbersome and a little frustration. The number of questions where the appropriate response was "Not Applicable" is evidence of the process frustrations.
						x	x		n. The monitoring questions should be clearer. Don't bother to ask ambiguous questions!
							x		o. Application of the biological opinion question to projects covered by a programmatic biological assessment required clarification.
									(In the 2002 report it recommended to review and reword project questions 68, and 105, and watershed questions 6a, 6b, 6c and 8b.)

							9	**Information Management**
				x				a. Develop an electronic questionnaire to simplify data compilation.
				x				b. Develop a process to track the status of past and future "Recommendations" from annual implementation monitoring reports.
				x				c. Increase and improve distribution of yearly implementation monitoring reports.
				x				d. Post all Final implementation monitoring reports to the implementation monitoring web site.

Appendix G

**NORTHWEST FOREST PLAN
IMPLEMENTATION MONITORING PROGRAM REVIEW**

**May 07 – 08, 2003
Portland, OR**

**Final Review Report
July 1, 2003**

**Prepared by:
Dave Baker, Tim Tolle and Craig Palmer**

Panel Members

Name	Unit	Position
Jim Alegria	BLM OR/WA State Office	Biometrician
Greg Alward	FS WO Inventory & Monitoring Institute	Assistant Director
Jim Fenwood	FS R-5 Mendicino NF	Forest Supervisor
Andy Leach	FS WO Inventory & Monitoring Institute	Statistician
Sue Richardson	BLM Coos Bay Dist.	District Manager
Randy Shepard	FS R-6 Okanogan NF	District Ranger
Craig Tuss	FWS R-1 SW OR	Field Supervisor
Denise Wickwar	FS WO Inventory & Monitoring Institute	Design & Quality Assurance Specialist

Presenters

Name	Unit	Position
Dave Baker	BLM Oregon State Office	Plan IM Module Lead
Gery Ferguson	FS R-6 Deschutes NF	Planner and Regional IM Team member
Liang Hsin	BLM OR State Office	Silviculturalist and Regional IM Team member
Gina Lampman	FS R-4 Regional Office	PACFISH and INFISH Coordinator
Mario Mamone	FWS R-1 Regional Office	Fish & Wildlife Biologist and Regional IM Team member
Jon Martin	US FS R-6 Regional Office	Plan Monitoring Program Lead
Peggy O'Connell	FS R-5 Eldorado NF	Lead Ecologist Sierra Nevada Project
Craig Palmer	University of Nevada Las Vegas	Consultant to Plan Regional Monitoring Program
Tim Tolle	US FS R-6 Regional Office	Ecosystem Coordinator and workshop facilitator

Other Participants

Name	Unit	Position
Bruce Bingham	FS R-6 Regional Office	Assistant Regional Monitoring Program Manager
Bob Gunther	BLM Coos Bay Dist.	Resource Management Specialist & SW OR Provincial IM Team Lead
Terry Johnson	BLM OR State Office	Research and Monitoring Lead
Jodi Leingang	FS R-6 Okanogan NF	Botanist and E WA Cascades & Yakima Provincial IM Team Lead
Barry Mulder	FWS R-1 Regional Office	Chief of Forest Resources
Paul Norman	FS R-6 Mount Hood NF	Special Forest Products Forester and Willamette Provincial IM Team Lead
John Roland	FS R-6 Gifford Pinchot NF	Forest Planner and SW WA Provincial IM Team Lead

EXECUTIVE SUMMARY

This workshop reviewed the status of the Northwest Forest Plan (Plan) Implementation Monitoring Program. Issues were described and recommendations offered. The main themes included:

- o Review of program objectives
- o Establishing priorities of work for the next 5 years
- o Encouraging both public participation and multiple agency participation
- o Review of issues about sampling, statistical conclusions one can reach and objectivity of project selection
- o Monitoring of current issues versus all projects and relating these to time continuity.
- o Closing the loop from what is learned, reported and recommended into action
- o Increasing the utility of Implementation Monitoring
- o Implementation Monitoring chapter for the 2004 Interpretive Report

The key recommendations of the panel are that a new five-year monitoring strategy be developed for the Implementation Monitoring program. The sampling design for this strategy should include proportional, random and purposive sampling. Patterns in noncompliance with Standards and guidelines need to be studied in more detail and a mechanism developed to ensure feedback to management. Steps need to be taken to encourage continued involvement of the public and other agencies in Implementation Monitoring.

