

## Appendix B

### Tongass Best Management Practice Implementation Monitoring Report: Fiscal Year 2006

**Background:** Implementation of Soil and Water Standards and Guidelines is necessary to maintain soil productivity and water quality. The soil and water Standards and Guidelines are implemented as Best Management Practices (BMPs) described in FSH 2509.22. Region-10 Soil Quality Standards are documented in FSM 2554. Methods for effectiveness monitoring of Soil Quality Standards are referenced in the FSM 2554. Soil conservation practices are practices used to ensure that ground-disturbing activities will meet the R-10 Soil Quality Standards. Typical soil conservation practices include log suspension requirements in timber harvest units and the use of full-bench and end-haul road construction techniques on landslide-prone terrain. Implementation monitoring evaluates whether or not soil conservation practice(s) were required and implemented. Effectiveness monitoring determines whether or not the soil conservation practice used kept the ground-disturbing activity within the R-10 Soil Quality Standard.

The State of Alaska Water Quality Standards set Standards for chemical, physical and biologic parameters of waters on National Forest System Lands. The Forest Service in Region-10 uses Best Management Practices and site-specific prescriptions to meet State of Alaska Water Quality Standards when implementing ground-disturbing activities on National Forest System lands.

The Best Management Practices (BMPs), described in the Soil and Water Conservation Handbook (Forest Service Handbook 2509.22, October 1996), define practices that protect soil and water resources. The Best Management Practices (BMPs) were monitored on the Tongass National Forest, using guidelines described in the Tongass Monitoring Strategy. The strategy was developed to provide direction for TLMP implementation monitoring. An interagency team of representatives from the Forest Service and Alaska Department of Environmental Conservation selected specific BMPs to be monitored, based upon potential risk factors to soil and water resources.

#### Best Management Practice Implementation

The Forest Plan Soil and Water Standards and Guidelines, in conjunction with BMPs, define site-specific measures to protect soil and water resources. Implementation of these standards and guidelines was monitored following a methodology described in the Tongass Monitoring Strategy.

The BMP implementation monitoring included two distinct efforts: (1) 100 percent monitoring of the units closed out and roads final completed and (2) Interdisciplinary Team (IDT) monitoring. The 100 percent monitoring was conducted primarily by Forest Service sale administrators and engineering representatives, with assistance from resource specialists in a few circumstances. The IDT Monitoring was conducted by a team of representatives from the Forest Service, other federal agencies and State agencies. This team included sale administrators, engineers, foresters, planners, and resource specialists from soils, water and fisheries. The IDT monitoring provides opportunity to discuss the implementation of the Best Management Practices across resource and agency groups. The IDT serves as a quality control on the 100 percent monitoring efforts since these units are monitored in two independent efforts by the sale administrator/ COR lead group and the IDT.

The IDT monitoring was conducted on a stratified sample made up of more than 10 percent of units and roads monitored during the 100 percent monitoring effort. This IDT monitoring was conducted as a quality control effort on the 100 percent monitoring as well as an effort to conduct interdisciplinary review of the implementation of the standards and guidelines. Due to low timber market values, the number of units harvested and roads constructed/ reconstructed in fiscal year 2006 were limited.

During the IDT review a number of units and roads were visited in fiscal year 2006 as noted by district below. Detailed reports and maps on each trip are included in the Appendix.

**Petersburg Ranger District:** August 28- 30, 2006; Finger Point Timber Sale; units 67, 145 and the associated temporary road.

**Petersburg Ranger District:** September 6- 7 2006; Thomas Bay Fish Pass Improvement Culvert Replacement Project; road 6256.

**Ketchikan Ranger District:** September 12- 13, 2006; Revillagio Island; Licking Creek Timber Sale; units 8 & 10, roads 8446140, 8446150, 8400470; and Shoal Cove LTF.

**Wrangell Ranger District:** September 30, 2006; Zarembo Island; roads 52033, 6594

Evaluation of the BMP monitoring for fiscal year 2006 shows that 31 units were in the unit pool, 25 roads/ road segments, including 8 fish passage culvert replacement sites. The IDT monitored 4 units, 6 road construction segments including 4 fish passage improvement culvert replacements (located on 1 road) and 2 log transfer facilities. The 10% quality control threshold was exceeded through the IDT monitoring in 2006. Of the 957.39 acres of harvested units monitored through the 100% process; 133.91 acres were monitored by the IDT during the review.

