

## **Road Construction, Mitigation, and Maintenance Item 24**

**OBJECTIVE:** To determine if Forest Plan Soil and Water Conservation Practices and State of Montana Best Management Practices are being implemented in project management activities.

**DATA SOURCE:** Road construction and timber sale contracts, post-sale ID team review, force account crew work accomplishments, and INFRA database records.

**FREQUENCY:** One sale per district per year.

**REPORTING PERIOD:** 2014-2015

**VARIABILITY:** Deviation from Best Management Practices Standards.

### **EVALUATION:**

The Bitterroot National Forest (BNF) uses Best Management Practices (BMPs) as a mechanism to help achieve water quality standards. The Forest incorporates BMPs as mitigation in all projects that may impact soil and water resources. In recent years, maintenance, reconstruction, hydrological stabilization for long term storage and road decommissioning through obliteration have become the focus of the National Forest program of work.

The Forest conducts interdisciplinary team reviews of projects on a yearly basis. We have reported these reviews, including road impacts to soil and water, in the yearly monitoring report (see Items 19, 21, 22, and 31 in this and previous reports). However, what has not been covered in the other reports is the overall status of roads on the Forest and ongoing road maintenance, reconstruction, and decommissioning. These are summarized below.

### **MONITORING RESULTS:**

#### **Aquatic Organism Passage (AOP) Projects**

AOP projects generally improve, replace, or remove undersized culverts to allow for aquatic organisms to safely pass at all life stages. Bridges and AOP structures are typically sized to mimic the bank full width of the channel and culverts are designed to have natural stream substrate throughout the length of the culvert. Each AOP project accounts for 0.10 miles of road improvement per project. In FY 2014-2015, the Bitterroot National Forest finished several culvert installations and drainage improvement on the following roads:

**Shovel Creek Culvert Replacement (NFSR 468 – Salmon Base Camp):** Completed September 2015 – Replaced undersized 18” culvert at Salmon Base camp access road with a new 36” culvert. Old culvert was consistently overwhelmed during runoff events and would spill over the roadway contributing sediment to the downstream side of the crossing. The new culvert was oversized and realigned to reduce potential of future washing and sediment contributions.

**Solider Creek Culvert Replacement (NFSR 91 – MP 5.1):** Completed June 2015 – The existing fish barrier culvert was replaced with an 8’ diameter AOP culvert that included stream simulation substrate and grade control structures throughout crossing. Slopes at the new culvert installation were armored and the curve widened. Concrete W-Beams were installed above the crossing and approximately 250’ of roadway was graveled. All disturbed areas were seeded, fertilized, and mulched.

**Sheep Creek Culvert Replacement (NFRS 5677 – MP 1.5):** Completed June 2015 – Replaced existing fish barrier culvert and replaced it with 9’ diameter AOP culvert that included stream simulation substrate inside the culvert and grade control structures throughout crossing. Slopes were armored and the curve widened at the culvert location approximately 200’ of the road was graveled. All disturbed areas were seeded, fertilized, and mulched

**Little Blue Joint Culvert Replacement (NFSR 5658 – MP 0.1):** Completed July 2015 – Replaced existing fish barrier culvert with 19'-span bottomless arch. Armored slopes and widened the curve at the pipe location. Installed an armored dip above crossing and graveled approx. 300' of roadway. All disturbed areas were seeded, fertilized, and mulched.



**Photos 1 - Little Blue Joint Culvert Repair before and after Photos**

**East Fork Magruder Creek Culvert Replacement (NFSR 468 – MP 41):** Completed June 2014 – Burned Area Emergency Recovery work. The existing 12" culvert was undersized, plugged and water was overtopping road. It was replaced with new 36" culvert, entire fill slope and catch basin was armored, widened the curve that was too tight for larger horse trailers, and installed an armored dip at pipe location. About two acres of disturbed soils were seeded, fertilized, mulched.