Introduction

Type of Review

This workshop reviewed the status of the Northwest Forest Plan (Plan) Implementation Monitoring Program. The workshop took place in Portland Oregon on May 7th – 8th, 2003. See attached agenda. The
review team consisted of: a panel of four managers and four statisticians; nine presenters and seven other participants (See above tables).

Need for Review

Plan Implementation Monitoring has been conducted on public lands administered by the BLM and Forest Service each year since 1996. The monitoring focused on determining compliance with the Standards and Guidelines found in the Plan Record of Decision. The information gathered through the 2003 monitoring effort and this review will be used three ways: (1) to develop an Implementation Monitoring chapter for the 2004 Plan Interpretive Report; (2) to establish the program direction for the five year period 2005-2009; and (3) to lead to the development of a long-term monitoring strategy as detailed in a peer-reviewed General Technical Report for Implementation Monitoring after the 2004 report.

Objectives of the Review

Develop the best message we can with the available information for the 2004 Plan Interpretive Report by:

    1. conducting a review of our data analysis procedures (those used in past implementation monitoring annual reports)

identifying other ways to examine our data for the 04 report

    2. Develop options for the future direction of the implementation monitoring program by:

        a. identifying potential objectives for consideration by management

        b. reviewing implications of these objectives to the development of monitoring designs

    3. Review of existing protocol and setting the stage for protocol revision and/or development leading to the publication of a General Technical Report or similar such documentation.

Review Approach

The approach included the use of review materials, presentations and dialogue with people involved in the Plan Implementation program as well as representatives from two monitoring efforts outside the Plan area.

FINDINGS AND RECOMMENDATIONS

The findings and recommendations of the peer-review panel have been grouped into eight different themes. It is recognized that there is some overlap between these themes and that several recommendations are repeated across themes.

Review of program objectives

The panel agrees with the overall objective of Implementation Monitoring i.e. determining the level of compliance with the Standards and guidelines of the Northwest Forest Plan Record of Decision across the 26 administrative units affected by the Plan.

They also agreed with the importance of conducting monitoring in such a way that it builds a relationship of understanding, trust and participation with interested parties such as the Provincial Advisory Committees (PAC's). They expressed concern regarding the apparent decrease in involvement of PAC's in reviews in some provinces in recent years.

The panel recommended that an additional objective of the Implementation Monitoring program should be to determine the reasons for noncompliance when these situations occur. The associated risks of noncompliance should also be identified. These results should be conveyed to the appropriate staff in the land management agencies to facilitate the adaptive management process. The PAC's should be kept aware of any changes in the land management processes resulting from Implementation Monitoring as a means of encouraging and recognizing their involvement in monitoring.

I.   Establishing priorities of work for the next 5 years

The panel noted that the categories of projects selected for monitoring changes from year to year. There does not appear to be a long-term strategy in place for determining a focus for monitoring each year.

The panel recommends that a five year monitoring design and strategy be developed. This strategy should meet overall program objectives of identifying the level of compliance with Standards and guidelines as well as determining the reasons of the noncompliance situations.

II. Encouraging both public participation and multiple agency participation

The panel identified that the involvement of the public as well as other agencies (e.g. FWS, NOAA Fisheries, EPA, etc.) in Implementation Monitoring reviews is very important. Unless steps are taken to encourage their involvement, participation from these entities is likely to continue to erode.

The panel recommended that several steps be taken to encourage continued participation by the public and other agencies. Examples include the substitution of office meetings by PAC's with an Implementation Monitoring field review. PAC chairs should personally encourage PAC member participation. A communication strategy should be developed to solicit input and provide feedback to PAC members including participants from other agencies. The feedback should identify how their comments have been used in the Implementation Monitoring process. Monitoring reviews should be scheduled well in advance to encourage participation.

III. Review of issues about sampling, statistical conclusions one can reach and objectivity of project selection

The panel concluded that the current sampling scheme with the randomized selection of projects in provinces provides for an objective and unbiased sample. However, inferences about the entire population of projects across the region cannot be made with the current sampling scheme. In addition, changes from year-to-year (trend information) cannot be identified with the current sampling scheme.