The 2006 monitoring results show that the Tongass National Forest is successfully implementing the Standards and Guidelines for protection of Soil and Water Resources in most cases. There were only a few departures from full implementation that were noted involving seeding of disturbed areas along road cuts on specified roads and temporary roads accessing units, lack of erosion control plans, lack of ditches along specified roads, erroneous tank sizes shown on SPCC plans, over blasting and soil disturbance associated with a rock pit development. Road construction monitoring indicated corrective action associated with cleaning up petroleum spills on 3 roads, and seeding disturbed soils shown in the cut banks of the road. In the cases involving unit design, corrective action to modify the unit maps to correct stream classification and flagging designation was implemented during sale administration. Some corrective actions were carried out to clean up spilled fuels from construction accidents and leaking equipment to prevent soil/ water contamination. Corrective actions to improve LTF surface drainage, limit sediment transport were initiated at two LTFs. Acreage was deleted from units and the acreage dropped from harvest contributed to protect wetlands and stream courses. Corrective actions were directed but not fully implemented to seed a few road cuts/ corridors. Action plans were developed to fully implement the BMPs, although seeding at some of these sites have not been completed to date.

## **Monitoring Context**

Planning for some of the roads and units was completed before the Soil and Water Conservation Handbook was revised in October 1996, and new Forest Plan Standards and Guidelines were approved in May 1997. Both documents included many improvements for protecting soil and water resources. Several important changes in the 1996 Soil and Water Conservation Handbook include improving wetlands management direction, considering stream buffer wind throw, and generally making Forest Service BMPs consistent with State Forest Practices Regulations. A few of the important changes included in the 1997 Tongass Land Management Plan FEIS and the revised Forest Plan Standards and Guidelines resulted in new stream class definitions, and stream protection measures required for each stream class and channel type. Buffer protection of Class III streams was entirely new. A number of the units monitored were planned, laid out, and harvested under pre-1997 TLMP Standards and Guidelines. Although in most cases the stream prescriptions were modified prior to harvest to implement the stream classes defined in the 1997 Standards and Guidelines.

### ***BMPs Monitored in FY 2006***

BMP 12.5 Wetlands Protection Measures

BMP 12.6/ 12.6a Riparian Area Designation & Protection/ Buffer Zone Design and Layout

BMP 12.7/ 14.5/14.8 Measures to Minimize Surface Erosion

BMP 12.8/ 12.9 Oil Pollution Control Measures

BMP 12.17 Revegetation of Disturbed Areas

BMP 13.5 Identification and Avoidance of Unstable Areas

BMP 13.9 Yarding Systems to Protect Soil/ Water Resources

BMP 13.10 Landing Location and Design

BMP 13.11/ 13.14/ 14.5 Erosion Control Measures for Units & Temporary Roads

BMP 13.16 Stream Channel Protection

BMP 14.6 Timing Restrictions for Construction Activities/ Fisheries Prescription

BMP 14.7/14.12 Measures to Minimize Mass Failures/ Control of Excavation & Sidecast

BMP 14.9 Drainage Control Structures to Minimize Erosion & Sedimentation

BMP 14.14/ 14.17 Design & Installation of Bridges and Culverts

BMP 14.18 Control Rock Pit Sediment

BMP 14.20/ 14.22 Road Maintenance Access Management

BMP 14.26/ 14.27 LTF Surface Erosion Control Plan, Storm Water Pollution Prevention Plan

During IDT monitoring the group noted soil, visual, timber, stream and buffer characteristics relative to the management practices. The focus issues and relative characteristics monitored are listed below:

- Running skyline, cable logging, and helicopter yarding: streams, buffers, wetlands, and soil disturbance
- Shovel Logging: soil disturbance, wetland protection
- Steep slopes: minimizing soil disturbance
- Stream identification (Class III vs. IV) and protection, buffer implementation
- LTF design, construction: sediment control structures, seeding, grading

In the road review, the IDT group looked at the reconstruction and construction. The focus issues and relative characteristics monitored are listed below:

- Reconstruction of the culverts and bridges: fish passage and erosion control
- Timber roads: sediment control and seeding
- Implementation of Standards and Guidelines through BMPs associated with culvert replacement to improve fish passage
- Implementation of Standards and Guidelines through BMPs associated with roads constructed with lineal grading specifications.

