

FINAL
Environmental Impact Report/
Environmental Impact Statement/
Environmental Impact Statement

Upper Truckee River and Marsh Restoration Project



Executive Summary
SCH# 2007032099

Lead Agencies:



California Department of
General Services



California
Tahoe Conservancy



Tahoe Regional
Planning Agency
Lake Tahoe Environmental
Improvement Program



U.S. Department of Interior
Bureau of Reclamation

December 2015

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General Services

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EXECUTIVE SUMMARY

ES.1 PROJECT LOCATION AND SETTING

The California Tahoe Conservancy (Conservancy), U.S. Bureau of Reclamation (Reclamation), and Tahoe Regional Planning Agency (TRPA) are pursuing a restoration project along the most downstream reach of the Upper Truckee River, at the mouth of Lake Tahoe. The Upper Truckee River and Marsh Restoration Project (Project) is identified in TRPA's Environmental Improvement Program (EIP) as a project that is necessary to restore and maintain environmental thresholds for the Lake Tahoe Basin (EIP Project #s 560, 650, 981, and 1002). EIP projects are designed to achieve and maintain environmental thresholds that protect Tahoe's unique and valued resources.

The 592-acre study area is located in South Lake Tahoe, California, bounded by U.S. Highway 50 (U.S. 50) and the Highland Woods subdivision to the south, the Al Tahoe subdivision to the east, Tahoe Islands/Sky Meadows and Tahoe Keys subdivision to the west, and Lake Tahoe to the north. It consists of parcels owned by the Conservancy, and other public and private landowners. It includes the downstream reaches of Trout Creek and the Upper Truckee River, adjacent wetland (Upper Truckee Marsh) and upland habitats, and the Lower West Side Wetlands Restoration Project site (located in the northwest portion of the study area, just east of the Tahoe Keys Marina).

ES.2 OVERVIEW OF THE EIR/EIS/EIS PROCESS

This joint final document is an environmental impact report (EIR) prepared on behalf of the Conservancy pursuant to the California Environmental Quality Act (CEQA); an environmental impact statement (EIS) prepared on behalf of the TRPA pursuant to Article VII of the Tahoe Regional Planning Compact and Chapter 3 of the TRPA Code of Ordinances; and an EIS prepared on behalf of Reclamation pursuant to the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations implementing NEPA.

The relevant statutes, regulations, and ordinances guiding the preparation of this Final EIR/EIS/EIS are:

- ▶ CEQA (California Public Resources Code [PRC] Section 21000 et seq.);
- ▶ the State CEQA Guidelines (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3), including Section 15222, "Preparation of Joint Documents";
- ▶ NEPA, as amended (Public Law [PL] 91-190, 42 United States Code 4321-4347, January 1, 1970, as amended by PL 94-52 [July 3, 1975], PL 94-83 [August 9, 1975], and PL 97-258, Section 4[b] [September 13, 1982]);
- ▶ Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA—Code of Federal Regulations (CFR) Title 40, Section 1500 et seq., including Sections 1502.25, 1506.2, and 1506.4 (authority for combining federal and state environmental documents);
- ▶ the Bureau of Reclamation NEPA Handbook. Available: <http://www.usbr.gov/nepa>; (Reclamation 2012);
- ▶ Article VII of the TRPA Compact (Public Law 96-551, as revised in 1980);
- ▶ Chapters 3 and 4 of the TRPA Code of Ordinances; and
- ▶ Article 6 of the TRPA Rules of Procedure.

CEQA, NEPA, and the TRPA Compact require a lead agency that has completed a draft environmental impact report/environmental impact statement/environmental impact statement (Draft EIR/EIS/EIS) to consult with and obtain comments from public agencies (cooperating, responsible, and trustee agencies) that have legal jurisdiction over the project. The lead agency also must give the general public opportunities to comment on the Draft EIR/EIS/EIS.

