4.2.4 *Management Area Change*

Management direction for geologic resources related to mineral development is provided in MA 8, MA 16, and MA 25 of the Forest Plan. The Forest Plan (USDA 1986) states that mineral material permits will not be issued for MA 8 (page III-24). In 1996, Section 701(j), Title VII, Division I of the Omnibus Parks and Public Lands Management Act withdrew all National Forest within permitted ski area boundaries from mineral entry, subject to valid existing rights. 5 and MA 25 standards state that mineral resource permits will be issued on a case-by- basis.

4.3 WATER RESOURCES

4.3.1 *Description of Potential Impact Mechanisms*

Two primary concerns are related to impacts on water resources from the Proposed Action:

- Impacts to water quality as a result of sediment delivery (sedimentation) to La Valle Creek and Butler Creek
- Impacts to water quantity as a result of modification of the flow regime (i.e., increased peak flows due to vegetation removal that may cause channel instability in La Valle Creek and reduction in flow of Butler Creek from snowmaking withdrawals).

The sections below describe issues relevant to the evaluation of these impacts.

Sedimentation

Clearing vegetation from hillslopes results in increased potential for erosion. By applying active BMPs, this erosion may be reduced (Stednick 2010). Hillslope erosion is addressed in Section 3.2. All ground-disturbing activities in the Proposed Action would occur uphill from FR 19080, located above La Valle Creek. This road would preclude downslope sediment migration from hillslopes in all but the most extreme erosion events; this is possible because it would be upgraded to meet road BMP standards, and all ground disturbances would be stabilized and vegetated in a timely manner.

During multiple site visits and a detailed erosion and sedimentation assessment, no sediment delivery mechanisms or occurrences were observed in the analysis area, with the exception of sites at the base area.

Erosion of a forest road surface depends on numerous factors (Sugden and Woods 2007), including:

- Soil and parent material characteristics
- Road age
- Presence or absence (and depth) of aggregate surfacing
- Quality of surfacing
- Frequency and type of vehicle traffic
- Rainfall characteristics
- Amount of vegetative cover
- Roadbed slope
- Presence of vehicle ruts on the road surface
- Road maintenance regimen.