**Johnson Creek Washout Repair (NFSR 5685 – MP 1.0):** Completed Aug 2015 - Emergency Repair to upper Johnson Creek culvert washout. Cleared pipe, regraded stream above as required, and built or repaired the road to make passable after washout.



**Photos 2 - Johnson Creek before and after Photos Taken from the Edge of NFSR 91**

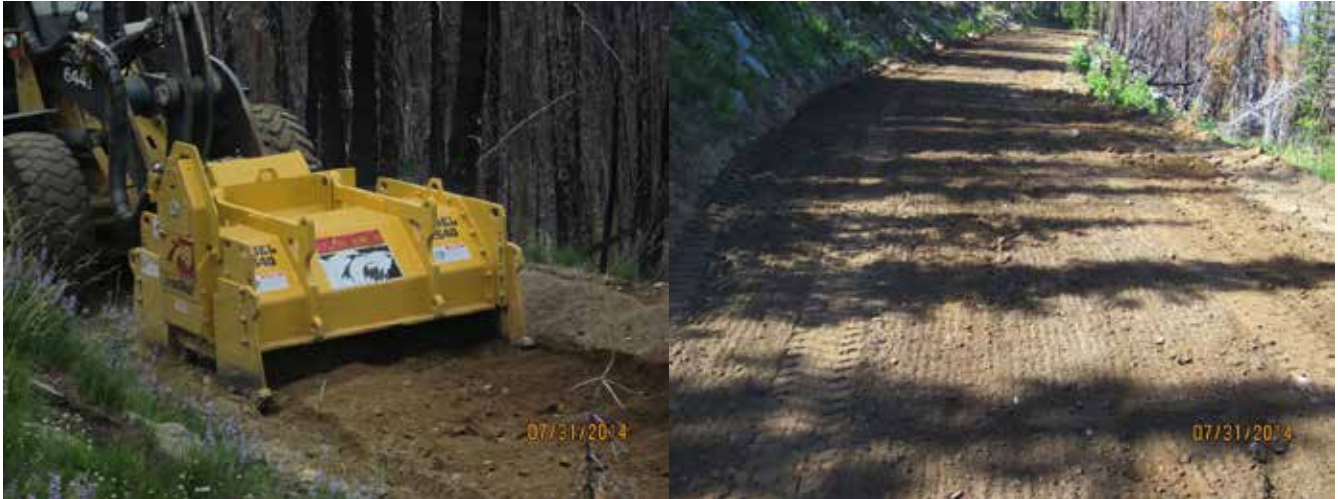
For additional information regarding the AOP program of work refer to Item 22 in this monitoring report.

## Road Maintenance/Reconstruction Projects

In FY 2014-2015, the Bitterroot National Forest finished road reconstruction, drainage improvement, and improved surfacing on the following roads:

**Woods Creek Washout Repair (NFSR 5669 – MP 5):** Completed Aug 2014 - Emergency repair to the Woods Creek culvert washout. Replaced pipe, regraded stream above as required, and rebuilt road to make passable after washout. Also graveled approximately one mile of road with stockpiled gravel from MP 5 to MP 6.

**Roadside Brushing and Drainage Maintenance (NFSR 468 – Gold Pan Overlook to Sabe Saddle):** Completed Aug 2014 – Forest Service Road Crew pulled brush and cleared snags where necessary throughout this 13 mile stretch. Ditches and catch basins were cleaned for all ditch relief pipes. Two ditch relief culverts that had been damaged and corroded were repaired by cutting out bad sections and patching with new sections.