In February 2013, the Conservancy, Reclamation, and TRPA released the Draft EIR/EIS/EIS for a 60-day public review and comment period. Public hearings were held at the TRPA Advisory Planning Commission meeting on March 13, 2013, and at the Governing Board meeting on March 27, 2013, to present the project alternatives and to receive public comments. The public hearings were recorded and public comments transcribed. Written comments were received from federal, state, regional, and local agencies and from businesses, organizations, and individuals. This Final EIR/EIS/EIS has been prepared to respond to comments received on the 2013 Draft EIR/EIS/EIS for the project and to present the Preferred Alternative.

ES.3. PURPOSE AND NEED AND PROJECT OBJECTIVES

The need for the project originates from the environmental degradation that the Upper Truckee River has historically experienced as a result of human alterations to the river and watershed. The purpose of the proposed action is to restore natural geomorphic processes and ecological functions in this lowest reach of the Upper Truckee River and the surrounding marsh to improve ecological values of the restoration area and help reduce the river's discharge of nutrients and sediment that diminish Lake Tahoe's clarity.

The following basic objectives of the project were developed for the proposed action to meet the purpose and need:

- ▶ Objective 1: Restore natural and self-sustaining river and floodplain processes and functions.
- ▶ Objective 2: Protect, enhance, and restore naturally functioning habitats.
- ▶ Objective 3: Restore and enhance fish and wildlife habitat quality.
- ▶ Objective 4: Improve water quality through enhancement of natural physical and biological processes.
- ▶ Objective 5: Protect and, where feasible, expand Tahoe yellow cress populations.
- ▶ Objective 6: Provide public access, access to vistas, and environmental education at the Lower West Side and Cove East Beach consistent with other objectives.
- ▶ Objective 7: Avoid increasing flood hazards on adjacent private property.
- ▶ Objective 8: Design with sensitivity to the site's historical and cultural heritage.
- ▶ Objective 9: Design the wetland/urban interface to help provide habitat value and water quality benefits.
- ▶ Objective 10: Implement a public health and safety program, including mosquito monitoring and control.

ES.3 SUMMARY DESCRIPTION OF THE PROJECT ALTERNATIVES

Four action alternatives (Alternatives 1-4), and the No-Project/No-Action Alternative (Alternative 5), were analyzed in the Draft EIR/EIS/EIS. None of the alternatives evaluated in the Draft EIR/EIS/EIS were designated

as preferred. Rather, guiding principles were developed requiring that each alternative be designed as a “full-spectrum” alternative that addressed, to varying degrees, all project objectives and design directives; be modular in nature, such that recreation access and infrastructure components could be interchangeable with habitat restoration and protection measures proposed; and embody a diverse range of feasible and implementable concepts, consistent with constraints identified and mapped early in the planning process. After input from responsible and interested agencies and public comments provided on the Draft EIR/EIS/EIS and through additional outreach efforts, the lead agencies used a qualitative system to weigh the pros and cons of the alternatives to develop the Preferred Alternative as described after each action alternative below.

Alternative 1 would involve restoration of the Upper Truckee River by increasing channel length and decreasing channel capacity. Alternative 1 includes maximum recreation access and infrastructure on the perimeter of the marsh, including a bridge and board walk. Alternative 2 would involve river restoration by directly raising the streambed elevation, increasing the channel length, and decreasing channel capacity. A key element of this restoration would be the excavation of a new river channel that has less capacity than the existing channel. Alternative 2 includes a minimum recreation access and infrastructure design approach, focusing primarily on habitat protection features. Alternative 3 would promote the development, through natural processes, of a new main channel and/or distributary channels in the central portion of the study area. A “pilot” channel would be constructed from the existing river channel to historical channels in the center of the study area, but no construction would occur in the central or northern portions of the study area. Rather, natural processes would be allowed to dictate the flow path(s), bed and bank elevations, and capacities of the channel(s) through the central and northern portions of the study area. Alternative 3 would include a moderate level of recreation access and infrastructure, including more signage, more trail development, and viewpoints than proposed under Alternative 2 but less than Alternative 1. Alternative 4 would restore the river channel and its connection to the floodplain by lowering bank heights by excavating an inset floodplain along much of the river channel, and by localized cut and fill to create meanders in the existing straightened reach. Alternative 4 would include a similar level of recreation infrastructure as Alternative 3. Alternative 5 would not provide any actions to restore the river channel and its connection to the floodplain or recreation features beyond maintaining existing infrastructure in the study area. This alternative would allow, but not facilitate the long-term, passive recovery of the river system via natural processes. This alternative represents a projection of reasonably foreseeable future conditions that could occur if no project actions were implemented.