The panel recommends that a new sampling scheme be developed with the assistance of statisticians. The sampling scheme should be based on a five-year design and include proportional, random and purposeful sampling if budgetary and time constraints allow (see Appendix IV). The importance of including purposeful sampling is to allow a focus on a pattern of projects that have been shown to be non-compliant in some important areas.

IV. Monitoring of current issues versus all projects and relating these to time continuity.

The panel noted that the categories selected for monitoring each year tend to reflect management issue that can be transitory (issue of the day) by nature. As a result, certain project categories might be under-sampled and others over-sampled relative to the overall pool of ongoing projects in a given province.

The panel again recommends the development of a five-year plan for monitoring with the inclusion of purposive sampling to address the need to address priority issues or follow up to non-compliance. The five-year design should also attempt to anticipate current issues and incorporate them into the sample.

V. Closing the loop from what is learned, reported and recommended into action

The panel noted that there is no apparent feedback loop whereby key Implementation Monitoring results can be handed off to the appropriate individuals for further action.   There does not appear to be a mechanism to answer the question "so what?' regarding the monitoring results as well as suggest what managers might need to do differently.

The panel recommends that the Implementation Monitoring program make a concerted effort to identify recurrent issues where agencies are not following the Standards and guidelines and to establish a process to determine who should address the relative importance of these issues. Also, the reasons behind the lack of compliance need to be explored and then to report them to the appropriate decision makers.

VI.   Increasing the utility of Implementation Monitoring

The panel noted the importance of collecting high quality data that is adequately documented and quality assured.

The panel was pleased to learn that the Implementation Monitoring program is making a concerted effort to develop a database that can be used for monitoring planning and reporting. They were also supportive of the development of a quality assurance program for Implementation Monitoring. This program should include training of field review teams in addition to other customary quality assurance procedures. The panel also recommends better integration in the future of the implementation and effectiveness monitoring programs for increased efficiencies and decreased costs.

VII.   Implementation Monitoring chapter for the 2004 Interpretive Report

The panel determined that the proposal to provide an overall review of Northwest Forest Plan accomplishments in the Implementation Monitoring chapter of the 2004 Interpretive Report was not appropriate.

The panel recommended that a separate report be prepared to review activities and that the focus of the Implementation Monitoring chapter be restricted to monitoring results. The chapter should disclose the limitations and applicability of the results that are a consequence of the sampling design. The number of projects reviewed in each category should be indicated. The chapter should include recommendations for improvements to the Implementation Monitoring process. No reporting should be done at a province level.

Appendices

Appendix I. - Themes with Initial Feedback, Implementation Monitoring Group Advice, and Panel Comments and Recommendations

o   *Revisit of program objectives or purposes of Implementation (Compliance) Monitoring*

The workshop attendees agreed with the following points describing program objectives:

1. Are we complying with the Standards and guidelines of the Northwest Forest Plan across 26 administrative units?
2. Relationship building through understanding, participation and trust
3. Improvement of implementation monitoring
      Necessary to help understand effects
      If not, why not

So what-risk assessment

- o *Establishing priorities of work for the next 5 years*

Initial feedback from participants following the presentations described in the agenda:
1. Need strategy/process to determine focus for monitoring each year
    a. Five year horizon
2. Risk assessment
    a. Highest priority
    b. Risk of errors
    c. Cost of errors
3. Identify and follow-up where problems occur
4. Look at people v. looking at projects
5. Training and orientation of teams
    a. Standards and procedures
    b. QA/QC
    c. Improve reliability
6. Revisiting of projects that were non-compliant → feedback element
    a. Analyze and assess

Implementation Monitoring Group Comments/Advice:
1. Long term strategy
    a. Can we stick to a long-term plan?
    b. Should we change focus each year or should we meet statistical sampling needs
    c. Limit scope of implementation monitoring; not include effectiveness?
    d. Clear mission
        1) Need to know when we have done a good job
        2) Need clear objectives from management of what they want from IM
        3) Need to know what to do in the realm of Quality Assurance and Quality Control for management to feel comfortable

Panel Comments/Recommendations:
1. Mechanisms
    a. Review non-compliant
    b. Ask PAC about issues to monitor
2. Ask Public
3. Shift to "why are we not doing some specific standard?"

