

## 24.14 CHAPTER 14 - SOILS, GEOLOGY AND SEISMICITY

### *Impact GEO-1, DEIR/EIS page 14-43, FEIR/EIS page 14-43; Revision to geologic hazard analysis to further address Gondola lift line*

General Upper Mountain. A Quaternary landslide is mapped in the volcanic rock to the north of the Project area. The same volcanic rock is mapped within the Project area and may be prone to landsliding (Kleinfelder 2007). The possibility of landslides and seismically induced slope instability in the general Project area is considered moderate because of the steep topography of the Project area and the observed evidence of soil creep. A number of areas of rock outcrops are observed in the Project area and additional rock outcrops could be present but not yet mapped. A potential for ~~seismically-induced~~ seismically induced rock fall exists within the Project area (Kleinfelder 2007), but is considered low because these areas are not ideal for development and ~~new existing and~~ structures and facilities are not proposed in these areas.

The Project, however, proposes a replacement of the existing Madden Triple Chair Lift with a Gondola. The Gondola alignment will follow the existing lift line but will require earthwork associated with modification of or replacement of the 14 existing lift towers and footings with Gondola towers and footings that are approximately 80 square feet each. Lift tower and locations may shift slightly to accommodate changes in vertical loads in and across the lift line but are not expected to increase the risk of seismic related ground failure because excavation necessary for replacement towers, approximately 27 cubic yards per tower footing, will be localized and within the previously disturbed lift alignment. Dopplemayr engineering specifications for vertical loads within and across lift lines indicate sufficient flexibility for lift tower spacing to span or otherwise avoid rock outcrops. Load calculations indicate tower spacing can range from approximately 23 feet to just over 450 feet. Engineering specifications indicate a range of tower height from 18.6 feet to 47 feet, which will allow for adequate ground clearance with no additional grading along the lift alignment. Four trees have been identified for removal at the slope break in proximity to the existing Madden chair lift mid-station.

The existing lift terminals will be replaced with a 6,000 square foot base terminal at the North Base and an 18,000 square foot top terminal adjacent to the proposed Mid-Mountain Lodge. No active faults are mapped in the areas of tower or terminal replacement.

Placer County requires a final geotechnical report as outlined in Mitigation Measure GEO-1 to determine site-specific recommendations to avoid and minimize unstable soil conditions from seismic related ground failure. The intentions of adopted codes and regulations are to avoid, reduce and minimize potential seismic hazards and provide for public safety. Implementation of the engineering and design recommendations of the final geotechnical report will minimize effects from ground shaking. Recommendations from the final geotechnical investigation required for project permitting will be incorporated into final project designs to address known seismic constraints, reducing the potential impact of ground shaking hazards and slope instability to a level of less than significant.

A previously unmapped spring on the slope of “The Face” ski trail was observed during preliminary geotechnical investigations (Kleinfelder 2007). The presence of this spring could affect slope stability in this localized area, but no facilities or structures are planned in this part of the Project area.

Slope instability is observed near White Lightning ski trail and soil creep (evidenced by bent tree trunks) is documented on “The Face” ski trail near the top of the slope below the mid-loading station of the Madden Triple chair lift (Kleinfelder 2007). No new facilities or structures are proposed in this part of the Project area.

Dopplemayr engineering specifications for vertical loads within and across lift lines indicate sufficient flexibility for lift tower spacing to span or otherwise avoid the previously unmapped spring and areas of soil creep and thus avoid areas of potential unstable soil conditions. Load calculations indicate tower spacing can range from approximately 23 feet to just over 450 feet.

Through conformance with existing building codes, compliance with federal, State, regional and local regulations, and incorporation of geotechnical recommendations from final geotechnical engineering reports, potential impacts from primary and secondary geologic hazards will be avoided, reduced and minimized to a level of less than significant. The potential impact is considered significant until the completion of mitigation measure GEO-1.

***Mitigation Measure GEO-1, DEIR/EIS page 14-43, FEIR/EIS page 14-44: Revision to mitigation language per Placer County***

**GEO-1. Submit Final Geotechnical Report**

The Project Applicant shall submit to the Engineering and Surveying Department (ESD), for review and approval, a geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer. The report shall address and make recommendations on the following:

- A) Road, pavement, and parking area design
- B) Structural foundations, including retaining wall design (if applicable)
- C) Grading practices
- D) Erosion/winterization
- E) Special problems discovered on-site, (i.e., groundwater, expansive/unstable soils, soil creep, etc.)
- F) Slope stability
- G) Utility trench design, including seismic design for sewer and water utilities crossing fault lines

Once approved by the ESD, two copies of the final report shall be provided to the ESD and one copy to the Building Department for their use. If the soils report indicates the presence of critically expansive or other soils problems that, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report shall be required for subdivisions, prior to approval of the Improvement Plans. ~~This certification may be completed on a lot by lot basis or on a Tract basis. This shall be so noted in the Covenants, Conditions and Restrictions (CC&Rs) and on the Informational Sheet filed with the Final Subdivision Map(s).~~ It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

***Impact GEO-2, DEIR/EIS page 14-44, FEIR/EIS page 14-45: Revisions to unstable soil conditions analysis to further address Gondola lift line***

Analysis: *Significant Impact; ~~Proposed Project (Alternatives 1, 1A) and Alternatives 3, 4, 5 and 6~~*

The Proposed Project (Alternative 1/1A) and Alternatives 3, 4, 5 and 6 will implement varying degrees of development across the Project area. The *Geologic Hazards and Preliminary Geotechnical Evaluation* (Kleinfelder 2007) provided results from investigations of the general Project area for consideration in project layout and design for these alternatives. Project-level geotechnical evaluations have been completed for the North Base and Mid-Mountain areas that will be developed during Phase 1 of the Project. Placer County requires the completion of a site-specific geotechnical evaluation for the Gondola lift alignment per Mitigation Measure GEO-1A to determine engineering specification for lift tower replacement in areas of potentially unstable soil conditions as discussed above under Impact GEO-1. Additionally, ~~p~~Project-level geotechnical evaluations will be completed for the South Base area with Phase 2.

North Base Area. Structures and facilities, including the Gondola base terminal, proposed at the North Base area under the Proposed Project (Alternative 1/1A) and

***Impact GEO-2, DEIR/EIS page 14-46, FEIR/EIS page 14-47: Revisions to unstable soil conditions analysis to further address Gondola lift line***

Mid-Mountain Area. Structures and facilities, including the Gondola top terminal, proposed at the Mid-Mountain area under the Proposed Project (Alternative 1/1A) and Alternatives 3, 4, 5 and 6 will not be located within areas of unstable soils. Based on low soil risk potential reported in the *Geotechnical Engineering Report for Homewood Mountain Resort Mid-Mountain Lodge* (Holdrege and Kull 2010b) the level of impact is less than significant.