The Preferred Alternative includes the most beneficial and cost-effective elements of the five alternatives evaluated in the Draft EIR/EIS/EIS. This alternative is also the most feasible, the most highly responsive to public comments, and the most resilient to the potential impacts of climate change. It includes the following components:

Alternative 3 restoration elements which involve construction of a small pilot channel that would reconnect the Upper Truckee River to the middle of the marsh to attain ecosystem and water quality improvements. This concept proposes the most geomorphically appropriate channel configuration allowing the pilot channel to strategically connect the current river alignment to historic channels and lagoons. The river would form its own pattern and spread over the expanse of the marsh, resulting in substantial benefits to habitats, wildlife, and water quality. The abandoned sections of existing river channel would be largely filled to create restored meadow and expanded wetlands.

Alternative 5 for recreation elements of the east side of the Upper Truckee Marsh that would maintain the current dispersed recreation experience. No new recreation infrastructure would be installed and public access would be afforded through the current informal user-created trail system. The Conservancy would continue to manage and reduce the impacts of recreational use and new trails while providing on-site signage.

Alternative 3 recreation elements for the west side of the Upper Truckee Marsh would upgrade the recreation infrastructure through construction of accessible trails to Lake Tahoe and formalized viewpoints that provide

interpretive and site-information signage. The developed recreation experience would be maintained consistent with natural resource values.

Previously proposed only under Alternatives 1 and 2, the Preferred Alternative would also include restoration of wet-meadow conditions behind the east end of Barton Beach, and the restoration of sand ridges (“dunes”) at Cove East Beach that were graded and leveled as part of the Tahoe Keys development. The sand ridge restoration would occur in conjunction with removal of fill in the southern portion of Cove East Beach and the modification and reconnection of the Sailing Lagoon to the Upper Truckee River.

A detailed description of the Preferred Alternative, the selection process, and a summary of Alternatives 1 through 5 are presented in Chapter 2 of the Final EIR/EIS/EIS. Table ES-1 below provides a summary of impacts for all the alternatives, including environmental commitments, and mitigation measures for the Preferred Alternative.

ES.4 CONCLUSIONS

Several issues have been the subject of public and/or affected agency interest. However, through stakeholder input and involvement, including a Science Review Panel, the public, surrounding neighborhoods, and affected agencies support implementation of the Preferred Alternative that will restore the Upper Truckee River and Marsh. These are the key issues for which controversy has previously arisen and may again come up during the public release of the Preferred Alternative. The issues are summarized, as follows:

- ▶ Concerns about flooding related changes in neighborhoods adjacent to the study area.
- ▶ Short-term risks to water quality from construction associated with river restoration and maturation period following construction.
- ▶ Changes in public access for recreation users.
- ▶ Potential for noise and traffic impacts to nearby residences.

The Conservancy will work with private landowners to obtain easements and agreements if private property is needed for access. In cases where an agreement between parties could not be made, the Conservancy would resolve the issue by completing activities on State-owned land. During initial scoping with the public and governmental agencies, and based on information obtained through literature review, agency correspondence, consultations, and collection of field data, it was determined that no Indian trust assets exists in the study area; therefore, potential impacts to Indian trust assets resulting from Proposed Project would not occur.

A detailed description of the Preferred Alternative, the selection process, and a summary of Alternatives 1 through 5 are presented in Chapter 2 of the Final EIR/EIS/EIS.

In conclusion, the Preferred Alternative includes the most beneficial and cost-effective elements of the five alternatives evaluated in the Draft EIR/EIS/EIS. This alternative is also the most feasible, the most highly responsive to public comments, and the most resilient to the potential impacts of climate change.