- o *Encouraging both public participation and multiple agency participation*

Initial feedback session:
1. Need involvement of other agencies, e.g., FWS, NOAA fisheries need to stay involved; need to encourage this

Joint Implementation Monitoring Group Comments/Advice and Panel Comments/Recommendations:
1. Participation: encourage
    a. PAC focus
    b. Ask PAC to help broaden participation
    c. Encourage substitution of a monitoring (field) trip for an office meeting. Optional
    d. Ask PAC for issues they want to monitor
    e. Schedule trips well in advance
    f. Provide feedback to PAC

  g. Develop communication strategy for/with PACs
  h. Maintain core of participating agencies
  i. Encourage NOAA fisheries, who are understaffed
  j. Participation (Craig Tuss)
    i. Inference
    ii. ?
    iii. feedback
  k. How to maintain or generate interest?
    i. Regular PAC meeting on IM
    ii. But, interest more in the Plan than in implementing the Plan
  l. Policy calls → frustration: screen
  m. Implemented activities
  n. Feedback to PACs – use their comments; show them how their comments were used
  o. Understanding – training
  p. Broader audience?
    i. E/.g., RAC funded projects (idea voted down)
  q. Worry: continued erosion of agency collaboration
  r. Watershed councils?
  s. May vary by Province
  t. Inform
    i. Web-based
    ii. Feedback
    iii. Familiarize

o *Issues about sampling, statistical conclusions one can reach and about objectivity of project selection*

Initial feedback session:
1. Method to compare year to year; i.e., a sampling strategy year to year
2. Does statistical design meet our needs? Goal → unbiased estimate of compliance
3. Define success: is 95% or 100% mean a successful project?
4. Tolerance to responses, for example, 80% met
  a. Met←> not met

Implementation Monitoring Group Comments/Advice:
1. Sample size
  a. Too few projects from which to select
    1. Lack of budget
    2. Maintaining involvement of other PAC members with low activity levels
  b. Statistically valid sample
    1. Do managers want to be able to extrapolate to region? For example, in 1996 statistically sound, but two provinces not sampled; in 1998 balanced work load, but not sound
    2. Can we say, "timber sale program is 95% compliant"?

Panel Comments/Recommendations:
1. Concern about the balance of participation and statistical inference, especially of objective selection of projects
2. Concern about the balance of issue driven and objective selection
3. Methods

      a.   Proportion sampling, use a five year design strategy
      b. Purposeful sampling
      c.   Random sampling
4. Look in places where problem exists, or could
      a.   Spatially explicit data for projects
5. Statistical write up

Current work has been completed to address the question "Are we doing what we said we'd do?" A paradigm shift might be beneficial to answer the following question, "Why aren't we doing what we said we'd do?" in addition to the primary question. This would give more meaning to the IM program.

Issues regarding current paradigm

- Current sampling scheme to good because it is objective and there are no pre-conceived biases.
- However, we cannot make inferences about entire population. This could be accomplished with some adjustments to the sampling scheme (this change would not be major).
- Another thing that is not currently being done is tracking year-to-year changes i.e. "are we getting better?" Answering this kind of question would require developing a "coherent" sampling plan that would include all activities.

Issues regarding alternative paradigm

- The answers to the new question are qualitative in nature.
- Because answers are qualitative, inferences about the entire population are of less interest than they might otherwise be.
- We should use a purposive sample that only focuses on "problem projects, because we are interested mainly in projects that were not compliant."
- Currently the answers to this question are not making their way to the people in the position to make the appropriate "fix" (whether it be to standards and guidelines or practices in the field).
- Risk/cost analysis would help determine which "problem projects" to target.

Further discussion is needed to resolve details (for either paradigm choice). A group including Jim Alegria and people from IMI (Andy Leach among others) would be a good start and would report to Dave Baker and/or Jon Martin.

o   *Monitoring issues verses all projects and relating these to time continuity*

Implementation Monitoring Group Comments/Advice:
1. Pool of projects
      a. Can we compile a complete list of projects or activities?
      b. Need a complete list, not a "massaged" list
      c. Plan-wide database to track accomplishments needed
      d. If we limit how far back in time we go each year for selection pool of projects, we limit the pool size. Which do we want?
      e. CWD is a tricky issue, but last two years we focused on LSRs, therefore we did not deal with this issue.