## **Monitoring Overview**

The data summarized in the table and discussed below reflect results from the total units and roads monitored in the 100 percent and IDT monitoring efforts. Reviewing the timber sales and respective environmental documents most of the units were harvested under contracts that were included in EISs or EAs that were signed before the new Tongass Land Management Plan Revision in 1997. South Lindenberg Timber sale and Lab Bay projects are specifically mentioned in the Forest Plan 1997 Record of Decision in category 2 which are timber sale projects for which NEPA decision documents were signed before the effective date of the Plan but timber volumes were not sold yet. The Lab Bay projects were found to be consistent with the goals, objectives and projected environmental effects of the revised Forest Plan. The South Lindenberg project was found to be consistent with the goals and objectives with the exception of riparian standards and guidelines. Direction to modify the South Lindenberg project was included in the Plan so the project better achieves the riparian standards and guidelines. The Control Lake projects are listed in category 3 of the Forest Plan Record of Decision. Category 3 timber sale projects are projects where the Notices of Intent to prepare EISs have been published and projects where the scoping has been initiated. According to the Forest Plan, these projects need to be consistent with all applicable management direction of the revised plan with the exception of the wildlife standards and guidelines. The small sales and public works contracts were all implemented under the revised Standards and Guidelines. The units and roads in the FY 2006 monitoring pool as well as those selected for IDT monitoring are listed below with their respective EIS/ EAs or contracts. Maps showing the location of these units and roads can be found in the Appendix.

**Table 1 Units Monitored in FY 2006 through BMP Implementation Monitoring Process**

<b>Units</b>	<b>Timber Sale; EIS/ EA (decision year)</b>
679-433, 679-409, 679-414	Fusion TS; (Dumpy) Polk EIS (1995)
594-412, 594-420	Kogish Shiniku; Control Lake EIS (1998)
581-417, 581-423, 581-448, 581-449, 581-452	Luck Lac TS; Luck Lake EIS (2000)
8*, 10*, 19, 29, 34, 51, 67	Licking Creek; Licking Creek EIS (2003)
551-001	Thorne Island TS; Lab bay EIS (1996)
60A & B	South Lindenberg TS; South Lindenberg EIS (1996)
Red Carpet unit	Red Carpet Small Sale; Roadside EA (2003)
118,122, 67*,145*, 147, 128, 127, 125, 108, 64, 124	Finger Point TS; South Lindenberg EIS (1996)

\*Monitored by IDT and 100% monitoring groups

**Table 2 Roads Constructed/ Reconstructed and Monitored in FY 2006 through BMP Implementation Monitoring Process**

<b>Roads</b>	<b>Road Contract/ Timber Sale</b>
6350	South Lindenberg TS; South Lindenberg EIS (1996)
6590, 6260, 6296, 6270, 6267, 6585, 6265	Zarembo Reconstruction
43500-1	Lindenberg TS Public Works
6594*, 52033*, 520331, 520332, 5203321, 520333, 520334, 520335, 520336	Skipping Cow TS Roads Contract, Skipping Cow EIS (2000)
8446150*, 8446140*, 8400470	Licking Creek Reconstruction

\*Monitored by IDT and 100% monitoring groups

**Table 3 Roads with Culverts replaced for Fish Passage Improvement and Monitored in FY 2006 through BMP Implementation Monitoring Process**

<b>Roads</b>	<b>Road Contract/ Timber Sale</b>
6256 MP 2.801, 3.144, 3.242*, 3.443*, 3.543*, 4.091, 4.496*, 5.524	Thomas Bay Fish Passage Structures
2160000 MP 7.715, 4.975	Polk Fish Passage Improvements

\*Monitored by IDT and 100% monitoring groups

### **Monitoring Methods**

Due to limitations on harvest and road construction associated with low timber market values, very few units and roads were in the monitoring pool. A stratified random selection was applied to the unit and road pool. In selection of the units and roads a stratified random process was applied. The units and roads on districts that had not been visited by the IDT groups last year were initially pulled from the unit/ road pool. From this subset, units and roads that showed characteristics of steep slopes or close proximity to live streams were designated. Similarly, in selection of fish passage crossings for IDT review, the selection process involved grouping adjacent culverts for selection pool representation. The site identifiers for both the unit/ road and fish passage culvert selection were processed through application of a random number generator function to identify the selection pool. The implementation monitoring results are summarized in the following tables. The table below displays the total number of times each specific BMP was rated; the number of times full implementation was monitored.