The results of corrosivity tests of soil samples collected at the Mid-Mountain area indicate negligible potential for sulfate attack on concrete and that the use of Type II cement is acceptable. The resistivity results indicated a very low potential (6,000 ohm-cm and higher) of corrosion of metal exposed to native soils (Holdrege and Kull 2010b).

Soil conditions encountered during final geotechnical investigations generally consisted of dense to very dense granular soil types of low plasticity that should provide suitable foundation support for the proposed structures on conventional shallow spread foundations. No highly plastic, compressible, or potentially expansive soil was encountered (Holdrege and Kull 2010b).

Field exploration encountered refusal in volcanic rock across the proposed mid-mountain lodge and water tank sites with depth to refusal varying from 4.5 feet bgs in the east area of the proposed water tanks to 13 feet bgs near the center of the lodge facility. Some areas of near surface rock may be encountered during excavations for utilities, site grading, and/or foundations. A large track-mounted excavator equipped with a ripper tooth or hydraulic hammer, or spot blasting is recommended in these areas. Confined excavations for footings and under ground utilities that extend into rock will likely be difficult. A significant amount of boulders and over-sized material should be anticipated in excavations. With the exception of the organic surface soil, site soil is generally suitable for reuse as structural fill; however, processing to remove oversized material will likely be necessary (Holdrege and Kull 2010b).

General Upper Mountain. Based on past project investigations, records and operations, the Proposed Project (Alternative 1/1A) and Alternatives 3, 4, 5 and 6 do not propose new structures and facilities in areas of moderate to high soil risk potential and the level of impact is less than significant.

The Project area contains areas of soil creep (e.g., the Face, White Lightning and Martin's Lane ski trails) in the general upper mountain (Kleinfelder 2007). No new structures or facilities are proposed in proximity of these areas. Tower replacements necessary for the Gondola are located in close proximity to soil creep mapped on "the Face"; however, Dopplemayr engineering specifications for vertical loads within and across lift lines indicate sufficient flexibility for lift tower spacing to span or otherwise avoid areas of potential unstable soil conditions. Load calculations indicate tower spacing can range from approximately 23 feet to just over 450 feet. Engineering specifications indicate a range of tower height from 18.6 feet to 47 feet, which will allow for adequate ground clearance with no additional grading along the lift alignment. Four trees have been identified for removal at the slope break in proximity to the existing Madden chair lift mid-station.

***Impact GEO-3, DEIR/EIS page 14-47, FEIR/EIS page 14-48: Revision to analysis of land coverage***

land coverage and net land coverage changes, if any, associated with Alternatives 1 through 6. The table has been revised to identify the following items:

- Addition of Alternative 1A (Revised Project) land coverage characteristics;
- Addition of 571 square feet of land coverage at the South Base Area representative of the existing fuel tank that will now remain under Alternatives 1, 1A, 3, 5 and 6 in LCDs 4 and 6; and
- Addition of 6,696 square feet of land coverage at the North Base associated with the TCPUD bike trail extension through LCDs 5 and 6 in the HMR project area.

**Table 14-6, DEIR/EIS pages 14-49 to 14-52, FEIR/EIS pages 14-49 to 14-52: Table 14-6 revised to add land coverage associated with the the proposed bike trail through the North Base Area and Alternative 1A**

**Table 14-6 (Revised)**

Proposed Land Coverage Comparison by Alternative (Square Feet)

Land Capability District <sup>1</sup>	Existing Land Coverage	Proposed Land Coverage	Existing Land Coverage to Remain <sup>2</sup>	Relocated Land Coverage	Allowable Base Land Coverage <sup>3</sup>	Remaining Allowable Base Land Coverage <sup>4</sup>	Excess Land Coverage <sup>5</sup>	Total Buildout Land Coverage <sup>6</sup>
<b>Alternative 1 (Proposed Project)</b>								
6	259,357	<del>307,088</del> 313,610	13,698	245,659	280,987	0	<del>39,799</del> 46,321	
6 (ROW)	18,761	10,581	0	10,581	6,175	0	4,406	
5	159,787	<del>56,724</del> 57,127	61,508	<del>56,724</del> 57,127	678,061	<del>559,829</del> 559,426	0	
4	23,878	<del>233,835</del> 234,177	2,710	21,168	258,929	<del>22,384</del> 22,042	0	
3	539,255	0	382,385	0	941,149	558,764	0	
2	18,123	39,234	768	17,355	7,918	0	32,084	
1a	753,243	0	423,502	0	275,826	0	147,677	
1b	7,694	0	0	0	24,279	24,279	0	
1b (ROW)	1,349	454	0	454	13	0	441	
TOTAL w/o ROW	1,761,337	<del>636,881</del> 644,148	884,571	<del>340,906</del> 341,309	2,467,149	<del>1,165,256</del> 1,164,511	<del>219,560</del> 226,082	<del>1,521,452</del> 1,528,719
<b>Alternative 1A (Revised Project)</b>								
6	259,357	291,828	13,698	245,659	280,987	0	24,539	-
6 (ROW)	18,761	10,653	0	10,653	6,175	0	4,478	-
5	159,787	54,337	61,508	54,337	678,061	562,216	0	-
4	23,878	256,440	2,710	21,168	258,929	0	221	-
3	539,255	0	382,385	0	941,149	558,764	0	-
2	18,123	39,234	768	17,355	7,918	0	32,084	-
1a	753,243	0	423,502	0	275,826	0	147,677	-
1b	7,694	0	0	0	24,279	24,279	0	-
1b (ROW)	1,349	473	0	473	13	0	460	-
TOTAL w/o ROW	1,761,337	641,839	884,571	338,519	2,467,149	1,145,259	204,521	1,526,410
<b>Alternative 2 (No Project)</b>								
6	259,357	0	259,357	0	280,987	21,630	0	
6 (ROW)	18,761	0	18,761	0	6,175	0	12,586	
5	159,787	0	159,787	0	678,061	518,274	0	

