31. Transportation System: Standards and Guidelines

Goals: Develop and manage roads and utility systems to support resource management activities. Recognize the potential for future development of major transportation and utility systems.

Objectives: Provide access for Forest users. Design and construct roads in support of forest resource management activities. Decommission roads that are no longer needed or are not affordable. Manage and maintain roads to protect water, soil, fish and wildlife resources.

Transportation Question: *Are the standards and guidelines used for Forest development roads effective in limiting the environmental effects to anticipated levels?*

Evaluation Criteria

Evaluation criteria are the environmental effects of forest development roads and log transfer facilities (LTFs). Focal areas include drainage of rock pits (TRAN4 IV., BMP 14.9, TRAN4 II.A.6, BMP 14.18) and effectiveness of access management prescriptions in restricting access and preventing sediment transport (TRAN6-1.A, BMP 14.22). Monitoring observations will focus on roads closed in high use areas. At least 10 percent of recently closed national forest system roads on a selected road system will be evaluated annually.

The roads selected for monitoring in 2014 included road 6351 on the Tonka road system (Kupreanof Island), road 3015 on the North Thorne road system (Prince of Wales Island), road 7576 Harbor Mountain, road 7513 Starrigavan campground and Frenchy road 6208 on the Mitkof road system. The INFRA[1] database was utilized to determine which roads were in the selection pool that were recently closed or maintained. These road systems were selected due to recreational use and a random selection of open maintained roads.

Sampling/Reporting Period

There is an annual sampling period, and the reporting period is every 5 years.

Monitoring Results

Roads

Effectiveness of drivable water dips for erosion control. A drivable water dip was constructed on road 6351 when the road was reconstructed for recreational use. This road is 0.532 mile long and ends in a parking area at the Mitchell Creek fishpass. The road had been constructed to access timber units as a specified road and left open to provide public access and administrative access to the fishpass.

Transportation Photo 1. Drivable dip on Tonka road 6351

Road 6351 was designed and constructed with culverts at all live stream crossings; however, as part of the stewardship contract, the road was reconstructed with a drivable dip to minimize road

[1] INFRA is a Forest Service database used to manage information on national resources, such as buildings, trails, roads, wilderness areas and water systems.

surface erosion associated with a blocked culvert. The culvert was removed from the live stream and a drivable water bar was installed. This stream is a class IV stream that flows to Mitchell Creek and transports water from a beaver pond across the road. The road was constructed roughly 200 feet upslope of Mitchell Creek.

Roadway reconditioning included installation of a one foot deep lift of shot rock aggregate. The reconstruction included surfacing a 30 x 45 feet parking lot at the end of road 6351 for the Mitchell Creek fishpass. The construction specified the aggregate be placed on the slopes of the drivable ford in a compacted layer. This maintenance was covered in the categorical exclusion for road maintenance that does not require a decision memo as defined in 36 CFR 220.6(d).

The drivable dip was functioning to transport water across the road with minimum sediment transport. A minor amount of fines were noted at the crossing in the water adjacent to the road. The fines noted in the crossing amounted to less than 0.1 cubic yard of sand and silt. Drivable dips are effective at transporting water across the road where there is minimal flow and traffic. The drivable dip provided an effective solution to an area where beavers had plugged a culvert and water was blocked from crossing the road prior to the road maintenance.

Effectiveness of road grading and culvert installation for erosion control. Road 7513 accesses Starrigavan Recreation Area, a popular recreation area, and is located near the community of Sitka. It includes an estuary, recreation facilities including camping, picnic sites, an artesian well and several different recreation trails. It is regularly graded for road maintenance and no ruts or potholes were noted in the running surface. The work included blading the road with a compaction B. The roads within in the campground were graded and rolled twice. The first grading occurred in July and the second in September. The road grading was effective at limiting erosion potential (Photo 2).

Transportation Photo 2. Looking east on Starrigavan road 7513. Road is graded with no ruts.

The Harbor Mountain road 7576 was reviewed as a recreational use ML2 road. This road traverses along the sideslope with switchbacks from the base starting at sea level. This road is graded and has a lift of crushed aggregrate on the surface (Photo 3). The road showed no erosion potential and the culverts were functional. The culverts were installed at angles to transport water effectively across the road from the intermittent channels and seeps (Photo 4).

Frenchy Road 6208 showed effective road maintenance where road brushing had been completed on a regular basis to maintain an open roadway. This road can be accessed off the Petersburg road system and is used by local hunters. The road surface is good with no evidence of erosion and sediment transport (Photo 5). Water is transported across the road by a large culvert. No evidence of erosion or undercutting was noted at the crossing (Photo 6).

North Thorne Road 3015 was monitored as a ML2 maintained road (Photo 7). This road had been recently reconstructed with a lift of crushed aggregate and replaced culverts. The streams that traverse down the sideslopes adjacent to this road are flashy streams that respond rapidly to precipitation. The angular cobbles and boulders are transported down the sideslopes from avalanche and slide areas in the uplands. The culverts were oversized to accommodate the storm water flows (Photos 8, 9 and 10). The streams frequently do not show significant flow during dry periods and occasionally show no flow. The road showed no evidence of erosion.

Transportation Photos 3 and 4. Left: Harbor Mountain road 7576 looking downslope. Right: Culvert outlet on Harbor Mountain road effectively transporting water

Transportation Photos 5 and 6. Left: Frenchy road 6208; no erosion noted on road surface. Right: Stream crossing French road 6208; not cutting noted in the channel; banks well-armored with rock.

Transportation Photos 7 and 8. Left: Road 3015 at milepost 8.743. Road is graded with no erosion or diversion potential. Right: Road 3015 milepost 8.743. Culvert inlet showing a poorly-sorted alluvium bedload of gravels, and angular cobbles and boulders.