**Table 5 Summary of BMP Use from Implementation Monitoring for Harvest Units, Roads Constructed/ Reconstructed, Roads Decommissioned, Road Segments with Culverts Reconstructed for Fish Passage Improvement**

<b>BMPs Applied in both IDT Monitoring &amp; 100 % Monitoring Pool</b>	<b>Number of Times the BMP was Appropriate for Use</b>
12.5 Wetlands Protection Measures	26
12.6/ 12.6a Riparian Area Designation & Protection/ Buffer Zone Design and Layout	15
12.8/ 12.9 Oil Pollution Control Measures	56
12.17 Revegetation of Disturbed Areas	9
Identification and Avoidance of Unstable Areas	20
13.9 Yarding Systems to Protect Soil/ Water Resources	31
13.10 Landing Location and Design	31
13.11/ 13.14/ 14.5 Erosion Control Measures for Units & Temporary Roads	23
13.16 Stream Channel Protection	27
12.7/ 14.5/ 14.8 Measures to Minimize Surface Erosion	25
Timing Restrictions for Construction Activities/ Fisheries Prescription	6
14.7/ 14.12 Measures to Minimize Mass Failures/ Control of Excavation & Sidecast	13
14.9 Drainage Control Structures to Minimize Erosion & Sedimentation	21
14.14/ 14.17 Design & Installation of Bridges and Culverts	25
14.18 Control Rock Pit Sediment	11
14.20/ 14.22 Road Maintenance Access Management	23
14.26/ 14.27 LTF Surface Erosion Control Plan, Storm Water Pollution Prevention Plan	33
	<b>395</b>

### **Aquatic/ Riparian Resource Overview**

Best Management Practices associated with implementation of standards and guidelines related to riparian and streams of particular interest to the Forest. To address this interest, we included

the table below that shows the linear feet of stream and acres of buffer monitored during the BMP process. A significant length of stream channels was reported as protected during unit harvest in the implementation monitoring effort in FY 2006 as shown in the table below. These stream lengths and associated buffer areas show that the stream protection measures are being implemented.

**Table 6 Linear Feet/ Acres of Stream Channel Protected and Lakes/ Wetlands Effected in FY 2006 monitored through implementation monitoring effort**

Stream Class	100 % Monitoring Effort		IDT Monitoring Effort	
	Linear feet of Stream Channel Protected/ Acres of Wetland Effected	Approximate Acres Retained as Streamside/ Beach/ Wetlands/ Buffer	Linear feet of Stream Channel Protected/ Acres of Wetland Effected	Approximate Acres Retained as Streamside/ Beach/ Wetlands Buffer
Class I	1,695 feet	6.03 acres		
Class II	13,688 feet	48.93 acres	5,620 feet	13.2 acres
Class III buffered	29,152 feet	59.27 acres	5,536 feet	4.3 acres
Class III un-buffered*	3,425 feet			
Class IV	27,214 feet	8.6 acres	3,055 feet	
Class I Lake	0 feet			
Beach buffer		18 acres		
Wetlands		48.86 acres		16.86 acres

\* Un-buffered class 3 streams in units planned, laid out, and harvested under pre- 1997 TLMP Standards and Guidelines

Culvert installation included sites at 3 Class I streams, 1 Class II streams, 13 Class III streams and 23 Class IV streams. These sites included bridges constructed to cross three Class I streams, one arch on a Class I stream, eight Class II streams, five Class III streams and one Class IV stream. The IDT monitored 3 Class I culverts, 0 Class II culvert, 7 Class III streams and 14 Class IV streams as well as 4 bridges that spans 1 Class I stream, 2 Class II stream, 1 Class III stream and 1 Class IV stream crossings respectively.

Comparison of the IDT monitoring relative to the 100% monitoring effort shows that the IDT monitoring was conducted on a high percentage of the sites. Specifically this effort is noted where BMPs were applied relative to Class II streams (primarily resident fish streams) and some of the sites associated with Class I streams crossings. Best Management Practices relative to Aquatic and Riparian Resources specifically included; 12.6/ 12.6a Riparian Area Designation & Protection/ Buffer Zone Design and Layout and BMP 13.16 Stream Channel Protection relative



to unit harvest, and BMP 14.6 Timing Restrictions for Construction Activities/ Fisheries Prescription and 14.14/ 14.17 Design & Installation of Bridges and Culverts applied in road construction/ reconstruction. Generally, these BMPs were applied; however, a couple corrective actions were noted relative to aquatic and riparian resources. The corrective actions are briefly described in the sections that follow.

## **Monitoring Results**

The number of times corrective actions were implemented and departures from full BMP implementation are summarized in the table below. Corrective actions are actions completed to mitigate situations that occur during implementation. In some cases, corrective action was taken so that the BMP was fully implemented before the unit or road was approved by either the sale administrator or contracting officers representative. In a few cases, the monitoring resulted in action plans being drawn up to complete additional work so the BMPs would be fully implemented. In a few cases these actions were not implemented in the time frames designated so the ratings are noted as departures. In some situations, corrective action is not possible since the construction is complete so departures were noted.