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Land Capability District <sup>1</sup>	Existing Land Coverage	Proposed Land Coverage	Existing Land Coverage to Remain <sup>2</sup>	Relocated Land Coverage	Allowable Base Land Coverage <sup>3</sup>	Remaining Allowable Base Land Coverage <sup>4</sup>	Excess Land Coverage <sup>5</sup>	Total Buildout Land Coverage <sup>6</sup>
4	23,878	0	23,878	0	258,929	235,051	0	
3	539,255	0	539,255	0	941,149	401,893	0	
2	18,123	0	18,123	0	7,918	0	10,205	
1a	753,243	0	753,243	0	275,826	0	477,417	
1b	7,694	0	7,694	0	24,279	16,585	0	
1b (ROW)	1,349	0	1,349	0	13	0	1,336	
TOTAL w/o ROW	1,761,337	0	1,761,337	0	2,467,149	1,193,434	487,623	1,761,337
<b>Alternative 3</b>								
6	259,357	<del>312,268</del> 318,790	13,698	245,659	280,987	0	<del>44,979</del> 51,501	
6 (ROW)	18,761	10,581	0	10,581	6,175	0	4,406	
5	159,787	<del>56,724</del> 57,127	61,508	<del>56,724</del> 57,127	678,061	<del>559,829</del> 559,426	0	
4	23,878	<del>282,846</del> 283,188	2,710	21,168	258,929	0	<del>26,627</del> 26,969	
3	539,255	0	382,385	0	941,149	558,764	0	
2	18,123	72,099	768	17,355	7,918	0	64,949	
1a	753,243	8,482	423,502	8,482	275,826	0	156,159	
1b	7,694	0	0	0	24,279	24,279	0	
1b (ROW)	1,349	454	0	454	13	0	441	
TOTAL w/o ROW	1,761,337	<del>732,419</del> 739,686	884,571	<del>349,388</del> 349,791	2,467,149	<del>1,142,872</del> 1,142,469	<del>292,714</del> 299,578	<del>1,616,990</del> 1,624,257
<b>Alternative 4</b>								
6	259,357	19,474	163,670	19,474	280,987	97,843	0	
6 (ROW)	18,761	0	18,761	0	6,175	0	12,586	
5	159,787	0	159,787	0	678,061	518,274	0	
4	23,878	5,287	20,598	3,280	258,929	233,044	0	
3	539,255	55,000	539,255	0	941,149	346,893	0	
2	18,123	0	18,123	0	7,918	0	10,205	
1a	753,243	15,000	753,243	15,000	275,826	0	492,417	
1b	7,694	0	7,694	0	24,279	16,585	0	
1b (ROW)	1,349	0	1,349	0	13	0	1,336	
TOTAL w/o ROW	1,761,337	94,761	1,662,370	37,754	2,467,149	1,212,640	502,623	1,757,131
<b>Alternative 5</b>								

HOMWOOD MOUNTAIN RESORT SKI AREA MASTER PLAN EIR/EIS

Land Capability District <sup>1</sup>	Existing Land Coverage	Proposed Land Coverage	Existing Land Coverage to Remain <sup>2</sup>	Relocated Land Coverage	Allowable Base Land Coverage <sup>3</sup>	Remaining Allowable Base Land Coverage <sup>4</sup>	Excess Land Coverage <sup>5</sup>	Total Buildout Land Coverage <sup>6</sup>
6	259,357	<del>196,612</del> 203,134	20,380	<del>196,612</del> 203,134	280,987	<del>63,995</del> 57,473	0	
6 (ROW)	18,761	0	18,761	0	6,175	0	12,586	
5	159,787	<del>53,097</del> 53,500	61,508	<del>53,097</del> 53,500	678,061	<del>563,456</del> 563,053	0	
4	23,878	<del>158,194</del> 158,537	18,166	5,712	258,929	<del>82,569</del> 82,226	0	
3	539,255	0	382,385	0	941,149	558,764	0	
2	18,123	20,679	18,123	0	7,918	0	30,884	
1a	753,243	0	423,502	0	275,826	0	147,677	
1b	7,694	2,161	190	2,161	24,279	21,928	0	
1b (ROW)	1,349	0	1,349	0	13	0	1,336	
TOTAL w/o ROW	1,761,337	<del>430,743</del> 438,011	924,254	<del>257,582</del> 264,507	2,467,149	<del>1,290,712</del> 1,283,444	178,561	<del>1,354,997</del> 1,362,265
<b>Alternative 6</b>								
6	259,357	<del>237,971</del> 244,493	18,590	<del>237,971</del> 244,493	280,987	<del>24,426</del> 17,904	0	
6 (ROW)	18,761	0	18,761	0	6,175	0	12,586	
5	159,787	<del>53,097</del> 53,500	61,508	<del>53,097</del> 53,500	678,061	<del>563,456</del> 563,053	0	
4	23,878	<del>158,194</del> 158,536	18,166	5,712	258,929	<del>82,569</del> 82,227	0	
3	539,255	0	382,385	0	941,149	558,764	0	
2	18,123	20,679	18,123	0	7,918	0	30,884	
1a	753,243	0	423,502	0	275,826	0	147,677	
1b	7,694	2,161	190	2,161	24,279	21,928	0	
1b (ROW)	1,349	0	1,349	0	13	0	1,336	
TOTAL w/o ROW	1,761,337	<del>472,102</del> 479,369	922,464	<del>298,941</del> 305,866	2,467,149	<del>1,251,143</del> 1,243,876	178,561	<del>1,394,566</del> 1,401,833

Source: HBA 2010 as based on HMR Master Land Coverage Calculation Workbook dated June 1, 2010; Appendix U, Appendix V



Notes:

