

---

**TABLE OF CONTENTS**

---

	Page
8.2 Geology and Soils Environmental Effects.....	8.2-1
8.2.1 Soil Erosion .....	8.2-1
8.2.2 Local Topography.....	8.2-2
8.2.3 Soil Contamination .....	8.2-2
8.2.4 Unavoidable Adverse Effects.....	8.2-3

## **8.2 GEOLOGY AND SOILS ENVIRONMENTAL EFFECTS**

This section describes potential impacts to geology and soils under the Proposed Action for the Middle Fork American River Project (MFP or Project). Section 4.0 – Proposed Action (including Tables 4-4, 4-5, and 4-6) provides a description of routine operation and maintenance activities to be implemented under the Proposed Action compared to the No-Action Alternative. Appendix A – Modified or New Facilities Construction Activities and Concept Designs includes a description of facility modification and construction activities to be implemented under the Proposed Action.

Potential impacts to geology and soils have been identified based on changes in routine maintenance activities, implementation of non-routine recreation facility activities, and modification of existing or construction of new Project facilities. Specifically, impacts to geology and soils include the following:

- Potential impacts to local topography from ground disturbance associated with development of augmentation areas and construction activities associated with modified or new Project facilities or Project recreation facilities.
- Potential soil erosion and contamination from implementation of vegetation and noxious weed management (herbicide use) and fuels or other toxic material utilized during routine maintenance activities or construction activities associated with modified or new Project facilities or Project recreation facilities.

Potential impacts to sediment capture at Project diversions; sediment transport in bypass and peaking reaches; and reservoir shoreline and stream bank erosion are discussed in Section 8.7 – Geomorphology Environmental Effects.

A description of potential impacts to geology and soils resulting from implementation of the Proposed Action, considering Avoidance and Protection (AP) measures and enhancement measures, is provided below. Unavoidable adverse effects are also discussed at the end of this section.

### **8.2.1 Soil Erosion**

Under the Proposed Action, implementation of non-routine recreation facility activities and construction projects could increase soil erosion. In addition, grading, vegetation removal, and other ground-disturbing activities could increase the susceptibility of soils to water and wind erosion. AP measures incorporated into the Recreation Plan (PCWA 2011a; SD A) and Appendix A – Modified or New Facilities Construction Activities and Concept Designs will be implemented to protect soil resources. These measures include:

## Recreation Plan

- Restricting activities to minimize erosion by conducting operations during periods of minimal runoff; and
- Implementation of measures to minimize erosion and sedimentation from disturbed ground on incomplete projects.

## Appendix A – Modified or New Facilities Construction Activities and Concept Designs

- Development of an erosion control plan prior to construction activities;
- Establishment of preventative measures to divert surface runoff around bare areas;
- Construction of drainage facilities to control erosion and/or sedimentation during earthwork;
- Implementation of measures to prevent or minimize erosion, including vegetative and/or mechanical measures to improve surface soil stability; and
- Revegetation of unstable or disturbed soil surfaces as soon as possible to minimize erosion potential.

Implementation of the AP measures listed above will protect soil resources and prevent soil erosion over the term of the new license. Therefore, potential soil erosion-related impacts associated with the Proposed Action are considered negligible.

### **8.2.2 Local Topography**

Under the Proposed Action, the development and use of new sediment augmentation areas could impact local topography. These new augmentation areas include: Middle Fork Interbay Augmentation Areas (two areas, each approximately 0.11 acre) and Junction Bar Augmentation Area (approximately 1.77 acres) (PCWA 2011b; SD A). In addition, the grading, vegetation removal, and other ground-disturbing activities associated with implementation of the Proposed Action could result in minor changes in local topography. While sediment augmentation will change local topography, this activity will allow for increased natural delivery and transport of sediment and enhance aquatic and riparian habitat downstream of MFP diversions. Therefore, potential impacts to local topography associated with the Proposed Action are considered negligible.

### **8.2.3 Soil Contamination**

Under the Proposed Action, the use of herbicides, surfactants, and fungicides as part of routine vegetation and noxious weed management could potentially impact soils as a result of an accidental spill of pesticides, fuels, or other toxic material utilized during vegetation/noxious weed management and other maintenance activities. The

Vegetation and Integrated Pest Management Plan (VIPMP) (PCWA 2011c; SD A) includes AP measures to protect soils during vegetation and noxious weed management activities. These measures include:

- Application and handling of pesticides and surfactants consistent with labeling and with applicable laws and regulations governing their use;
- Limiting pesticide use to days when precipitation and wind conditions are within appropriate parameters; and
- Establishing contingency plans in the event of hazardous spills.

Implementation of these AP measures will protect soil resources over the term of the new license. Therefore, potential soil contamination-related impacts associated with routine vegetation and noxious weed management under the Proposed Action are considered negligible.

In addition, implementation of non-routine recreation facility activities and construction projects could potentially impact soils as a result of an accidental spill of fuels or other toxic materials used for maintaining and operating heavy equipment. AP measures incorporated in the Recreation Plan (PCWA 2011a; SD A) and Appendix A – Modified or New Facilities Construction Activities and Concept Designs will be implemented to protect soil resources. These measures include:

- Establishment of contingency plans prior to project activities addressing potential hazardous spills;
- Establishing designated equipment refueling and maintenance areas;
- Required cleaning and inspection of equipment prior to entering the National Forest to ensure it is in proper functioning condition; and
- Required compliance with all applicable local, state, and federal standards associated with handling and disposal of hazardous materials.

Implementation of these AP measures will protect soil resources over the term of the new license. Therefore, potential soil contamination-related impacts associated with non-routine recreation facility activities and construction projects under the Proposed Action are considered negligible.

#### **8.2.4 Unavoidable Adverse Effects**

There are no unavoidable adverse effects to geology and soils under the Proposed Action.

**LITERATURE CITED**

Placer County Water Agency (PCWA). 2011a. Recreation Plan. Available in PCWA's Application for New License – Supporting Document A.

\_\_\_\_\_. 2011b. Sediment Management Plan. Available in PCWA's Application for new License – Supporting Document A.

\_\_\_\_\_. 2011c. Vegetation and Integrated Pest Management Plan. Available in PCWA's Application for New License – Supporting Document A.