Panel Comments/Recommendations:
1. Purposeful monitoring → what? Why?
      a.   Supplement sample: issue based

o   *Closing the loop from what is learned, reported and recommended into action*

   Initial feedback session:
   1. Feedback link: are we monitoring the right things?
   2. Address the 'so what' question
      a. meaning of data
      b. what managers need to do differently
   3. Feedback loop – same concerns keep coming up year after year
   4. Expectations of IM team
      a. On how to present to public
      b. On how to package data
   5. Revisiting of projects that were non-compliant to analyze and assess

   Implementation Monitoring Group Comments/Advice:
   1. Feedback
      a. To whom to hand off issues identified by IM?
      b. Need a process to 'close the loop' for 'not mets'
      c. Separate procedural questions from those that can have biological effect(s)
      d. Work on consistent problems identified by IM, e.g., CWD, green tree retention, riparian reserve widths, snag retention

   Panel Comments/Recommendations:
   1. Concern about feedback to 'decision makers'
   2. Feedback to appropriate audiences after assessing the risks involved
   3. Take preliminary findings to PACs in 2004

o   *Increasing the utility of Implementation Monitoring*

   Initial feedback session:
   1. Link implementation to validation to effectiveness
   2. Spatial tracking of monitored projects
   3. Corporate approach to data
      a. Metadata
      b. Definitions
   4. OMB quality of information guidelines

   Panel Comments/Recommendations:
   1. One year lead time for project selection helps efficiency
   2. Include QA/QC procedures

o   *2004 Interpretive Report*

   Initial feedback session:
   1. Activities to separate report
   2. Discussion in 2004 report of implication of IM to Plan

   Implementation Monitoring Group Comments/Advice:
   1. No reporting by province
   2. Disclose limitations of results
      a. for example, down wood not based on objective measurements
      b. Display basis for numbers, e.g., number of grazing projects reviewed

c. Clearly identify original intent
3. Complete of more focused analysis of "not mets"
4. Recommendations for follow-up actions
a. process to ensure recommendations are acted on

Appendix II. Implementation Monitoring Protocol/Direction Review Workshop

Objectives of Workshop:

1. Develop the best message we can with the information we have for the "2004 Northwest Forest Plan Regional Monitoring Interpretive Report" ('04 report) by:
a. conducting a review of our data analysis procedures (those used in past implementation monitoring annual reports)
b. identifying other ways to examine our data for the '04 report

2. Develop options for the future direction of the implementation monitoring program by:
a. identifying potential objectives for consideration by management
b. reviewing implications of these objectives to the development of monitoring designs

3. Review of existing protocol and setting the stage for protocol revision and/or development leading to the publication of a General Technical Report.

Dates: **May 7-8** (1 ½ day workshop)
(Report from the panel expected by June 30)

Location: US Fish and Wildlife Service, 911 NE 11th Avenue, Portland, OR
Conference Room C

Participants: Overall Program Regional Monitoring Team (RMT)
Regional Implementation Monitoring Team
Provincial Implementation Monitoring Team Leaders
Representatives of other Implementation Monitoring Programs
Reviewers (Statisticians* and Managers** – total of 8)
*USDA Inventory and Monitoring Institute Fort Collins, CO, - Denise Wickwar, Andy Leach, and Greg Alward, OR State Office BLM - Jim Alegria
**Eastern WA FS Naches District Ranger – Randy Shepard, W. OR BLM Coos Bay District Mgr. – Sue Richardson, USFWS Region One – Craig Tuss, and CA FS R-5 Mendicino Forest Supervisor – James Fenwood.

Agenda

Afternoon – Day 1 (May 7)

Objective: Review progress-to-date with data analysis by the Implementation Monitoring module

Part 1: Overview (1:00 p.m. – 4 p.m.)

1) Introductions
2) Development of original monitoring plan and draft GTR   (Tim Tolle)
3) Program Course (Dave Baker)
4) IM database (Tim Tolle & Gery Ferguson)
5) Interpretive Report
   - Overall Document (Jon Martin)
   - Implementation Monitoring Chapter (Dr. Craig Palmer)

Part 2: Presentation of data analysis procedures

6) Monitoring results: 1996-1998 (Liang Hsin)

Coffee Break (3:00-3:15 p.m.)

7) Monitoring results: 1999-2001 (Mario Mamone)
8) Monitoring results and plans: 2002-2003 (Gery Ferguson)

Part 3: Peer Review (Day 1: 4 – 5 p.m and Day 2: morning)

Objectives: Discuss strengths and weaknesses of data analysis procedures used.
Identify other approaches for analyzing the data.