- <sup>1</sup> LCD 1c, and 7 are not found within the Project area. See table 14-3 for LCD land coverage coefficients/percentages. LCD 1a is assumed for existing land coverage in the general Project area (upper mountain) where LCDs are not yet verified by TRPA. The existing land coverage assigned to LCD 1a is the difference between the 1,781,447 square feet of total existing land coverage stated in TRPA land coverage verification letters in Appendix U and the existing verified land coverage documented for the Tahoe Ski Bowl Way and North Base, South Base and Mid-Mountain areas.
- <sup>2</sup> This total reflects the commitment by the Project Applicant to remove and restore approximately 500,000 square feet of existing land coverage under Alternatives 1, 3, 5 and 6. The assumption is that total land coverage removed will equal no less than 500,000 square feet of land coverage under Alternatives 1, 3, 5 and 6.
- <sup>3</sup> TRPA Code of Ordinances Section 20.3.D(2)(ii) outlines the methodology for calculating allowable and maximum allowable base land coverage. TRPA Code Section 20.3.D(1)(b) excludes land beneath Public Right of Ways (ROWs) from inclusion in the Project area for the calculations of allowable base land coverage. TRPA verified existing land coverage for the Project area is 1,761,337. TRPA total allowable base land coverage for the Project area is 1,062,925 square feet (this total excludes allowable base land coverage in ROWs).
- <sup>4</sup> Remaining Base Land Coverage is defined as Allowable Base Land Coverage minus Existing Improvements/Land Coverage.
- <sup>5</sup> From page 20-25 of the TRPA Code of Ordinances: Excess Land Coverage is defined as the existing amount of land coverage, less the total of the following: the maximum allowable amount of base coverage; the amount of coverage approved by transfer; and the amount of coverage previously mitigated.  $\text{Excess Land Coverage (\% sf)} = \text{Existing Land Coverage (\% sf)} - (\text{Maximum coverage (\% sf)} + \text{Transferred Coverage (\% sf)} + \text{Previously Mitigated Coverage (\% sf)})$ .
- <sup>6</sup> Total Build Out Land Coverage = Proposed Land Coverage + Existing Land Coverage to Remain

***Impact GEO-3, DEIR/EIS page 14-52, FEIR/EIS page 14-53: Revision to update banking application submittal***

Analysis: *Significant Impact; ~~Proposed Project (Alternative 1, 1A,) and Alternatives 3, 5 and 6~~*

TPRA Code Section 20.3.D – Determination of Project Area Land Coverage. The Project area has 1,761,337 square feet of verified existing land coverage, excluding the 20,100 square feet of land coverage within public ROW. A portion of this existing land coverage, 288,277 square feet (see Appendix U and V), is verified as hard coverage associated with parking and ski facilities, lodges, etc. primarily located within the North and South Base areas, while the balance 1,473,060 square feet represents miscellaneous facilities and soft coverage in the form of existing roads located across the Project area.

Banked land coverage associated with removal of “Lombard Street” per TRPA File #970662 to APN 097-210-01 is 126,324 square feet. This banked land coverage was distributed as follows: 80% attributed to APN 97-060-12, 15% attributed to APN 97-060-10 and 5% attributed to APN 97-050-22 and was removed from LCD 1a.

Under CEP Alternatives 1, 1A, 3, 5 and 6, the Project Applicant commits to removing and restoring no less than 500,000 square feet of existing land coverage within the Project area and permanently retiring at least 10 percent of the total existing land coverage to meet the TRPA CEP resolution, which requires a significant reduction in land coverage within the Project area, and proposed height ordinance amendments, which require at least 10 percent reduction in total existing land coverage. Since 2006, soft land coverage associated with roads in the Project area has been removed and restored in the areas outside of the HMR Land Capability Challenge boundary documented in Figure 14-3. ~~At this time, The Project Applicant has not submitted the banking applications to TRPA on July 20, 2011 but and the land coverage is treated as existing land coverage in Table 14-6 until banking approvals are granted.~~

***Impact GEO-3, DEIR/EIS page 14-53, FEIR/EIS page 14-54: Revisions made to add land coverage associated with the proposed bike trail through the North Base Area and Alternative 1A***

- The Proposed Project (Alternative 1) will result in ~~1,528,719~~<sup>1,528,719</sup>~~1,452~~ square feet of total land coverage, requiring ~~644,148~~<sup>644,148</sup>~~36,881~~ square feet of proposed land coverage, retaining 884,571 square feet of existing land coverage, relocating ~~341,309~~<sup>341,309</sup>~~0,906~~ square feet within the Project area to similar or higher capability LCDs and reducing total land coverage by 134 percent. However, resultant land coverage will still exceed TRPA allowable base land coverage limits in LCDs 1a, 2 and 6 by up to ~~226,082~~<sup>226,082</sup>~~19,560~~ square feet. This alternative results in ~~1,164~~<sup>1,164</sup>~~5,511~~<sup>5,511</sup>~~256~~ square feet of remaining allowable base land coverage in LCDs 5, 4, 3 and 1b.
- Alternative 1A will result in 1,526,410 square feet of total land coverage, requiring 641,839 square feet of proposed land coverage, retaining 884,571 square feet of existing land coverage, relocating 338,519 square feet within the Project area to similar or higher capability LCDs and reducing total land coverage by 13 percent. However, resultant land coverage will still exceed TRPA allowable base land coverage limits in LCDs 1a, 2 and 6 by up to 204,521 square feet. This alternative results in 1,145,259 square feet of remaining allowable base land coverage in LCDs 5, 4, 3 and 1b.
- Alternative 3 will result in ~~1,624,257~~<sup>1,624,257</sup>~~46,990~~ square feet of total land coverage, requiring ~~732,419~~<sup>732,419</sup>~~739,686~~ square feet of proposed land coverage, retaining 884,571 square feet of existing land coverage, relocating ~~349,791~~<sup>349,791</sup>~~388~~ square feet within the Project area to similar or higher capability LCDs, and reducing total land coverage by 8 percent. However, resultant land coverage will still exceed TRPA allowable base land coverage limits in LCDs 1a, 2, 4 and 6 by up to ~~299,578~~<sup>299,578</sup>~~2,714~~ square feet. This alternative results in ~~1,142,469~~<sup>1,142,469</sup>~~872~~ square feet of remaining allowable base land coverage in LCDs 4, 3 and 1b.
- Alternative 5 will result in ~~1,362,265~~<sup>1,362,265</sup>~~54,997~~ square feet of total land coverage, requiring ~~438,011~~<sup>438,011</sup>~~0,743~~ square feet of proposed land coverage, retaining 924,254 square feet of existing land coverage, relocating ~~264,507~~<sup>264,507</sup>~~57,582~~ square feet within the Project area to similar or higher capability LCDs, and reducing total land coverage by 23 percent. However, resultant land coverage will still exceed TRPA allowable base land coverage limits in LCDs 1a and 2 by up to 178,561 square feet. This alternative results in ~~1,283,444~~<sup>1,283,444</sup>~~90,712~~ square feet of remaining allowable base land coverage in LCDs 6, 5, 4, 3 and 1b.
- Alternative 6 will result in ~~1,401,833~~<sup>1,401,833</sup>~~394,566~~ square feet of total land coverage, requiring ~~479,369~~<sup>479,369</sup>~~2,102~~ square feet of proposed land coverage, retaining 922,464 square feet of existing land coverage, relocating ~~305,866~~<sup>305,866</sup>~~298,941~~ square feet within the Project area to similar or higher capability LCDs, and reducing total land coverage by ~~20+~~ percent. However, resultant land coverage will still exceed TRPA allowable base land coverage limits in LCDs 1a and 2 by up to 178,561 square feet. This alternative results in ~~1,243,876~~<sup>1,243,876</sup>~~51,143~~ square feet of remaining allowable base land coverage in LCDs 6, 5, 4, 3 and 1b.