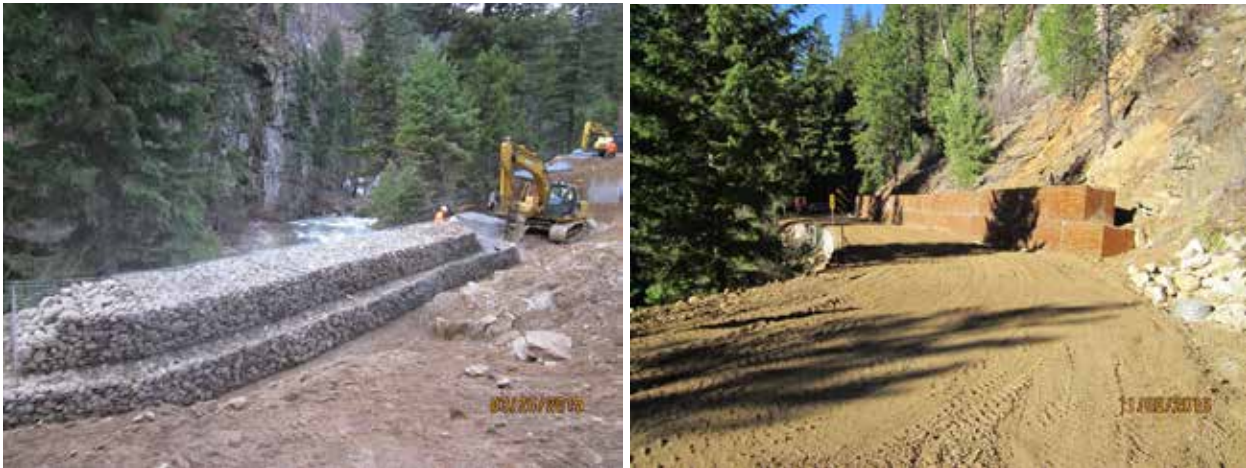


**Photos 3 - Roadside Brushing and Drainage Maintenance NFSR 468 – Gold Pan Overlook to Sabe Saddle, Iron Wolf Pulverizing Road Subgrade, and Resulting Road Prism Prior to Roller Compaction.**

**Lost Horse Gravel Surfacing Phase 1 (NFSR 429):** Completed Aug 2014 – Hauled, placed, watered, and compacted gravel surfacing on approximately 6 miles of roadway. Cleared catch basins and improved ditches and road surface drainage. Work was done in cooperation with Forest Service (FS) road crew and contractors.

**Deep Creek Slide Repairs (NFSR 468 – multi):** Completed September 2014 – Emergency reconstruction/repairs made to Road 468 after large debris flow took out the road at six locations of tributary/swale crossings to Deep Creek. FS road crew worked cooperatively with contracted equipment/operators to clear road and make passable immediately to get stranded public out of area and then work to clear debris, regrade stream as necessary, install multiple culverts at tributary crossings and reconstruct road to standard. Approximately one mile of gravel surfacing was placed in conjunction with repairs. Significant rock armoring of fill slopes and catch basins occurred at multiple locations. Seeded, fertilized, and mulched all roadside sites disturbed by slides and resulting reconstruction.

**Selway Road Stabilization (NFSR 468 – MP 34.4 & NFSR 6223 – MP 0.1):** Completed May 2015 – Installed 3 gabion basket retaining walls, 1 Geosynthetic Reinforced Soil retaining wall, and multiple rock buttress retaining walls to stabilize failed fill slopes along road 468 and 6223. Failing slopes had been identified throughout previous years and all were immediately adjacent to the Selway River. Appropriate treatments were discussed and decided on through collaboration with Regional geotechnical engineers and contracted A&E firm. This project is multi-phase and also includes the stabilization of cut slopes at various sites through the use of precast concrete retaining walls; this work started in fall of 2016 and will be complete by spring of 2017.



**Photos 4 – Gabion and Retaining Wall Installation and Finished Product NFSR 468**

**Lost Horse Gravel Surfacing Phase 2 (NFSR 429):** Completed August 2015 – Hauled, placed, watered, and compacted gravel surfacing on approximately five miles of roadway. Replaced one failing culvert, cleared catch basins, and improved ditches and surface drainage. Work was done in cooperation with FS road crew and contractors.

**Hog Trough Pit Gravel (NFSR 75 – MP 1 – 3):** Completed August 2015 - Hauled, placed, watered, and compacted gravel surfacing on approximately three miles of roadway. Work was done in cooperation with FS road crew and contractors.