Table ES-1 below provides a summary of impacts for all the alternatives, including environmental commitments, and mitigation measures for the Preferred Alternative.

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.2 Air Quality and Global Climate Change					
3.2-1: Short-Term Emissions of Criteria Air Pollutants and Precursors during Construction	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.2-2: Long-Term Operational (Regional) Emissions of Criteria Air Pollutants and Precursors	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.2-3: Long-Term Operational (Local) Emissions of Carbon Monoxide by Mobile Sources	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.2-4: Exposure of Sensitive Receptors to Odors	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.2-5: Exposure of Sensitive Receptors to Emissions of Hazardous Air Pollutants	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.2-6: Short-Term or Long-Term Operational (Regional) Emissions of GHGs	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.3 Archaeological and Historical Resources					
3.3-1: Damage to or Destruction of Documented Potentially Significant Cultural Resources during Construction	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.3-2: Damage to or Destruction of Undocumented Potentially Significant Cultural Resources during Construction	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.3-3: Damage to or Destruction of Previously Undocumented Human Remains during Construction	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.3-4: Damage to or Destruction of Documented Potentially Significant Cultural Resources Resulting from Public Access Features	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	Long term	LTS	No mitigation is required.	LTS
3.4 Biological Resources: Vegetation and Wildlife					
3.4-1: Introduction and Spread of Invasive Plants by Construction Activities	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.4-2: Introduction and Spread of Invasive Plants by Recreational Activities	1, 3-5, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	2	Long term	B	No mitigation is required.	B
3.4-3: Damage to or Mortality of Special-Status Plants Resulting from Construction Activities	1-4, P. Alt.	Short term	PS	Mitigation Measure 3.4-3: Conduct Protocol-Level Preconstruction Surveys and Avoid or Mitigate Impacts on Tahoe Yellow Cress Plants.	LTS
	5	NA	NI	No mitigation is required.	NI
3.4-4: Altered Extent of Special-Status Plant Habitat	1, 3, and 4	Long term	LTS	No mitigation is required.	LTS
	2, P. Alt.	Long term	B	No mitigation is required.	B
	5	NA	NI	No mitigation is required.	NI

**Table ES-1
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.4-5: Damage to or Mortality of Special-Status Plants Resulting from Recreational Activities	1	Long term	S	No additional mitigation beyond Mitigation Measure 3.4-3 is feasible.	SU
	2, 3, 4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.4-6: Short-Term Disturbance of Sensitive Communities (Jurisdictional Wetlands, Riparian Vegetation, and SEZ) Resulting from Construction Activities	1-4, P. Alt.	Short term	S	No additional mitigation is feasible.	SU
	5	NA	NI	No mitigation is required.	NI
3.4-7: Enhancement and Creation of Sensitive Communities (Jurisdictional Wetlands, Riparian Vegetation, and SEZ) Resulting from Ecosystem Restoration	1-4, P. Alt.	Long term	B	No mitigation is required.	B
	5	NA	NI	No mitigation is required.	NI
3.4-8: Disruption of Wildlife Habitat Use and Loss of Wildlife Resulting from Construction Activities	1-4, P. Alt.	Short term	S	Mitigation Measure 3.4-8A: Conduct Preconstruction Surveys for Nesting Special-Status Birds (Yellow Warbler, Willow Flycatcher, Waterfowl, and Long-Eared Owl), and Implement Buffers if Necessary. Mitigation Measure 3.4-8B: Conduct Preconstruction Surveys for Special-Status Bats, Avoid Removal of Important Roosts, and Implement a Limited Operating Period If Necessary.	SU
	5	NA	NI	No mitigation is required.	NI
3.4-9: Altered Extent and Quality of Wildlife Habitats Resulting from River, Floodplain, and Other Restoration and Enhancement Elements	1-4, P. Alt.	Long term	B	No mitigation is required.	B
	5	NA	NI	No mitigation is required.	NI