***Impact GEO-3, DEIR/EIS page 14-54, FEIR/EIS page 14-55: Revisions to analysis of land coverage***

The Proposed Project (Alternative 1) meets the Resolution and proposed height amendment requirements for additional land coverage reduction to counter expected increases in density and height through a minimum ~~134~~ percent reduction in total existing land coverage. Alternative 1 will remove and restore 329,741 square feet of existing land coverage from LCD 1a, 7,694 square feet in LCD 1b, 156,871 square feet in LCD 3 and ~~4141,152555~~ square feet in LCD 5 for relocation to higher capability LCDs. Alternative 1 results in ~~1,161,164,511~~ ~~5,256~~ square feet of remaining allowable base land coverage in LCDs 5, 4, 3 and 1b that is not proposed for use within the Project area.

Alternative 1A meets the Resolution and proposed height amendment requirements for additional land coverage reduction to counter expected increases in density and height through a minimum 13 percent reduction in total existing land coverage. Alternative 1A will remove and restore 329,741 square feet of existing land coverage from LCD 1a, 7,694 square feet in LCD 1b, 156,871 square feet in LCD 3 and 43,942 square feet in LCD 5 for relocation to higher capability LCDs. Alternative 1A results in 1,145,259 square feet of remaining allowable base land coverage in LCDs 5, 4, 3 and 1b that is not proposed for use within the Project area.

Alternative 3 does not propose to amend existing height ordinances and therefore does not need to reduce land coverage to counter expected increases in height. However, Alternative 3 will result in a minimum 8 percent reduction in total land coverage and will remove and restore 321,259 square feet of existing land coverage from LCD 1a, 7,694 square feet in LCD 1b, 156,871 square feet in LCD 3 and ~~4141,152555~~ square feet in LCD 5 for relocation to higher capability LCDs. Alternative 3 results in ~~1,1421,142,469872~~ square feet of remaining allowable base land coverage in LCDs 5, 3 and 1b that is not proposed for use within the Project area.

Alternative 5 meets the Resolution for additional land coverage reduction to counter expected increases in height through a 23 percent reduction in total existing land coverage. Alternative 5 will remove and restore 329,741 square feet of existing land coverage from LCD 1a, 5,343 square feet in LCD 1b, 156,871 square feet in LCD 3, ~~444,7795,182~~ square feet in LCD 5, ~~35,84342,365~~ square feet in LCD 6 for relocation to similar or higher capability LCDs.

Alternative 6 meets the Resolution for additional land coverage reduction to counter expected increases in height through a ~~20+~~ percent reduction in total existing land coverage. Alternative 6 will remove and restore 329,741 square feet of existing land coverage from LCD 1a, 5,343 square feet in LCD 1b, 156,871 square feet in LCD 3, ~~454,779,182~~ square feet in LCD 5, and ~~3,7262,796~~ square feet in LCD 6 for relocation in similar or higher capability LCDs.

TRPA Code Section 20.4 – Prohibition of Additional Land Coverage in LCDs 1a, 1c, 2 3 and 1b. TRPA permits no additional land coverage or other permanent land coverage in LCDs 1a, 1c, 2 and 3 unless certain conditions can be met. The Proposed Project (Alternative 1/1A) and Alternatives 3, 5 and 6 will result in an overall reduction of land coverage within the Project area and will relocate existing land coverage from lower capability LCDs to higher Capability LCDs. Because the proposed land coverage will be relocated within the Project area, TRPA Code Section 20.4 is not applicable to the Project and findings for relocation of land coverage are made as follows.

***Impact GEO-3, DEIR/EIS page 14-61, FEIR/EIS page 14-62: Revisions made to add land coverage associated with the proposed bike trail through the North Base Area and Alternative 1A***

The Proposed Project (Alternative 1/1A) will relocate structures outside of the SEZ and establish 60-foot setbacks from Homewood Creek in the South Base area. Alternative 3 will relocate buildings outside of the SEZ and establish 35 to 40-foot setbacks because of the larger development footprint required to accommodate buildings with less height. Alternatives 5 and 6 will retain the existing culvert associated with the public ROW over Homewood Creek in the South Base area. Alternatives 1 and 3 will establish a 10-foot setback from the edge of the SEZ at the southern end of the North Base area (existing gravel parking area) to conform to TRPA and Placer county setbacks for SEZs without active channels. Alternatives 5 and 6 will maintain development within a portion of the mapped SEZ at the North Base area in order to maximize the use of lands currently located in Plan Areas 158 and 159.

By relocating the existing parking area out of the North Base SEZ and by increasing setbacks from Homewood Creek in the South Base, the Proposed Project (Alternative 1/1A) and Alternative 3 will remove land coverage from LCD 1b (SEZ) and the SEZ setback. This land coverage will either be permanently retired or relocated to higher capability LCDs within the Project area for a net environmental benefit to the North and South Base area SEZs. The Proposed Project (Alternative 1/1A) and Alternative 3 will reduce land coverage within LCD 1b of the public ROW by improving the existing culvert crossing over Homewood Creek to a bridge span. The Proposed Project (Alternative 1/1A) and Alternative 3 propose a stream channel and SEZ restoration project in the South Base and a SEZ restoration project in the North Base. Flood attenuation, culvert removal, bed contact, groundwater recharge, bank erosion reduction, fish passage, aeration, aesthetic and habitat improvements are among the net environmental benefits detailed in Appendix C, which contains the Homewood Creek SEZ Restoration Plan that will be revised based on mitigation measure BIO-5a requirements.

Alternatives 5 and 6 will reduce total land coverage within LCD 1b, but will not improve the existing culvert crossing. As a result, Alternatives 5 and 6 will retain the 1,349 square feet of land coverage in LCD 1b in the public ROW at the South Base area. At the North Base area, Alternatives 5 and 6 will require the relocation of 2,161 square feet of existing land coverage in LCD 1b to provide for the residential development program within existing parking areas. Relocation of land coverage will be to a previously disturbed area. The North Base SEZ does not contain an active stream channel. Alternatives 5 and 6 remove and restore ~~5,343,533~~ square feet of land coverage in the North Base, which exceeds the 1.5:1 retirement ratio. Because Alternatives 5 and 6 will relocate more than 1,000 square feet of land coverage within the North Base SEZ, TRPA will require a report prepared by a qualified professional that supports that the relocation will improve the functioning of the SEZ and the quality of the existing habitat (see mitigation measure BIO-5b in Chapter 5, Biological Resources).

