

# **LIME COMPLEX FIRES**

## **Burned Area Emergency Response**

### **Engineering Report**

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**Objectives:** The purpose of this assessment is to evaluate the effects of the fire on the transportation system within the burned areas of the fires. The emphasis is to protect existing infrastructure, surrounding watersheds, native habitat, and provide safe travel.

**Issues:** Due to recent fires, anticipated higher amounts of water runoff and debris flow are expected to occur. As a result, culvert failure, increased surface rilling and eroded roadbeds and trails could severely impact associated streams.

#### **Observations:**

##### **A). Background information:**

There is nearly 80 miles of existing system roads and an additional 20miles of previous decommissioned or unclassified roads. The majority of the system roads have been previously well maintained with adequate drainage systems. The South Fork Mountain road 2N27 should not have an adverse effect on resources providing adequate measures are taken to recommission it. Road 2N54 within the Cold Camp Creek could pose a risk due to the high intensity burn. Little Creek in the Miners Fire with the high burn intensity above road 4N08 could exacerbate the problems with two existing culverts. A large 66 inch culvert with crushed outlet and an undersized 18 inch culvert with a plus 20 foot fill are in jeopardy of loss without remedial action. Road 4N08 also has many cross drains, for ditch relief, that threaten increased soil erosion at outlets. Future reconnaissance will be needed to determine correct culvert and stream channel sizing.

#### **Miles of Road by Maintenance Level**

<b>OPERATIONAL_MAINTENANCE_LEVEL</b>	<b>Lime</b>	<b>Miners</b>
0 - NOT MAINTAINED	8.5	3.3
1 - BASIC CUSTODIAL CARE (CLOSED)	17.6	8.6
2 - HIGH CLEARANCE VEHICLES	11.1	15.6
3 - SUITABLE FOR PASSENGER CARS	11.2	4.8
4 - MODERATE DEGREE OF USER COMFORT		
(blank)	5.2	2.4
<b>Grand Total</b>	<b>53.6</b>	<b>34.7</b>

Level 0 and (blank) are unknown road types – Decommissioned or Unclassified

##### **B). Reconnaissance Method:**

All reconnaissance was completed by vehicle and foot access. Areas of high/moderate burn severity and specific values were the priority for the field survey.

**C). Findings/Description of Emergency:**

General observations for roads inspected and identified are as follows:

Road 2N54 – Cold Camp Creek

- 30” culvert with risk of plugging from increased runoff and debris flow.
- 36” culvert with high risk of plugging from increased runoff and debris flow.
- Road outslope and dips to be maintained for water sheetflow to prevent concentration of waters.

Road 4N08 – Miners Creek Road

- Existing 66 inch culvert, 20 foot height at centerline, crushed outlet, heavy woody debris at inlet and outlet.
- Undersized 18 inch culvert, 25 foot plus high fill with woody debris.
- Slide at head of Little Creek with 48 inch culvert, has underdrains, rocked critical dip and armored overflow.
- Multiple 18 inch ditch relief culverts with increase erosion potential at outlets.

**Treatment recommendations:**

**A). Management treatments:**

**Road 2N54 1.1 miles**

- Clean inlet and outlets of woody debris.
- Construct rocked critical dip with armored outlet, to accommodate overtopping of culverts and protect embankments.
- Maintain outsloped roadways and construct dips (5 total) to reduce surface rilling and erosion.

Cost of repair - \$\*\*\*\*\*

**Road 4N08 4.7 miles**

- Repair crushed 66 inch culvert outlet, armor toe of embankment and outfall, and remove wood debris from inlet and outlet. This will consist of mostly hand labor due to inaccessibility of area. Clear inlet of vegetation.

Cost of repair - \$\*\*\*\*\*

- Upsize 18 inch culvert, reduce amount of embankment, construct critical dip with armor outlet. Remove approx. 2000 cubic yards material, install 60” x 120’ culvert, replace compacted embankment, and construct rocked critical dip and armor fill slope.

Cost of repair - \$\*\*\*\*\*

- Installation of energy dissipaters at ditch relief culvert outlets with rip rap material.

Cost of repair - \$\*\*\*\*\*

**B).Monitoring:**

Monitor or storm patrol of roads the first 1-3 years after fire. Monitor large culverts on road 4N08 during storm events until vegetation recovers.

**C). National Fire plan proposals, long term project proposals:**

Reduce the number of unclassified roads. In the Lime Fire Complex, 20 percent of the roads are unclassified or non-maintained roads. Many of these roads were opened up and used as fire lines or access routes. Establishing guidelines for opening and closing these roads to insure there status is maintained to resolve responsibilities.

**Consultations:**

Members of the BAER Assessment Team and Lori Jackson, Local Road Manager.

**References:** Best Management Practices booklet by the USDA Forest Service. (Author unknown at this time)