**Table 7 Summary of Relative Corrective Actions and Departures noted in Implementation Monitoring for Harvest Units, Roads Constructed/ Reconstructed, and Road Segments with Culverts Reconstructed for Fish Passage Improvement**

<b>BMPs Applied in both IDT Monitoring &amp; 100 % Monitoring Pool</b>	<b>Number of Times Corrective Action Noted &amp; Implementation Initiated</b>	<b>Number of Times Departure from full BMP Implementation Noted</b>
12.5 Wetlands Protection Measures	0	0
12.6/ 12.6a Riparian Area Designation & Protection/ Buffer Zone Design and Layout	1	0
12.8/ 12.9 Oil Pollution Control Measures	4	2
12.17 Revegetation of Disturbed Areas	0	2
13.5 Identification and Avoidance of Unstable Areas	0	0
13.9 Yarding Systems to Protect Soil/ Water Resources	0	0
13.10 Landing Location and Design	0	0
13.11/ 13.14/ 14.5 Erosion Control Measures for Units & Temporary Roads	0	0
13.16 Stream Channel Protection	0	0
12.7/ 14.5/ 14.8 Measures to Minimize Surface Erosion	1	2
14.6 Timing Restrictions for Construction Activities/ Fisheries Prescription	0	0
14.7/ 14.12 Measures to Minimize Mass Failures/ Control of Excavation & Sidecast	1	1
14.9 Drainage Control Structures to Minimize Erosion & Sedimentation	0	0
14.14/ 14.17 Design & Installation of Bridges and Culverts	0	0
14.15 Diversion of Flows Around Construction Sites	0	0
14.18 Control Rock Pit Sediment	0	1
14.20/ 14.22 Road Maintenance Access Management	0	1
14.26/ 14.27 LTF Surface Erosion Control Plan, Storm Water Pollution Prevention Plan	0	0
	7	9

## Corrective Action Summary

Comparison of the data that is summarized in the previous tables shows that corrective actions were implemented on the Tongass in efforts to implement the Best Management Practices. In some cases corrective action was directed by the sale administrators, contracting representatives, and engineering representatives; however, the timber sales and road construction contracts are still ongoing and work on some of the corrective actions is still ongoing. Details outlining some of the corrective actions are summarized in below as well as in detailed trip reports.

The corrective actions included;

- modifying the unit configuration and boundaries to minimize construction on wetlands and steep slopes,
- identification and prescription of protection measures on streams during unit harvest,
- clean up of a minor equipment leaks and oil spills,
- correction of SPCC Plans,
- construction of a rock buttress to stabilize a cut bank along a road,
- seeding prescribed and action directed prior to the end of the seeding window, and
- grading of log transfer facilities (LTF) surfaces and maintenance of settling ponds to minimize sediment transport.

On the Skipping Cow Timber sale road construction, corrective action was noted associated with road 52033 and road 6294 relative to a fuel spill that occurred on a road when a fuel truck was traveling to the work site. The fuel truck over turned, the spill was reported and the spill prevention counter measure plan was followed. The contractor worked with the Alaska Department of Environmental Conservation (ADEC) to develop and implement an approved cleanup and bioremediation plan. The contractor delayed reporting the incident and ADEC and the USCG are investigating. A rock pit used in construction of road 6294 showed some surface staining from minor fuel spills and trash that the Engineering Representative directed to be cleaned up.

On the Wrangell reconstruction road contract (Zarembo Reconstruction) corrective actions were reported relative to a minor fuel spill that occurred when a back hoe caught on fire on road 6260. After the fire was suppressed, the fuel was cleaned up and the minor amount of contaminated rock and soil was disposed of properly. A corrective action was also noted on road 6260 relative to surface erosion control. Grass seeding was not included in the contract so the Forest Service seeded the road cuts to prevent erosion of the exposed soil in the road cuts. A minor road cut slough occurred on Road 6296 and the ditch line was cleared to prevent surface erosion. A 275 feet long rock buttress wall was constructed to stabilize the cut slope along this road and a culvert was installed to improve the cross drainage of water across the road.