In conclusion, the Project reduces total land coverage within the Project area. Because land coverage in LCDs 1a and 2 exceed allowable base land coverage for those LCDs, the Proposed Project (Alternative 1/1A) and Alternatives 3, 5 and 6 are subject to the excess coverage mitigation program described in TRPA Code of Ordinances Section 20.5, which is required to reduce significant land coverage impacts from excess existing land coverage to a level of less than significant. Options to mitigate the excess land

***Impact GEO-3, DEIR/EIS page 14-62 to 14-65, FEIR/EIS pages 14-63 to 14-66: Revisions made to add land coverage associated with the proposed bike trail through the North Base Area and Alternative 1A***

**Mitigation: GEO-3: Comply with Excess Land Coverage Mitigation Program**

Based on allowable base land coverage determinations in LCDs 1a and 2, the Proposed Project (Alternative 1/1A) and Alternatives 3, 5 and 6 shall be subject to the excess coverage mitigation program described in Code Section 20.5. The excess land coverage within the Project area shall be reduced to comply with Code Section 20.5 through: 1) reduction of coverage onsite; 2) reduction of coverage offsite; 3) payment of excess coverage mitigation fee; 4) parcel consolidation or parcel line adjustment; or 5) combination of these options.

Table 14-7 presents the excess land coverage mitigation fee and reductions in existing land coverage options for each of the alternatives, which are the mitigation options most applicable to the Project area. Land coverage must be permanently retired to supplement the payment of a mitigation fee.

**Table 14-7**

**Excess Land Coverage Mitigation Comparison by Alternative**

	<b>Alt. 1</b>	<b>Alt. 1A</b>	<b>Alt. 3</b>	<b>Alt. 5</b>	<b>Alt. 6</b>
Verified Existing Land Coverage (sf)	1,761,337	<u>1,761,337</u>	1,761,337	1,761,337	1,761,337
TRPA Allowable Land Coverage (sf)	1,086,112	<u>1,086,112</u>	1,086,112	1,086,112	1,086,112
Total Proposed Land Coverage (sf)	<del>1,528,719</del> <sup>4</sup> 1,526,410	<u>1,526,410</u>	<del>1,624,257</del> <sup>4</sup> 1,624,257	<del>1,362,265</del> <sup>4</sup> 1,362,265	<del>1,401,833</del> <sup>4</sup> 1,401,833
Excess Land Coverage (sf) <sup>1</sup>	<del>226,082</del> <sup>4</sup> 226,082	<u>204,521</u>	<del>229,578</del> <sup>4</sup> 229,578	178,561	178,561 <sup>4</sup>
Excess Land Coverage Mitigation Fee <sup>2</sup>	\$1,601,228	<u>\$1,482,171</u>	\$1,794,027	\$1,005,366	\$1,293,198
Permanently Retired Land Coverage Requirement to Offset Mitigation Fee (sf) <sup>3</sup>	188,380	<u>174,373</u>	211,062	118,278	152,141

Source: HMR Master Land Coverage Summary June 1, 2010; HMR Land Capability Challenge; TRPA Code of Ordinances Chapter 20 Table; HBA 2010

**Notes:**

1. Excess Land coverage is equal to the Existing Land Coverage – Allowable Base Land Coverage for LCDs that are over allowable base land coverage limits.
2. Coverage Reduction (sf) = ((Fee Percentage of 5% based on Ch 20 Table A) x (CM Construction Cost) / Mitigation Factor of 8);  
Mitigation Fee (\$) = (Coverage Reduction (sf) X Mitigation fee square feet Coverage Cost Factor (The Project area is

located in Area 7 for McKinney Bay = \$8.5)); and Construction costs are approximately: Alt 1 = \$30,140,767; Alt 1A = \$27,899,746; Alt 3 = \$33,769,916; Alt 5 = \$18,924,583; Alt 6 = \$24,342,547.

- 3 Assuming the application of McKinney Bay Cost Factor of \$8.50/square foot
- 4 Alternative 6 would result in 39,569 square feet of additional land coverage as compared to Alternative 5, but this land coverage is proposed in LCD 6, which contains remaining allowable base land coverage.

The impact from excess land coverage under the Proposed Project (Alternative 1/1A) and Alternatives 3, 5 and 6 can be reduced to a less than significant level through completion of the excess land coverage mitigation program as outlined in TRPA Code section 20.5. The mitigation options are listed according to alternative.

Proposed Project (Alternative 1):

- 1) Payment of Excess Coverage Mitigation Fee = \$1,601,228; or
- 2) Permanent retirement of 188,380 square feet of onsite land coverage (offset of \$8.50/square foot assumed) in lieu of the Excess Coverage Mitigation Fee; or
- 3) Permanent retirement of 176,134 square feet of onsite land coverage (offset of \$8.50/square foot assumed) as required for TRPA Code of Ordinances Chapter 22.4.G Amendment for additional building height findings and for CEP Governing Board Resolution requirements and payment of an adjusted Excess Coverage Mitigation Fee equal to \$104,091 (Note that the proposed Chapter 22.4.G height amendment requires a 10 percent reduction of total existing land coverage, while the TRPA CEP Resolution requires a “substantial” reduction in existing land coverage but does not quantify square footage of land coverage for permanent retirement - the 176,134 square feet identified above is equal to a 10 percent reduction in verified existing land coverage); or
- 4) Permanent retirement of 176,134 square feet of onsite land coverage (offset of \$8.50/square foot assumed) as required for TRPA Code of Ordinances Chapter 22 for building height findings and for CEP Governing Board Resolution requirements and the permanent retirement of an additional 12,246 square feet (offset of \$8.50/square foot assumed) of offsite land coverage to be identified by the Project Applicant; or
- 5) Combination of Options 1 and 2 for permanent retirement of on or offsite land coverage (offset of \$8.50/square foot assumed) and payment of Excess Coverage Mitigation Fee that is appropriate for the amount of excess land coverage that remains (offset of \$8.50/square foot assumed).