**Concrete Water Bar Installation (NFSR 468 – Magruder Crossing to Haystack Saddle):** Completed September 2015 – Installed concrete water bars at four different sites between Haystack and Magruder Crossing where water was obviously running down road and eroding roadway surface.



**Photos 5 – Concrete Water Bar Installation Lost Trail Ski Area NFSR 5734**

### **Road Storage and Obliteration**

The Bitterroot National Forest has been hydrologically stabilizing future needed roads, and obliterating unneeded system and non-system roads in an effort to reduce sedimentation and to restore areas to pre-road conditions

Road decommissioning work includes full or partial recontouring of the road prism, culvert removal, full recontouring of stream and drainage crossings, seeding, mulching, and fertilizing of disturbed areas. Road storage treatments include full recontouring of entrance, de-compaction of road prisms, culvert removal, full recontouring of drainages, surface drainage improvements, and seeding, mulching and fertilizing disturbed area.



**Photos 6 – Cathouse Creek Decommissioning Project**

The Bitterroot National Forest Watershed program continued treating and field reviewing roads identified in the Martin Creek Watershed Restoration Project in 2014, and the Darby Lumber Lands Project in 2015. The watershed program began treating those roads identified for decommissioning and road storage using a rented excavator and a force account crew, as well as contract crews to accomplish the work. The watershed crew also did field reviews on all of these roads in order to identify those roads where treatment has been done in the past, or where natural recovery has mitigated resource risks and needed no additional treatments.

The majority of those roads considered to be naturally recovered, are at high elevation, near the top of the watershed boundary, located on rocky soils, some had been burned by the 2000 fires and also the Sleeping Child fire in the early 1960's. Review found many of these roads to be very stable, not erosive, and inaccessible to full size vehicle traffic. For more detailed information regarding road storage and decommissioning, please refer to Item 19 in this report.

**Road Maintenance Totals**

The Bitterroot National Forest's road crew, timber sale operators and private contractors maintained roads on the Bitterroot from 2014 to 2015, the breakdown of road miles per maintenance level (ML) is as follows.

**Table 1 - Road Miles Maintained per ML from 2014-2015**

Maintenance Level	2014 Miles	2015 Miles
ML 1	13.3	5.9
ML 2	29.7	40.8
ML 3	116.7	202.2
ML 4	0	3.4
ML 5	0	0

Note: Reconstruction miles are included in these totals.

Yearly routine maintenance items completed in FY 2014 to 2015 may include spot gravelling, removing large rocks from road surfaces, culvert maintenance and repair, road surface grading, brushing and bridge maintenance. In addition to road maintenance, the road crew assisted with watershed and recreation projects.

**New Specified Road Construction**

The Como Forest Health Project, signed 9/15/2015, authorized new road construction within the project area. Two new Specified roads were constructed for timber extraction and administrative access. National Forest System road (NFSR) 62931A, 0.59 miles, connects the existing road system in the Lick Creek Drainage to the

Bitter Root Irrigation Ditch Lost Horse Feeder Canal. This enables to Bitterroot National Forest to access National Forest System Lands below the canal that were previously accessible only with permission from private land owners. This Maintenance Level 2 road will remain available to motorized administrative travel, and closed to motorized public travel.

A 0.175 mile portion of NFSR 62945 was decommissioned due to water resource concerns, and a new 0.405 mile section was constructed to access an existing plantation. NFSR 62945 will be stored after project operations and remain on the National Forest System as a ML 1, stored road.