On the Licking Creek Timber sale, corrective action was implemented during sale administration to clarify the stream designation of a Class III stream in unit 8. There was a discrepancy between the sale area map and the flagging shown on the ground; the map showed a Class III stream and the stream was flagged as a Class II on part of the stream reach. The sale

administrator requested a fisheries biologist review the stream and the biologist determined the stream was a Class III stream. A Class III buffer was prescribed and implemented on this stream. Associated with this timber sale there was a small fuel spill at the fueling facility. This spill was reported and the SPCC plan was implemented and ADEC notified. The contaminated soil and rock was removed from the site and brought to Ketchikan. The Sale Administrator had directed the operator to correct their SPCC plan since the plan showed 4000 gallon tanks, however, 5000 gallon tanks were no site. Maintenance of the LTF facility was directed by the sale administrator to prevent non point source discharge of sediment to the ocean from road run off. The sale Administrator directed the operator to clean the ditches of the settlement pond, grade the running surface, and lay a lift of clean rock on the running surface and road through the LTF.

A few corrective actions were noted on the Finger Point Timber sale relative to changes in the stream designation and flagging in retrofitting the timber sale to the Riparian Standards and Guidelines. The unit configuration was changed between layout and harvest to drop acreage where numerous braided channels bisected the slopes to provide stream protection. On the Finger Point Timber sale, corrective action was directed by the sale administrator to maintain the LTF facility. This corrective action was intended to limit transport of sediment to the ocean from the running surface of the road and LTF. The facility will be re-designed to improve the settling pond and separate the settlement pond from the running surface of the facility. The LTF facility was constructed with highly degrading rock that was breaking down to fine sediment. The surface was graded on a regular basis and a new lift of rock added to limit sediment transport.

### ***Departure from Full BMP Implementation Summary***

In FY 2006, the corrective actions contributed to the BMP implementation in most cases so there were very few departures from full implementation noted. Departures from full BMP implementation occurred on 9 events on 4 roads, 2 harvest units that are associated with two timber sales. The best management practices that showed the departures follow;

BMP 12.8/ 12.9 Oil Pollution Control Measures

BMP 12.17 Revegetation of Disturbed Areas

BMP 12.7/ 14.5/ 14.8 Measures to Minimize Surface Erosion

BMP 14.7/ 14.12 Measures to Minimize Mass Failures/ Control of Excavation & Sidecast

BMP 14.18 Control Rock Pit Sediment

BMP 14.20/ 14.22 Road Maintenance Access Management

One departure was noted relative to Controlling Rock Pit sediment on the Skipping Cow Timber Sale Road Construction Contact in BMP 14.18. During development of a rock pit for road material associated with road 6594, rock was over blasted and fly rock covered two streams. One intermittent stream was flowing through the rock material; however, a class three channel was covered with rock. The Class III channel was excavated in the blasted rock and a culvert installed to provide cross drainage.

On the Licking Creek Timber sale departures relative to BMP 12.8/ 12.9 and BMP 12.17 were reported associated with units 8 & 10. The erroneous sizes noted on the SPCC plan for the fuel

tank at the fueling facility relayed the departure in BMP 12.8/ 12.9. The fuel tank on site is a 5000 gallon tank and the plan shows a 4000 gallon tank. The Sale administrator directed the operator to correct the discrepancy; however, the operator did not take action. Relative to BMP 12.17, soil was bared in a unit associated with road cuts along the temporary road during the seeding window. The SA directed the operator to seed the bared soil. The seeding was not completed by the operator prior to close of the seeding window. The IDT noted the lack of attention to timely seeding in the trip report. The operator did remove the culverts and excavated water bars as needed. Neither of these areas was seeded in the spring when the seeding window re-opened. The SA seeded the bared area and some of the temporary road.

On Roads 8446150, 8446140 and 8400470 on the Licking Creek Timber Sale, departures were noted relative to BMP 12.7/ 14.5/ 14.8, 14.20/ 14.22 and 14.7/ 14.12. There was no erosion control plan for this construction although required in the plan of operations of the contract. Seeding of the bared soil in the road cuts was not adequately completed prior to the close of the seeding window September 1. This seeding was not completed at the re-opening of the seeding window in the spring in the next operating season. On road 8400470, there was over blasting of rock from the rock cut of the road during construction. The road construction contract did not include the end haul described in the road cards. The blasted rock covered a 200 feet x 75 feet area down slope in a unit adjacent to the road and may limit re-vegetation.

### ***Evaluation of Results***

The summary below includes short description and overview of Best Management Practice Implementation by resource topic. The interdisciplinary trips are summarized in detail in trip reports that are included in the appendix. Key observations documented by the monitoring groups on units, roads constructed include:

### **Riparian Standards and Guidelines:**

The riparian standards and guidelines implemented in most of the timber sales included the riparian standards and guidelines of the 1997 Forest Plan Record of Decision (ROD). Significant efforts were made to implement the riparian standards and guidelines from the 1997 ROD in the timber sales that were planned prior to the ROD but laid out and / or harvested after the signing of the ROD. In all units both pre and post 1997 decision Environmental Impact Statements, the Class I & II streams showed buffers. In a couple of the units from pre-decision EIS areas, the buffers on Class II streams did not include reasonable assurance of wind firm areas. The major difference in the units that were from pre-decision EIS areas was in the Class III buffers. Generally, the Class III streams were buffered and the slope break buffers included the riparian area or 120 feet with reasonable assurance of wind firm areas as required.