According to TRPA Code Section 20.5.A, the payment of the Excess Coverage Mitigation Fee mitigates excess land coverage for the Project area to a less than significant level. Permanently retiring 188,380 square feet of onsite land coverage under the Proposed Project (Alternative 1) is considered a more beneficial option for reducing impacts from excess land coverage than only the payment of the mitigation fee. Permanent retirement of land coverage directly reduces impacts in the Project area watersheds through the permanent removal of impervious surfaces and restoration of land capability. HMR proposes to permanently retire land coverage as part of their Master Plan as needed for additional height findings and to mitigate past development.

Notable benefits of the Proposed Project (Alternative 1) that are over and above standard TRPA mitigation requirements include: land coverage reductions in excess of the CEP goal for “substantial” reduction, permanent retirement of a portion of land coverage removed from LCDs 5, 3 and 1a, and the relocation of land coverage from LCD 1a and

1b lands to higher capability LCD lands. Additionally, effects from proposed land coverage will be reduced through application of LID measures such as bioretention areas for stormwater treatment, cisterns to capture roof runoff, heated walkways to control the timing of runoff from walkways and pervious pavement to reduce typical runoff volumes by around 40 percent. The LID measures more closely mimic natural hydrologic patterns and alleviate pressures placed on traditional stormwater treatment systems. The Proposed Project (Alternative 1) will utilize pervious pavers and pervious pavement to infiltrate approximately 850 cubic feet of runoff and will install bioretention areas for stormwater treatment (approximately 117,000 square feet) across the North Base, South Base and Mid-mountain areas. Cisterns will capture a portion of roof runoff from buildings, up to 7,800 cubic feet per runoff event. These LID measures are not considered in the TRPA calculations for land coverage reductions but will provide added benefits to the Project through reductions in runoff from impervious surfaces. Table 15-8 in Chapter 15, Hydrology, Water Rights, Surface Water Quality and Groundwater, details the impact reductions specified above.

Alternative 1A:

1) Payment of Excess Coverage Mitigation Fee = \$1,482,171; or

2) Permanent retirement of 174,373 square feet of onsite land coverage (offset of \$8.50/square foot assumed) in lieu of the Excess Coverage Mitigation Fee; or

3) Permanent retirement of 176,134 square feet of onsite land coverage (offset of \$8.50/square foot assumed) as required for TRPA Code of Ordinances Chapter 22 for building height findings and for CEP Governing Board Resolution requirements (Note that Chapter 22 requires a 10 percent reduction of verified existing land coverage, while the CEP Resolution requires a “substantial” reduction in existing land coverage but does not quantify square footage for permanent retirement. The 176,134 square feet stated above is based on 10 percent permanent retirement of verified existing land coverage.); or

4) Combination of Options 1 and 2 for permanent retirement of on or offsite land coverage (offset of \$8.50/square foot assumed) and payment of Excess Coverage Mitigation Fee that is appropriate for the amount of excess land coverage that remains (assuming an offset of \$8.50/square foot).

According to TRPA Code Section 20.5.A, the payment of the Excess Coverage Mitigation Fee mitigates excess land coverage for the Project area to a level of less than significant. Identification and permanent retirement of onsite land coverage (174,373 square feet) in lieu of payment of the remaining Excess Coverage Mitigation Fee (\$1,482,171) is considered more beneficial option for reducing impacts from excess land coverage in the Project area watersheds. A combination of the two mitigation options, described above under option four, is considered more beneficial than the payment of the excess coverage mitigation fee only. Option 3, however, would be required for Alternative 1A because although options one, two and four would legally mitigate excess land coverage on the project area to a level of less than significant, these mitigation options would not meet the proposed TRPA Chapter 22.4.G amendment requirements for additional height nor the CEP Governing Board Resolution for substantial land coverage reductions, assumed to be at least a 10 percent reduction in existing land coverage. Identification and permanent retirement of 176,134 square feet of onsite or offsite land coverage in lieu of payment of the remaining Excess Coverage Mitigation Fee (\$1,482,171) is considered the most beneficial option (Option number 3 above) for reducing impacts from excess land coverage. HMR proposes to permanently retire land

***Impact GEO-4, DEIR/EIS page 14-70, FEIR/EIS page 14-76; Revision made to topography and geologic substructure analysis to describe the Gondola lift line impacts***

and will not result in significant visible changes in topography that appear inconsistent with the surrounding conditions. Up to 14 Gondola lift towers and footings will be constructed from the Gondola base terminal at the North Base with spacing ranging from 23.5 feet to 450 feet in a westerly direction to the Gondola top terminal adjacent to the Mid-Mountain Lodge over a horizontal length of approximately 3,360 feet and a vertical rise of 1,040 feet. The Gondola will utilize the existing Madden Chair lift alignment, keep with the existing terrain and will result little impact to existing topography beyond excavations necessary for relocation of lift towers that may shift slightly to accommodate changes in vertical loads in and across the lift line.

Excavation necessary for replacement towers, approximately 27 cubic yards per tower footing, will be localized and within the previously disturbed lift alignment. Dopplemayr engineering specifications for vertical loads within and across lift lines indicate sufficient flexibility for lift tower spacing to span or otherwise avoid rock outcrops. Load calculations indicate tower spacing can range from approximately 23 feet to just over 450 feet. Engineering specifications indicate a range of tower height from 18.6 feet to 47 feet, which will allow for adequate ground clearance with no additional grading along the lift alignment. Four trees have been identified for removal at the slope break in proximity to the existing Madden Chair lift mid-station.

To construct ~~the other the p~~Project components, changes in ground surface relief could occur. As identified on preliminary grading plans Sheets C10, 11, 12 and 13, the Proposed Project (Alternative 1/1A) and Alternatives 3, 5 and 6 will create cut and fill slopes of up to approximately 20.5 feet maximum, as associated with the water tanks at the Mid-Mountain, and retaining walls 29 to 32 feet, as associated with the North Base underground parking structure, and 19 to 21 feet (note: 18 to 21 feet under Alternative 1A), as associated with the South Base underground parking structure. Aboveground retaining walls range from 15 feet to one foot in height. The Project's impacts will be reduced to a level of less than significant through compliance with Placer County codified regulations and mitigation measures GEO-4b and GEO-4f for mitigation of impacts associated with alteration of topography and relief features.

Subsurface explorations (Kleinfelder 2007, Holdrege and Kull 2010a, Holdrege and Kull 2010b) identified no geologic substructures that would be destabilized by earthwork activities. Potential impacts from changes in topography and geologic substructures are less than significant.