**Table 2 - New Road Construction Miles per Maintenance Level**

Maintenance Level	2015 Miles
ML 1	0.41
ML 2	0.59

**Road Maintenance Status**

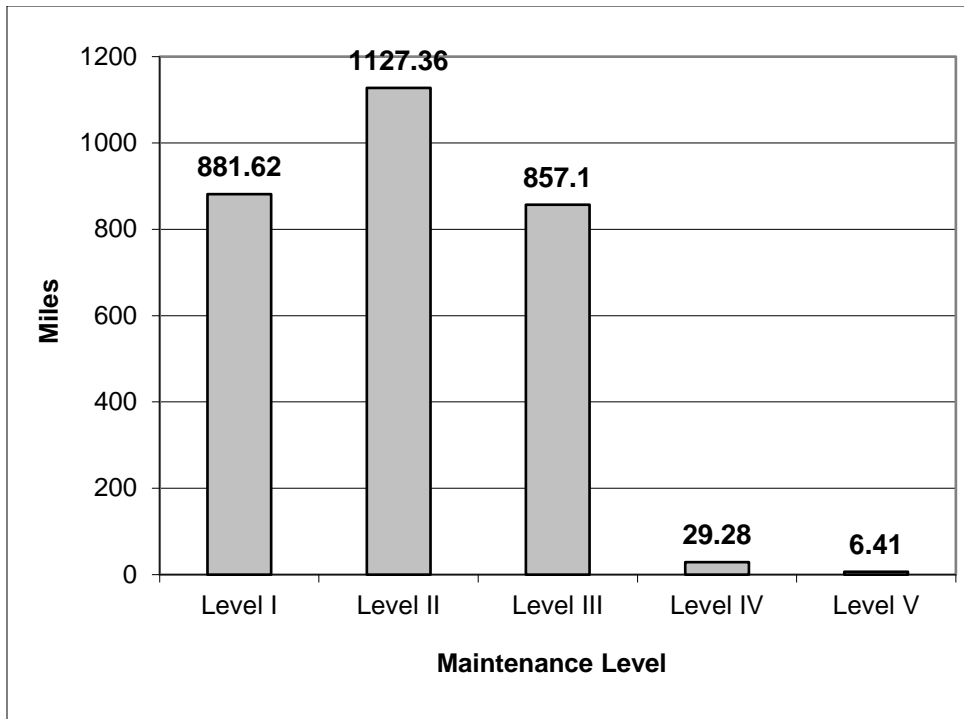
Existing roads are maintained and managed based on access needs, volume and types of traffic, and the impacts the roads have on other resources. There are five levels of maintenance. They are as follows.<sup>1</sup>

**Table 3 - Management of Existing Roads Based on Maintenance Level**

Maintenance Level	Management
Level I	Not maintained for public use. These are only maintained to preserve the road template. There are 881.62 miles of Level I roads on the Forest, these roads are closed yearlong to full size motorized vehicle traffic.
Level II	Managed for high clearance vehicles, maintenance mainly focused on erosion control. There are 1127.36 miles of Level II.
Level III	Native and gravel surface, low traffic volumes, maintained for template preservation and some user comfort. These roads are managed for use by standard highway vehicles. There are 857.10 miles of Level III.
Level IV	Higher traffic volumes, gravel surfaced arterial roads, maintenance at a higher standard. There are 29.28 miles of Level IV.
Level V	High traffic volumes, paved arterial roads. There are 6.41 miles of Level V roads.

Note: Total National Forest System Road miles will vary due improved mapping technologies, NEPA decisions, and new road construction.

<sup>1</sup> Please note that minor variations from year to year reflect on-the-ground changes as well as adjustments and corrections to the INFRA database.



**Figure 1 - Road Maintenance Status – Miles per Maintenance Level**

**Schedule A Agreement with Ravalli County**

The Forest Service has special authorities under the Forest Road and Trail Act to trade road maintenance equally with the counties where it is more efficient for the Forest Service to maintain some county roads and for the county to maintain some Forest Service roads. Under the most recent agreement with Ravalli County, the county will perform normal spring maintenance and grading on all or portions of the following Forest Service roads: Mill Creek, Blodgett Creek, Warm Springs-Laird, North Kootenai, Rye Creek, and Lost Horse. The Bitterroot NF will perform normal spring maintenance and grading on portions of the following county roads: Three Mile, Willow-St. Clair, Bitterroot-Big Hole, Hughes Creek, Fred Burr, and Pierce Creek. We will do joint maintenance on Nez Perce Road.