A few Class III streams in a couple units from these pre- decision timber sales were not buffered with as described in the ROD. A couple of these streams were not buffered and a couple had slope break buffers but did not show reasonable assurance of wind firm areas for the required stream process groups per the new ROD. In these cases, the prescription for buffers as defined in the pre-decision Standards and Guidelines were implemented.

The Forest Plan Standards and Guidelines describe management direction for various stream process groups relative to application of the standards and guidelines to meet the objectives of the process group during timber harvest. Generally, no timber harvest is allowed within 100 horizontal feet of a Class I stream or Class II stream that flows into a Class I stream with a few

exceptions for Class II streams that flow to the ocean or to Class III streams to flowing to Class I streams. The Forest Plan requires an additional area of reasonable assurance of wind firm outside the buffer widths. The riparian Standards and Guidelines reference the descriptions under the process groups for the specific guidelines. Slope break buffers on the Class III streams are required with reasonable assurance of wind firm areas (RMAs) although the required width varies for process group. (For instance, the moderate gradient/ mixed control channels have a 120 feet or riparian area + reasonable assurance of wind firm area requirement).

There was one case where a few trees were felled within a Class II stream buffer due to safety concerns associated with yarding. The stream corridor was still protected by some timber and the stream course was not damaged. During the course of administering the timber sale contract and ensuring the stream protection measures are implemented, the sale administrators have made conscientious efforts to work diligently with the hydrologists and fish biologists to resolve any questions that arise related to riparian areas and buffers.

A few corrective actions were noted relative to changes in the stream designation and flagging in retrofitting the timber sale to the Riparian Standards and Guidelines. The unit configuration was changed between layout and harvest to drop acreage where numerous braided channels bisected the slopes to provide stream protection.

### **Stream Identification/ Classification:**

In some units, the stream verification completed in the NEPA process was not accurate. The stream identification and verification completed during layout in some cases refined the initial stream work. However, in some cases, further stream identification and verification was completed during contract sale administration. Additional focus on BMP 12.6/ 12.6a and 13.16 relative to identification and verification of the streams is needed during the NEPA and layout processes.

Evaluation of the Class III and Class IV stream classifications was conducted during the BMP Interdisciplinary review on the Licking Creek Timber Sale, Finger Point Timber Sale and Skipping Cow Timber Sale Road Construction projects. Measurements along transects in Class III and IV streams were taken and compared to the Tongass Forest Plan Implementation Clarification (TPIT). The TPIT clarification was intended to provide guidelines for consistent classification of Class III and IV streams. The findings showed that the streams vary in reach from non-stream to Class IV to Class III in some channels and the classification criteria were consistently applied.

Recommendations include specifically defining BMP 12.6/ 12.6a on the monitoring form to focus on EIS/ EA. Splitting out the layout, planning, and administration phases and rating each separately would bring out this issue. In the current unit pool, the rating reflects the final outcome in some cases and in some cases reflects problems that were corrected already. The stream identification issues and implementation of protection is typically resolved through the sale administrators working with the fish biologists and hydrologists.

The GIS locations of the streams and stream classifications need to be updated to include streams identified during layout and administration that were not input into the GIS streams cover. The cover needs to be updated both with the streams identified during planning as well as those identified and located during layout and administration. Follow up on this work typically scheduled during reconnaissance or layout is necessary.

### ***Class IV Stream Protection:***

The monitoring groups noted the Class IV streams were bridged or logs fully suspended over the streams during harvest. Tree debris was cleaned from the Class IV stream immediately following harvest. The sale administrators took contract action to bring the contractor back to the sites and remove the tree debris as necessary.

### ***Wetlands:***

Very little soil disturbance was noted in the units harvested during the BMP review. During the BMP monitoring particular efforts to avoid wetlands and minimize impact were noted. Some of these deletions were also due to lack of merchandisable timber. A few units had areas deleted and configuration modified due to wetlands and low value timber on the wetlands. The wetland should have been noted during the reconnaissance during the environmental assessment phases or layout. Focus on careful aerial photo and field analysis during the planning phases is necessary. These unit changes need to be recorded in GIS.