**Table ES-1
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.4-10: Altered Quality of Wildlife Habitats Resulting from Altered Recreational Use	1	Long term	LTS	No mitigation is required.	LTS
	2, 3, 4, P. Alt.	Long term	B	No mitigation is required.	B
	5	NA	NI	No mitigation is required.	NI
3.4-11: Conversion of Forest Land to Nonforest Use	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.4-12: Interference with Wildlife Use of Established Movement Corridors	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.5-1: Short-Term Aquatic Habitat Degradation	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.5-2: Stranding of Aquatic Biota from Dewatering Work Sites and Abandoning the Old Channel	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.5-3: Short-Term Disruption of Fish Passage/Migration	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.5-4: Long-Term Disruption of Fish Passage/Migration	1, 2, and 4	Long term	LTS	No mitigation is required.	LTS
	3, P. Alt.	Long term	PS	No mitigation is feasible.	SU
	5	NA	NI	No mitigation is required.	NI
3.5-5: Introduction and Spread of Aquatic Invasive Species by Construction Activities	1-4, P. Alt.	Short term	LTS	No additional mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.6 Geology and Soils, Mineral Resources, and Land Capability and Coverage					
3.6-1: Soil Erosion, Sedimentation, and Loss of Topsoil	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	Long term	LTS	No mitigation is required.	LTS
3.6-2: Risks to People and Structures Caused by Strong Seismic Ground Shaking	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.6-3: Reduction and Relocation of Land Coverage	1	Long term	LTS	No mitigation is required.	LTS
	2, 3, 4, P. Alt.	Long term	B	No mitigation is required.	B
	5	NA	NI	No mitigation is required.	NI
3.7 Human Health/Risk of Upset					
3.7-1: Potential Hazards to the Public from Use of Hazardous Materials	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.7-2: Potential Hazards to Human Health from Exposure to Existing On-Site Hazardous Materials	1, 2, 3, P. Alt.	Short term	PS	Mitigation Measure 3.7-2a: Prepare and Implement a Health and Safety Plan and Provide Qualified Oversight of Fill Removal Related to the Corporation Yard. Mitigation Measure 3.7-2b: Notify Appropriate Federal, State, and Local Agencies if Contaminated Soils Are Identified, and Complete Recommended Remediation Activities.	LTS
	4 and 5	NA	NI	No mitigation is required.	NI
3.7-3: Potential Hazardous Emissions or Handling of Hazardous or Acutely Hazardous Materials, Substances, or Waste within One-Quarter Mile of an Existing or Proposed School	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

**Table ES-1
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.7-4: Potential Increase in Public Health Hazards from Mosquitoes Resulting from Increased Floodplain Inundation	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.7-5: Potential for Airspace Safety Hazards Associated with Restoration and Enhancement of Habitat for Hazardous Wildlife	1-4, P. Alt.	Long term	LTS	No mitigation is required	LTS
	5	NA	NI	No mitigation is required.	NI
3.7-6: Potential for Wildland Fire Caused by Construction Equipment	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.8 Hydrology and Flooding					
3.8-1: Increased Runoff Volumes and Peak Flows	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.8-2: Effects on Channels from Reconfiguration of Stream Channels and Lagoon Surface Water Features	1, 2, and 4	Long term	B	No mitigation is required.	B
	3, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.8-3: Modified 100-Year Flood Flow Directions or Floodplain Boundaries	1-5, P. Alt.	Long term	LTS	No mitigation is required.	LTS
3.8-4: Increased Overbank Flooding for Small Streamflow Events	1-4, P. Alt.	Long term	B	No mitigation is required.	B
	5	Long term	LTS	No mitigation is required.	LTS
3.8-5: Modified Groundwater Levels and Flow Patterns	1-3, P. Alt.	Long term	B	No mitigation is required.	B
	4 and 5	Long term	LTS	No mitigation is required.	LTS
3.8-6: Exposure to Seismically Generated Wave Hazards	1-5, P. Alt.	Long term	LTS	No mitigation is required.	LTS