Transportation Photos 9 and 10. Left: Road 3015 at milepost 1.773. Culvert outlet is transporting water through the culvert at relatively low flow. Right: Road 3015 milepost 1.773. Culvert inlet bedload is poorly-sorted gravels and alluvium.

Log Transfer Facilities

Each log transfer facility (LTF) is operated under terms of the LTF permits, and in accordance with Alaska Water Quality Standards and requirements from the Environmental Protection Agency (EPA) for storm water discharge (National Pollutant Discharge Elimination System [NPDES] permits). LTF monitoring for this report was accomplished through field inspection, and was documented through completion of an LTF monitoring table. The table is designed to tabulate assessments of the success of the best management practices (BMPs) stipulated as terms of the LTF permits. The assessment elements of the LTF monitoring table include the following:

- Site identification
  - common name
  - Corps of Engineers permit name
  - NPDES general permit
- Transfer activity
  - facility transfer type
  - activity status
  - current year volume
- Fuel control
  - visible oil sheen per LTF guidelines M5 of the Forest Plan (Alaska Timber Taskforce Guidelines)
  - discharge reported to Alaska Department of Environmental Conservation (ADEC) under requirements of Alaska Administrative Code (18 AAC 75.300-307)
  - discharge reported to National Response Center (NRC) under requirements of the Clean Water Act (40 Code of Federal Regulations [CFR] 110, 117, and 302)
- Runoff control, reference BMP 14.27
  - drain to sediment trap
  - vegetated filter strip

- Bark and debris, reference BMP 14.27
    - excessive churning prevented
    - remove debris and bark from LTF or yard
    - bark and debris properly disposed
    - marine bark zone of deposit
    - date of last dive

Two general types of monitoring occur, upland and marine. The upland monitoring is summarized into assessments developed by Forest Service timber sale administrators, and is recorded under the general categories of fuel control, runoff control, and bark and debris. These assessments were made for all the active sites. Divers perform underwater bark debris surveys to accomplish marine monitoring.

Bark Monitoring and Reporting. Bark monitoring is required annually for each LTF under the EPA general NPDES permit no. AK-G670-1000 and EPA general NPDES permit no. AK-G70-0000. This monitoring is required at sites that are planned to transfer a total volume of 15 million board feet (MMBF) or more during the next 5 years and are located in less than 60 feet mean lower low water (MLLW). Monitoring for bark accumulations is not required on LTFs classified as type V or type VI under part I.B. If the annual bark monitoring survey conducted at the beginning of the season indicates continuous coverage by bark and wood debris of 0.9 acre or greater, the next annual bark monitoring survey is conducted after cessation of log transfer, or in the following year prior to any additional log transfer. Otherwise, the annual bark monitoring survey is not required during years when the LTF is not operating.

The purpose of the bark monitoring program is to determine compliance with the Alaska water quality standards for settable-residues in marine waters. In accordance with 18 AAC section 70.210, ADEC has authorized a zone of deposit for facilities authorized to discharge under the general NPDES permit. The zone of deposit may include continuous coverage, discontinuous coverage, and trace coverage by bark and wood debris. No wood was put into marine waters in 2012, although logging operations did put wood into marine waters in FY2014. Logging operations were ongoing in the fall, and bark monitoring dives had not yet been completed.

Oil Sheen Monitoring and Reporting. During periods of log transfer operation, receiving waters at the LTF shall be visually monitored daily for the presence of oil sheen. The presence of oil sheen shall be recorded, with the date, name of observer, cause or source of oil sheen and corrective measures taken, and shall be reported to EPA within 24 hours in accordance with part IX.B.

In FY2014, all active LTFs were operated in accordance with their permits. No fuel or hydraulic fluid spills occurred. If spills occur, the oil, fuel or contaminated soils are handled as specified in the spill prevention control and counter measure plan section of their operating plans. The actions of the sale administrators, which are prescribed in the standards and guidelines for LTFs, have served to limit the environmental effects of LTF operation to anticipated levels. The guideline for locating LTFs along straits and channels proved to be effective in reducing underwater bark accumulations.

Transportation Photos 11 and 12. Left: Accessing the Tonka LTF from the sort yard. Right: Tonka sort yard surface clean of bark material.

Transportation Photos 13 and 14. Left: Settling pond at the Tonka sort yard. Right: Secondary settling area after the settling pond at the Tonka LFT.

Evaluation of Results

The FY2014 monitoring showed that we were effective in limiting environmental effects as a result of an effective maintenance program on the road system. Sediment transport of eroded materials from the road surfaces was minimal. The road surfaces were in excellent condition and showed no ruts or water diversion. The culverts monitored were effectively transporting water across the road and no maintenance issues were noted on the culverts; no head cutting or bank erosion was noted. The running surface of the Tonka LTF was in good condition; the surface is graded weekly as needed (Photo 11). The surface is cleared of loose soil and bark debris. The sort yard running surface was well-graded and clean of bark (Photo 12). The Tonka sort yard settling pond showed some need for clean-out (Photo 13). The system of settling ponds is functioning well to filter out the fine sediment. No sediment was noted in the ditch downslope of the settling pond and no sediment was noted in transport to the ocean (Photo 14). The settlement pond at the LTF was functioning well, filtering out sediment in the primary and secondary settling areas.

Action Plan

Maintenance is needed to correct deficiencies on maintenance of the sort yard settling pond at Tonka on Kupreanof Island. The settling pond was cleaned out before the end of the 2014 operating season. The back wall of the sort yard is raveling. An action plan for slope stabilization was developed and documented in the Storm Water Pollution Prevention Plan.