1) Preliminary comments on afternoon presentations (Panel)
2) Implementation Monitoring in other regions
   a. Interior Basin (Gina Lampman)
   b. Sierra Nevada (Peggy O'Connell)

Evening Day 1 : No Host Dinner

Morning – Day 2 (May 8) Begin at 8:15 AM

3) Breakout groups
   a. Statisticians and managers to complete recommendations
   b. Other Participants to discuss possible modifications to program objectives

Coffee Break (9:45 a.m. – 10:00 a.m.)

4) Presentation of peer review panel comments
5) Discussion

Lunch (11:30 – 12:45)

Part 4: Development of Future Options (1 – 3 p.m.)

Objectives: Identify potential changes to the Implementation Monitoring Program for consideration by
management
Discuss implications of these options to the monitoring design

1) Presentation of participant breakout group discussion of possible modifications to module objectives
2) Discussion with peer review panel
3) Conclusions and summary

Adjourn (3 p.m.)

Appendix III. Background Information

A 54 page document entitled "Background Information for Implementation Monitoring - Northwest Forest Plan Peer Review Workshop- May 7-8, 2003, Portland, Oregon" is available upon request from Craig Palmer (email: palmerc@unlv.edu).

APPENDIX IV. POSSIBLE SAMPLING DESIGN

The suggested sampling design would have a five-year scope. In a five-year period, a select set of issues/projects could be emphasized as long as they are consistently measured throughout the five-year period. For example, suppose the project categories A, B, C, and D need to be emphasizes in the five-year period where A is the most important project category and D is the least important. The sample design would require that 50% of observations come from category A, 20% of observations from category B, 20% of observations to come from category C, and 10% of observations come from category D. This enables inferences to be made about selected projected types at the end of the five-year period.

The proposed sampling scheme would be a spatially balanced design to select watersheds for monitoring. This would ensure that each of the provinces contains a representative sample and that selected watersheds are not clumped together. One method of generating such a sample is the Generalized Random Tessellation Stratified (GRTS) Design (Don L. Stevens, Oregon State University and Anthony R. Olsen, EPA). A spatially balanced design would be used to select watersheds with two or more projects of the same project category such that the observed watersheds are spread out spatially across the entire PNW and that their numbers reflect the emphasis placed on certain types of issues/projects. For each randomly selected watershed, two projects of the same category contained in that watershed would be randomly selected for monitoring. Although the sample size for any given year may not be large enough to make inferences about all projects in the PNW for that year, or all projects pertaining to a certain issue for that year, the sample sizes will be large enough to make these types of inferences for the entire five-year period.

In addition to the spatially balanced design that incorporates emphasis on issues/projects of interest, purposive sampling could be used to examine projects that are known to be problematic. Although this subset of data would not be used to make inferences about the five-year period, it would provide information about problem areas that could aid in solving noncompliance issues.

Appendix H

Sample Design for Implementation Monitoring of the Plan
Jim Alegria

Background

Implementation monitoring of the Northwest Forest Plan evaluates whether the agencies are 'doing what they said they would do'. There are standards and guidelines for specific projects that must be taken into account prior to any actions, plans such as watershed analysis and Late-successional Reserves that must be written and updated as well as over-sight responsibilities that should be conducted. Implementation monitoring is a means of reviewing whether these activities were actually accomplished.

For this document, a project, plan or the oversight responsibility at a specific level of the organization, such as Regional/State office or Regional Ecosystem Office is considered one activity. Each activity may be comprised of numerous standard & guidelines by which the activity is evaluated. The population is the collection of all activities in the Plan area over a five-year period.

The Plan area is divided into 12 physiographic provinces. The physiographic provinces are a "geographic area having a similar set of biophysical characteristics and processes due to effects of climate and geology which result in patterns of soils and broad-scale plant communities" (FEMAT). While physiographic provinces have no direct relationship with activities, there is an interagency infrastructure that is the basis for organizing teams of reviewers to assess implementation monitoring.

General Constraints for all Options

- There are numerous types of activities and limited funds available to review them. It is anticipated that the number of activities to review will be approximately 24 per year for five years. The 24 samples per year across all types of activities will influence the design proposals.

- It is desirable to distribute the samples spatially across the landscape.

- All activities are not considered equally important. This translates into a probability of selection that is not equal across all activities.