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.9 Geomorphology and Water Quality					
3.9-1: Short-Term Risk of Surface Water and Groundwater Degradation during Construction	1-4, P. Alt.	Short term	S	All feasible measures to avoid, minimize, or mitigate this impact have already been incorporated into the design of these alternatives.	SU
	5	Short term	NI	No mitigation is required.	NI
3.9-2: Short-Term, Project-Related Risk of Surface Water Degradation Following Construction	1-4, P. Alt.	Short term	S	Mitigation Measure 3.9-2: Adaptively Manage Potential Flood Disturbance in the Interim Period after Construction.	SU
	5	NA	NI	No mitigation is required.	NI
3.9-3: Upper Truckee River Channel Erosion within the Study Area	1-4, P. Alt.	Long term	B	No mitigation is required.	B
	5	Long term	LTS	No mitigation is required.	LTS
3.9-4: Trout Creek Channel Erosion within the Study Area	1 and 2	Short term	B	No mitigation is required.	B
	3, 5, P. Alt	Short term	LTS	No mitigation is required.	LTS
	4	NA	NI	No mitigation is required.	NI
3.9-5: Erosion of Backfilled and/or Remnant Channel Segments on the Floodplain	1, 2, 3, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	4 and 5	NA	NI	No mitigation is required.	NI
3.9-6: Retention of Fine Sediment and Nutrients within the Study Area	1-4, P. Alt.	Long term	B	No mitigation is required.	B
	5	Long term	LTS	No mitigation is required.	LTS