### ***Soil Erosion/ Soil Disturbance- Units:***

Shovel Yarding: Minimal soil disturbance was noted in these areas; in relatively dry areas little evidence of shovel tracks was shown within the units in most areas. These tracks extended for less than 50 feet in isolated areas. No erosion, water rilling, nor soil transport was noted in these equipment tracks.

Helicopter Yarding: In most areas of the units harvested by helicopter yarding, very little impact to the soils was noted. Full suspension was achieved. There were some steep pitches noted in the helicopter units and some areas deferred for helicopter yarding.

Cable Yarding: Very little soil disturbance was noted in the units monitored. The yarding systems and landing locations were modified to provide at least partial suspension. The timber was yarded to the road in most cases so potential disturbance to the soil associated with the landings was minimized. Some marginally stable areas were noted in isolated portions of the units but most of these areas were deleted during sale administration.

### ***Soil Erosion- Drainage:***

Some of the temporary and specified roads showed inadequate or no seeding application on the Licking Creek timber sales. Numerous areas of barred soil were shown where the seed did not germinate. On the Mop Point and Licking Creek timber sales, seeding was not completed prior to the close of the seeding window although the excavation had been completed well before the end of the operating season. Contract action was taken to direct the contractor to seed. The Contractor has seeded the road cuts on the Mop Point timber sale. The Forest is still following up on the Licking Creek timber sale to enforce the seeding requirement.

Most of the culverts on the closed specified roads were removed, cross drains and water bars were installed; however, a few were left in place with the understanding that they would be maintained. Most of the specified road corridors showed little potential for erosion from the road surface; however, some of the cut banks needed additional seeding. Plan for this seeding were developed by timber and engineering for the next year.

### ***Culvert/ Bridge Installation & Design:***

The culverts were installed per design and concurrence for the timing of the installations on fish streams were made by ADNR. Turbidity measurements were taken at some of the culverts larger than 48 inch diameter. There were some cases where fish simulation techniques were used to design structures although no upstream habitat surveys and no verification of fish presence had been completed. There were errors noted on the design drawings relative to structural requirements at the sites.

### ***Oil Pollution Control Measures:***

A spill countermeasure control plan was implemented during timber harvest and road construction/ reconstruction. A few oil spills or evidence of oil leaks were observed and/ or reported. There were corrective actions noted on roads relative to hydraulic oil and fuel spills. These spills were reported to ADEC and cleaned up according to the regulations. There was one small spill that occurred when the fuel truck was accessing the site. This spill was reported to ADEC and the USCG. The contaminated soil and rock material was removed and disposed of properly. There was one small spill that occurred at a fueling facility and this spill was reported to ADEC. The contaminated soil and rock was cleaned up according to the requirements of ADEC. There were a couple minor equipment leaks that occurred on a road due to leaking equipment associated with timber harvest. Following report, the contaminated soil was excavated and disposed of properly.

### ***LTFs:***

The LTFs had features required in the storm water protection plans; settlement ponds for surface run off, drainage ditch at the back of the site, and graded running surfaces. Corrective action was required at the Tonka LTF, and Shoal Cove LTF. Maintenance of the facilities was directed by the SA at the Shoal Cove and Tonka facilities. The Shoal Cove facility needed grading and maintenance of the settlement pond although the LTF was in good general operating condition. The Tonka facility is being modified to grade the drainage of the surface water toward a settlement pond at the back of the facility and remove the deep mud and ruts from the running surface. Following the corrective action at the Tonka facility, the surface was scrapped of loose sediment and a fresh lift of rock placed on the surface.

Generally good housekeeping measures were implemented and the settlement ponds were functioning but grading and clean up was directed by the SAs during timber haul. The LTF surfaces were clean of bark and soil debris and graded to drain to the settlement ponds. The water was flowing through the LTF bedrock and rock through surface flow to the ditches and settlement ponds. No sediment and little water discharge were observed at these facilities.

### ***Recommendations- General Notes:***

Reviewing the large number of units and road sites reviewed by the IDT, the findings show general consistency with the sale administrator and contracting officer's representatives relative to the IDT. Overall the monitoring indicates that the Best Management Practices are being implemented. The monitoring system is conveying useful implementation information through the ratings and descriptions. Careful attention to use the rating protocol is necessary for the results to be meaningful and insure consistent ratings. The conclusion can be drawn that transitioning from a 100% monitoring sample to a random subset of units and roads to monitor



10% of the sites would be feasible. This smaller subset monitored through an IDT may be more efficient and yield comparable results. Developing a modified monitoring form for fish passage improvement structures that includes the BMPs specific to this construction is recommended.