***Impact GEO-4 and Table 14-8, DEIR/EIS page 14-72, FEIR/EIS page 14-77: Revisions made to add Alternative 1A and Gondola tower footing estimates***

Under the Proposed Project (Alternative 1/1A) and Alternatives 3, 5 and 6, imported fill material will not be required because fill areas in the Project area will use material that is generated from cut areas. HMR has identified additional areas suitable for the receipt of excess cut materials, including the project locations and approximate fill volume needed to remove, redesign and realign on-mountain access roads, increase vegetation cover on ski trails and improve water quality and skiing conditions within the Project area. These areas are detailed in Chapter 3.

For the Proposed Project (Alternative 1), 148,000 cubic yards of cut material will be produced and up to 157,700 cubic yards (55,700 cubic yards for proposed structures and up to 102,000 cubic yards for projects identified in Chapter 3) of fill material will be needed within the Project area. There is a net deficit of fill material for the Proposed Project (Alternative 1) and thus only material determined by geotechnical engineering evaluations as unfit for fill material will require off-site disposal to an approved receiving site. Excavations for Gondola tower footings will result in up to an additional 378 cubic yards depending on tower locations.

**Table 14-8**

Estimates of Cut and Fill Volumes (Cubic Yards) for the Proposed Project  
(Alternative 1/1A) and Alternatives 3, 5 and 6

	<b>Alternative 1</b>	<b>Alternative 1A</b>	<b>Alternative 3</b>	<b>Alternative 5</b>	<b>Alternative 6</b>
Snowmaking Excavation <sup>1</sup>	22,000	<u>22,000</u>	22,000	22,000	22,000
Utility Excavation <sup>2</sup>	15,000	<u>15,000</u>	15,000	15,000	15,000
Cut Volume	148,000	<u>138,500</u>	297,800	208,800	216,800
Fill Volume	55,700	<u>67,000</u>	57,400	42,300	55,500
Net Grading (Cut + Fill Volumes)	203,700	<u>206,000</u>	355,200	251,100	272,400
Net Cut (Cut – Fill Volumes) <sup>3</sup>	92,300	<u>71,500</u>	240,400	166,500	161,300

Source: Alternative 1/1A - Master Plan Earthwork Quantities on Civil  
Plan Sheet C2, Notes, Legends and Abbreviations; Alternative 3, 5  
and 6 estimates provided by HMR and NCE; HBA 2010

- Notes: <sup>1</sup> Snowmaking estimates based on: (59,300ft)\*(4ft)\*(2.5ft)\*(1ft<sup>3</sup>/27yd<sup>3</sup>)  
<sup>2</sup> Utility estimates based on: (8,750ft)\*(5ft)\*(2.5ft)\*(1ft<sup>3</sup>/27yd<sup>3</sup>) for Sewer; (10,700ft)\*(5ft)\*(2ft)\*(1ft<sup>3</sup>/27yd<sup>3</sup>) for Water; (18,100ft)\*(4ft)\*(2.5ft)\*(1ft<sup>3</sup>/27yd<sup>3</sup>) for Dry Trench/Gas and Electric  
<sup>3</sup> Totals to not include tower footing estimate of 378 cubic yards

For Alternative 1A, 138,500 cubic yards of cut material will be generated and approximately 169,000 cubic yards (i.e., 67,000 cubic yards for proposed structures and up to 102,000 cubic yards) of fill material be used within the Project area for projects identified in Chapter 3. There is a net deficit of fill material for Alternative 1A and thus only material determined by geotechnical engineering evaluations as unfit for fill material will require off-site disposal to an approved receiving site. Excavations for Gondola tower footings will result in up to an additional 378 cubic yards depending on tower locations.

***Impact GEO-4, DEIR/EIS page 14-75, FEIR/EIS page 14-78: Revisions to tree counts***

*For the Proposed Project (Alternative 1) a total of ~~202+95~~ trees will be removed for construction of the North Base Townhomes, Tahoe Ski Bowl Way Extension, and development in the North Base, South Base and Mid-Mountain Areas. Alternatives 1A, 3, 5 and 6 will removed ~~197, 202+95, 124 and 120+24~~ trees, respectively. The excavations are designed such that no damage occurs to mature trees that will remain in the areas of proposed construction. Tree protection measures are discussed in Chapter 8, Biological Resources in impact analysis BIO-10.*

(3) Excavated material is disposed of pursuant to Section 64.5 and the Project area's natural topography is maintained pursuant to Subparagraph 30.5.A(1); or if groundwater interception or interference will occur as described in the soils/hydrologic report, the excavation can be made as an exception pursuant to Subparagraph 64.7.A(2) and measures are included in the project to maintain groundwater flows to avoid adverse impacts to SEZ vegetation, if any would be affected, and to prevent any groundwater or subsurface flow from leaving the Project area as surface flow.

*Excavated material will be utilized on-site in fill areas or utilized to complete road removal and ski trail improvement projects, as described above. Excess fill material not utilized onsite will be transported to a TRPA approved disposal site. Dewatering measures during construction activities have been identified for the South and North Base portions of the Project area to maintain groundwater flows to avoid adverse impacts to SEZ vegetation (South Base only) and to prevent groundwater or subsurface flows from leaving the Project area as surface flows. These measures are detailed in mitigation measure GEO-4 below.*

***Mitigation Measure GEO-4g, DEIR/EIS page 14-78, FEIR/EIS page 14-84: Revision made in response to Lahontan comment letter***

There are a number of methods for dewatering intercepted groundwater, from drilling wells upslope to installing sheet piling to constructing temporary or permanent concrete walls with dewatering galleries installed. These decisions shall be made in collaboration with the earthwork contractor chosen to construct the Project and the earthwork contractor shall be responsible for addressing the issue effectively. Interception methods are fairly well understood. Interception strategies shall be explored and implemented in parallel with the actual dewatering strategies. Typical approaches to dewatering intercepted groundwater flows during construction shall include, but shall not be limited to the following: irrigation systems, holding tanks, low mountain feed, snowmaking line feed, distribution (sprinkler system), ground infiltration system, full treatment and surface water discharge (this option would require a temporary discharge permit from Lahontan and may require treatments for the removal of sediment, such as settling or baker tanks), groundwater recharge wells, and/or sewer inflows (this option is not typically viable for ongoing dewatering because the Truckee Tahoe Sanitary District typically denies permits for dewatering inflow into their sewer system due to the stress additional inflow puts on their treatment facilities, but shall be considered for an emergency situation). Dewatering discharges shall be treated to a level such that they do not contain pollutants, including but not limited to sediment, before discharging to surface waters, should discharge to surface water be necessary.