Outline

I. Legal Requirements for Geologic Input
II. Common Geologic Issues affecting THP’s
III. THP Preparation – Office Research and Field Work
IV. Determining when a Geologist is Needed
V. Element of the Geologic Assessment
VI. Standards of Practice
I. Legal Requirements for Geologic Input

a) Forest Practice Rules

a) Geologist and Geophysical Act
a). Forest Practice Rules
Threatened and Impaired Watersheds

• Consultation with Experts (page 33)
  – Landslide identification, Soils/Erosion, Public Safety/Welfare

• Records Examined (page 33)
  – Geologic maps, previous geologic reports

• Inner Gorge (page 74)

• Surface Mining and Reclamation Act (SMARA) (page 294)

• Headwall Swales (page 304)
  – Road repair/construction/decommissioning
Inner Gorge is a geomorphic feature formed by coalescing scars originating from landsliding and erosional processes caused by active stream erosion. The feature is identified as that area beginning immediately adjacent to the stream channel below the first break in slope.
SMARA – Surface Mine and Reclamation Act
SMARA – Surface Mine and Reclamation Act

- Disturbed area exceeds 1 acre or volume is greater than 1000 cubic yards
  - Within 100 feet of Class I
  - Within 75 feet of Class II
  - Within 25 feet of Class III
How SMARA Applies to Timber Operations

1. Excavation of rock material for use during timber operations will occur.
   - No: SMARA does not apply to timber operations.
   - Yes: Is the area disturbed by mining activity >1 acre in size of the material excavated cumulatively >1000 yards? per location? (§ 2714(d))
     - Yes: The activity is exempt from SMARA. Where necessary, mitigate any significant adverse impacts that may result from the activity.
     - No: Timber operations may commence once the proper harvest document is acquired from CDF.

2. Are the excavated materials for use on the same property for timber operations only and not to be sold for commercial purposes?
3. Is the mined area >100 ft from Class I and/or >75 ft from Class II wetlands? (§ 3700(k))
4. Will the excavation occur on the same ownership as timber operations? (§ 3700(k))
5. Will slope stability and erosion be controlled per 14 CCR §§ 3704(f) and 3700(k)?

The activity is not exempt from SMARA. Surface mining operations may occur.

Prepared by the California Department of Forestry and Fire Protection 7/15/05
HEADWALL  SWALES
Connected Headwall Swale means a geomorphic feature consisting of a concave depression, with convergent slopes typically of 65 percent or greater, that is connected to a watercourse or lake by way of a continuous linear depression. A linear depression interrupted by a landslide deposit is considered to be continuous.
Debris Flows

(From DMG, 1997)
ROAD REPAIR and CONSTRUCTION in Headwall Swales
b). Geologist and Geophysical Act

- Defines who can practice geology
- Reason for Geologist and Geophysical Act is to ensure reports on which the public may rely
- Define an ethical standard of practice and competency
II. Common Geologic Issues Affecting Timber Harvest Plans

- Effects of Tree Removal on Hillslope Stability
- Effects of Road/Skid Trail Construction on Hillslope Stability and Erosion
- Excessive Sedimentation
- Impacts to:
  - Public Safety
  - Natural Resources including water quality/habitat.
  - Economic Concerns
- HCP, SYP, or other requirements
III. Geologic Disclosure in THP
RPF Office Research

– CEQA
– Regional Geologic Maps (starting point)
– Soils Maps
– Previous geologic report or reviews in the THP area.
– Aerial photo collections
SOIL
SURVEY
MAPS
RESEARCH

PREVIOUS

GEOLOGIC

REPORTS

OR

REVIEWS
AERIAL PHOTO REVIEW = HISTORY OF LAND USE
III. Geologic Disclosure in THP
RPF field work

– Recognition of unstable areas
  • CFLA guidelines
  • CDMG Note 50
  • CGS pre-permit consultation

– Public Safety
  • Residential structures
  • Roads, Highways, Railroads
  • Domestic and Municipal Water supplies
  • Power lines, off site properties
Landslide Identification

California Licensed Foresters Association's Guide to Determining the Need for Input from a Licensed Geologist in THP Preparation

The following planting should be addressed by Registered Professional Foresters (RPF) acting as Timber Harvesting Plan (THP) preparers. THPs are managed by the Division of Mines and Geology, State of California, Bureau of Land Management.

5. Are there recent or past landslides on or adjacent to the proposed THP area?

a) Were landslides seen on aerial or satellite images, landslides, and watershed maps, field photo, or similar site to the intensity of the area?

The Division of Mines and Geology will provide digital maps from the California Landslide Inventory. Landslide inventory maps are available on the internet. The Division of Mines and Geology will provide DLCD-1000A coordinate data for landslides.

b) Were landslides observed in the field? Features associated with landslides may include:

1. Elliptical scars on slopes
2. Disturbed soil or debris
3. Acidic soil
4. Displaced or deformed vegetation

CALIFORNIA DEPARTMENT OF CONSERVATION

FACTORS AFFECTING LANDSLIDES IN FORESTED TERRAIN

NOTE 50

Factors affecting landslides are complex and depend on a variety of site-specific conditions. Determining whether a site has a potential for landslides requires a detailed evaluation of the site's geologic conditions. The evaluation should include an assessment of the stability of the site, including factors such as slope stability, soil moisture, and the presence of cracks or other signs of potential instability. The evaluation should be performed by a licensed geologist or other qualified professional.
HUMMOCKY GROUND
SCARPS AND BENCHES
LEANING TREES
ROAD OR LANDING FILL FAILURE
IV. Determining when a geologic consultant is needed.

- CLFA Guidelines
- Impacts to Public Safety/Welfare
- Focused needs (watercourse crossings, road construction, road abandonment/decommissioning, mitigations)
- Interagency requests (new rules, HCP, TMDL, Waivers)
THP Map

- Plan Boundary
- Existing Permanent Road
- Existing Seasonal Road
- Seasonal Road Needing Reconstruction
- Class I Watercourse
- Class III Watercourse
- Class IV Pond

TC1 - Temporary Crossing, Sec. 5, L 26
- EEZ Cliff Area
- Clearcut Area, Rest of plan is Group Selection
- House or Outbuilding
Area #1 - Area of Road Reconstruction, See Section II, Item 25
+++ - Existing Ski Trail

Hydesville & Owl Creek Quads, Cont. Int. - 40'
Scale: 1" = 500' T. 2 N. R. 2 E. HB&M
Original map submitted with THP  CGS Review Notes Following PHI
Note: Cross section is based on rough field measurements.

Cross Section A - A'
Residence to landing area

Date: 2/15/05
Scale: 1" = 50'
Approved By:

Horizontal and Vertical Scale 1 inch equals 50 feet
175' of new road construction.
V. Consultant Geologic Assessment

• Types of Investigations
  – Focused Investigation
  – Full Investigation
  – Disclosure

• What CGS expects to see

• Note 45 – Guidelines for Engineering Geologic Reports for Timber Harvest Plans

• What CGS does not expect to see
VI. STANDARDS OF PRACTICE

NOTE 45

- General Information
- Scope of Investigation
- Geologic Conditions
- Proposed Activities
- Potential Effects
- Cumulative Effects
- Mitigations
- References
Questions and Comments???