- There are numerous types of activities. This coupled with the sample size constraint above, encourages the grouping of activities. The rationale for the grouping is not statistical but depends upon logical assembly of activity types and the sensitivity of the activity types to the public. The sample design will focus on sampling activity groups and not activity types. Having activity groups also allows the number of target samples to vary by group. This allows more flexibility to concentrate on higher profile groups while still drawing samples from the range of activities.

- There is no complete listing of all activities across the Plan. At the present time, only very few activities are routinely reported in a consistent form to the regional offices. The proposals will assume no complete list of activities.

- There must be a clear understanding as to which year an activity is available to sampling. Normally, it is for the year that the activity is completed. If the activity spans multiple years, and is composed of many sub-activities, then the activity is subject to sample on multiple years but only those completed sub-activities in the past year would be reviewed. These sub-activities form an 'activity-year'. For the sake of brevity, both activities and activity-year will be referred to as just 'activities'. The objective is to include an activity or sub-activity only once in the sample pool. In the situation of sampling complicated multi-year activities, the sample unit is defined as the activity-year.

Population

The sampling unit is the activity or the 'activity-year'. The population is defined as the collection of all completed activities with the Plan area across 5 years. Conceptually, the population can be seen as either the collection of all activities across 5 years regardless of groups, or the sum of several sub-populations with each sub-population corresponding to one group and all the activities in the groups. The preferred concept is to treat each year as a sub-population for reasons that will be apparent in the *Sampling Frame* discussion.

Sampling Frame

Federal lands can be divided into geographic entities. A geographic entity is a region that can be defined consistently across the Plan area such as administrative units, fifth-field, or sixth-field watersheds. Those geographic entities that intersect the federal lands will define as being "potentially in" the sampling frame, regardless of the amount of federal land in the entity.

The administrative unit(s) managing the selected geographic entities will be asked to provide a complete list of activities in the selected group(s). This method restricts the inconvenience to the field only to those administrative unit(s) that has been selected to review. Any geographic entity that does not contain an element from the target population is not considered in the sampling frame. This means that each group may have a different sampling frame and can be sampled with varying intensities.

The implications of the above bullets acknowledges that geographic entities cannot be selected in year one and used through the five years while still maintaining approximately equal sample sizes across years because a geographic entity may not have activities for each of the five years.

Sample Design

Common to all proposals are design characteristics that are recommended in any option. These common characteristics are described below and they should be carefully reviewed since they have significant impact on the final design.

Common to all proposals:

The number of standard & guidelines is constant for a type of activity but there are different number of standard & guidelines reviewed across types of activities in a group. For any given activity, there are several types of response categories: compliance; non-compliance; not applicable; and not capable. It is assumed that all activities are of equal importance and contribute equally to the results. This translates into treating the activity as the sample unit and the response variable as multinomial with any category being treated as a proportion. There is another option that would weight the results by the number of standard & guidelines evaluated for each activity. Activity types with large number of standards and guidelines influence the results.

The number of activities will vary from zero to many in any geographic entity. The proposal is to select two activities from the same group with equal probability of selection. Two activities would ensure a in cluster estimate of variability. If there is only one activity in the selected group, then that

activity is reviewed. If no activities are in the geographic entity, then that entity is not part of the sampling frame and another entity should be selected to sample.

Another constraint is the desire to distribute the reviews across the geographic area. There is a concern that a completely random selection of geographic entities could have a substantial impact on a physiographic provincial team due to random chance. Another reason to distribute the reviews is to maintain the sense of engagement of the provincial teams to the monitoring process. The distribution of the sampling could be done by using provinces as strata but this would cause increased analytical complexity and sampling inefficiency. The number of geographic entities vary widely across provinces thereby decreasing sampling efficiency by selecting two entities from each of the 12 provinces. One method that spreads the samples across the landscape without stratification is using the spatially balanced design developed by Stevens and Olsen (citation) that generates a list of samples that are spatially balanced regardless where one stops on the list. This last point can be invaluable if the number of geographic entities are not clearly known a priori as in the case of a budget shortfall or if the geographic entity has no activity to review. In the latter case, the entity is not part of the population so one simply includes the next entity in the sample list as part of the sample and the design remains spatially balanced. While this method will distribute the samples across the landscape, provinces with more geographic entities will have more samples than another province with few entities. Selecting entities from the entire NW Forest Planning area will also simplify intensifying the sampling for use at the administrative unit level to meet local monitoring needs.