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.9-7: Decreased Delivery of Coarse Sediment to Cove East and Barton Beaches	1, 3, P. Alt.	Short term	PS	Mitigation Measure 3.9-7: Monitor and Adaptively Manage Delivery of Coarse Sediment to Cove East and Barton Beaches.	LTS
	2	Short term	LTS	No mitigation is required.	LTS
	4	NA	NI	No mitigation is required.	NI
	5	Short term	TSMC	No mitigation is required.	TSMC
	1-5	Long term	TSMC	No mitigation is required.	TSMC
3.9-8: Stormwater Drainage and Treatment	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.10 Land Use					
3.10-1: Potential to Physically Divide an Established Community	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.10-2: Potential Conflict with Land-Use Plans, Policies, or Regulations Intended to Protect the Environment.	1-5, P. Alt.	Long term	LTS	No mitigation is required.	LTS
3.10-3: Potential Conflict with Regional Conservation Strategy for Tahoe Yellow Cress	1	Long term	S	All feasible measures to reduce effects on Tahoe yellow cress, and thus reduce the potential conflict with the regional conservation strategy, have been included in the Conservancy's Tahoe yellow cress management plan for the study area, which would be implemented as a component of Alternative 1.	SU
	2-5, P. Alt.	Long term	LTS	No mitigation is required.	LTS
3.11 Noise					
3.11-1: Short-Term Project Construction Noise Levels Exceeding Applicable Thresholds	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.11-2: Long-Term, Project-Related Generation of Stationary- and Area-Source Noise	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.11-3: Long-Term Generation of Project-Related Traffic Noise	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.11-4: Land Use Compatibility of Study Area Noise Levels and Surrounding Land Uses	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.11-5: Short- and Long-Term Increases in Groundborne Vibration Levels	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.12 Public Services					
3.12-1: Potential for Longer Emergency-Vehicle Response Times Caused by Roadway Obstruction during Construction	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.12-2: Potential Need for Additional Public Services or Facilities as a Result of Increased Demand for Public Services	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.13 Recreation					
3.13-1: Short-Term Increase in Use of Existing Neighborhood and Regional Parks and Recreation Facilities during Construction	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.13-2: Short-Term Construction Impacts of Recreation Facilities That May Have an Adverse Physical Effect on the Environment	1-4, P. Alt.	Short term	SU	See Section 3.4, "Biological Resources: Vegetation and Wildlife," Section 3.5, "Fisheries," and Section 3.9, "Geomorphology and Water Quality."	SU
	5	NA	NI	No mitigation is required.	NI
3.13-3: Short-Term Decrease or Loss of Public Access and Recreation Opportunities within Lakes, Waterways, or Public Land during Construction	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.13-4: Long-Term Change in Use of Surrounding Neighborhood and Regional Parks and Recreation Facilities	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.13-5: Long-Term Operation and Expansion of Recreation Facilities That May Have an Adverse Physical Effect on the Environment	1	Long term	S	All feasible management measures to reduce effects on Tahoe yellow cress have been included in the Conservancy's Tahoe yellow cress management plan for the study area and would be implemented as a component of Alternative 1.	SU
	2, 3, 4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	Long term	LTS	No mitigation is required.	LTS
3.13-6: Long-Term Decrease or Loss of Public Access and Recreation Opportunities within Lakes, Waterways, or Public Lands	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	Long term	NI	No mitigation is required.	NI
3.13-7: Conflicts with Regional PAOT Allocations	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.14 Scenic Resources					
3.14-1: Potential for Short-Term Degradation of the Scenic Quality of Shoreline Travel Unit 33, Roadway Travel Unit 35, or the Visual Character or Quality of the Study Area	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.14-2: Potential for Long-Term Degradation of the Scenic Quality of Shoreline Travel Unit 33 and Mapped Scenic Resources Related to the Boardwalk and Observation Platforms	1, 3, 4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	2 and 5	NA	NI	No mitigation is required.	NI
3.14-3: Potential for Long-Term Degradation of the Scenic Quality of Shoreline Travel Unit 33 and Mapped Scenic Resources Related to the Upper Truckee River Bridge and Ramps	1	Long term	S	Because the composite score was calculated based on use of optimal colors and vegetative screening for the bridge, ramps, and support columns, no additional mitigation is feasible.	SU
	2-5, P. Alt.	NA	NI	No mitigation is required.	NI
3.14-4: Potential for Long-Term Degradation of a Scenic Highway or the Scenic Quality of Roadway Travel Unit 35 and Mapped Scenic Resources	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.14-5: Potential for Long-Term Degradation in Existing Visual Character or Quality of the Study Area	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.14-6: Potential for Increases in Light or Glare	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.15 Socioeconomics, Population and Housing, and Environmental Justice					
3.15-1: Short-term Increase in Population and Housing Demand Resulting from Construction-Related Activities	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.15-2: Potential Long-Term Effect on Sales or Incomes of Local Businesses Resulting from Additional Visitors to the Study Area	1-4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.16 Transportation, Parking, and Circulation					
3.16-1: Increased Traffic on Regional Circulation System during Construction	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.16-2: Increased Parking Demand	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.16-3: Potential for Conflicts between Construction Traffic, Local Traffic, Pedestrians, and Bicycles	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.17 Utilities					
3.17-1: Increased Waste Disposal Requirements Resulting from Construction and Operations	1-4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.17-2: Increased Use of Electrical Power	1	Long term	LTS	No mitigation is required.	LTS
	2-5, P. Alt.	NA	NI	No mitigation is required.	NI

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration ¹	LOS before Mitigation ³	Mitigation Measure	LOS after Mitigation ²
3.18 Cumulative Impacts					
3.18-C1: Cumulative Air Quality—Short-Term Emissions of Criteria Air Pollutants and Precursors during Construction	1–4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C2: Cumulative Air Quality—Long-Term Operational (Regional) Emissions of Criteria Air Pollutants and Precursors	1–4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C3: Cumulative Air Quality—Long-Term Operational (Local) Emissions of Carbon Monoxide by Mobile Sources	1–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C4: Cumulative Air Quality—Exposure of Sensitive Receptors to Odors	1–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C5: Cumulative Air Quality—Exposure of Sensitive Receptors to Emissions of Hazardous Air Pollutants	1–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C6: Cumulative Air Quality—Generation of Greenhouse Gases	1–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C7: Cumulative Archaeological and Historical Resources—Damage to or Destruction of Potentially Significant Cultural Resources or Human Remains	1–4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	Short term	LTS	No mitigation is required.	LTS