Since the geographic entities may vary from one year to another, any design should incorporate stratification by year as a flexible approach that could be used to interim estimates on compliance before the end of the five-year period. Stratification by year would also be more efficient than no stratification if the number of activities vary by year, say due to budget fluctuations.

The concept of having a separate frame for each group can be integrated with the spatially balanced design. Since the geographic entities are arranged in random spatially balanced list, the first entries in the list can be used as selected samples for multiple groups. One could proceed down the list until the number of targeted samples are met for each group.

Options for Activity Group:

Sampling all Groups every year: Groups could be sampled in each of the five years. This would be the most straightforward option from a sample design perspective and afford the most flexibility. Results across all groups could be assessed for each year or a rolling average across multiple years. The downside is that the provincial teams would need to be briefed on the standards and guidelines each year for all groups. Since these review teams frequently contain personnel from non-land management agencies or non-governmental groups, they would need significant amount of briefing prior to beginning the review. For any given group, it is a stratified two-stage design where years are the strata, and the geographic entity is the first stage with activities composing the second stage.

Sampling a subset of the Groups in any year: Another option would be not to sample all groups each year. For each group, randomly select at least two years in which that group would be reviewed. This would be a three-stage design with years as the first stage, geographic entity as the second and individual activities as the third stage. This option increases the complexity and is not as statistically efficient as sampling all groups every year but it is easier to implement with less training per review group.

Options for Sample Design:

Adopting the Sampling Protocol of the Aquatic Riparian Effectiveness Monitoring Plan (AREMP)

This protocol is a rotating sample design with years as panels and six-field hydrological units as the geographic entity. Some of the ramifications of adopting this design is:

Pros:

- Assumes that Aquatic Conservation Strategy (ACS) is a key module and that there are benefits to review projects in the same geographic area as conducting aquatic-riparian monitoring.
- Watersheds have already been selected thereby decreasing planning time and costs.

Cons:

- Due to the direct relationship between the amount of federal lands in a watershed and the ability to influence ACS objectives, watersheds with less than 25% federal ownership were excluded from the sampling population. So either the implementation monitoring results must be restricted to watersheds with at least 25% federal ownerships or the watersheds must be grouped (stratified) into less than 25 percent and greater than or equal to 25 federal ownership and ensure that watersheds are sampled from each group.

General observations:

- Under the AREMP protocols, 50 six-field watersheds are sampled per year. Even if some of those six-fields do not have activities, fewer six-fields will be sampled for implementation monitoring.

Continue the current method:

The current method involves selecting two activities in each of two fifth watersheds per province. The activities are selected from one group in any one-year. Samples from subsequent years are selected from a different group. At the end of five years, most if not all groups are sampled at least once.

Cons:

- If all groups are not sampled, no inferences can be made for those groups not sampled.
- If all groups are sampled once or if the choice of groups are not randomly chosen, estimates must be accompanied by the assumption that the rate of compliance to the standard & guidelines **must** be the same across five years. Any increase or decrease in the rate of compliance during the five-year period would bias the results by an unknown amount.

Pros:

- Everyone involved is familiar with this approach.

Stratified two or three-stage method:

Use years as strata, geographic entity as the first stage and activity group as the second stage. The watersheds be selected using a spatially balanced methodology developed by Stevens and Olsen (xxx). Only have two or at the most three activity group. The geographic entity could either by the fifth or sixth field hydrological unit. All activity groups can be sampled every year (two-stage design) or each activity group be sampled on a sub-set of years (three-stage design).

Pros:

- Accommodates varying number of samples from one-year to the next.
- Using year as a stratum provides flexibility of varying the sampling intensity from one year to the next based on funding factors.
- Similar to the current process where all of the activities in a group are enumerated in the chosen watershed.

Cons:

- In spite of the built in flexibility, sampling protocols must be followed to achieve credible results at the end of five years.

General Observations:

- Using a sixth field watershed will be easier for the field to identify activities but the fifth field coincides with the scale for watershed analysis.
- The variance estimate will be larger for under the three-stage design than the two-stage design even though the same number of activities is sampled. The third-stage adds another layer of variability that does not exist with the two-stage design.
- The three-stage design may be easier to implement than the two-stage because fewer activity groups would be sampled in any one year.