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration ¹	LOS before Mitigation ³	Mitigation Measure	LOS after Mitigation ²
3.18-C8: Cumulative Biological Resources: Vegetation and Wildlife—Introduction and Spread of Invasive Plants	1–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	Short term and long term	LTS	No mitigation is required.	LTS
3.18-C9: Cumulative Biological Resources: Vegetation and Wildlife—Construction-Related Effects on Special-Status Plants and Sensitive Habitats (Jurisdictional Wetlands, Riparian Vegetation, and SEZs)	1–4, P. Alt.	Short term	S	No additional mitigation is feasible.	SU
	5	NA	NI	No mitigation is required.	NI
3.18-C10: Cumulative Biological Resources: Vegetation and Wildlife—Long-Term Effects on Special-Status Plants and Sensitive Habitats (Jurisdictional Wetlands, Riparian Vegetation, and SEZs)	1 (Tahoe yellow cress)	Long term	S	No mitigation is feasible.	SU
	1 (other plants/habitat)	Long term	B	No mitigation is required.	B
	2 and P. Alt.	Long term	B	No mitigation is required.	B
	3 and 4	Long term	LTS	No mitigation is required.	LTS
	5	Long term	LTS	No mitigation is required.	LTS
3.18-C11: Cumulative Biological Resources: Vegetation and Wildlife—Short-Term Effects on Common or Special-Status Wildlife Resources and Wildlife Movement Corridors	1–4, P. Alt.	Short term	S	No mitigation is feasible.	SU
	5	NA	NI	No mitigation is required.	NI

**Table ES-1
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.18-C12: Cumulative Biological Resources: Vegetation and Wildlife—Long-Term Effects on Common or Special-Status Wildlife Resources and Wildlife Movement Corridors	1-4, P. Alt.	Long term	B	No mitigation is required.	B
	5	NA	NI	No mitigation is required.	NI
3.18-C13: Cumulative Fisheries—Short-Term Disruption of Aquatic Habitat and Movement Corridors for Fish	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C14: Cumulative Fisheries—Short-Term Disruption of Spawning Migration, Rearing, and Holding Activity of Lahontan Cutthroat Trout	1-4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C15: Cumulative Fisheries—Short-Term Localized Impacts on Fish Abundance and Distribution Related to Rescue and Relocation	1-4, P. Alt.	Short term	LTS	No additional mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C16: Cumulative Fisheries—Long-Term Increase in Upper Truckee River Habitat Quality	1-4, P. Alt.	Long term	B	No mitigation is required.	B
	5	NA	NI	No mitigation is required.	NI
3.18-C17: Cumulative Fisheries—Long-Term Population Level Impacts on Western Pearlshell Mussels	1-4, P. Alt.	Long term	LTS	No additional mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C18: Cumulative Fisheries—Long-Term Impacts of Aquatic Invasive Species to Aquatic Habitat in the Upper Truckee River	1-4, P. Alt.	Long term	LTS	No additional mitigation is required.	LTS
	5	Long term	LTS	No mitigation is required.	LTS

**Table ES-1
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.18-C19: Cumulative Geology and Soils, Mineral Resources, and Land Capability and Coverage—Construction-Related, Short-Term Increases in Soil Erosion, Sedimentation, and Loss of Topsoil	1–4, P. Alt.	Short term	LTS	No additional mitigation is required.	LTS
	5	Short term	LTS	No mitigation is required.	LTS
3.18-C20: Cumulative Geology and Soils, Mineral Resources, and Land Capability and Coverage—Land Coverage Changes	1–4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	Long term	NI	No mitigation is required.	NI
3.18-C21: Cumulative Human Health/Risk of Upset—Potential Hazards to the Public from Use of Hazardous Materials or Exposure to Existing On-Site Hazardous Materials	1–4, P. Alt.	Short term and long term	LTS	No additional mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C22: Cumulative Human Health/Risk of Upset—Potential Increase in Public Health Hazards from Mosquitoes Resulting from Increased Floodplain Inundation	1–4, P. Alt.	Short term and long term	LTS	No additional mitigation is required.	LTS
	5	Short term and long term	LTS	No mitigation is required.	LTS
3.18-C23: Cumulative Human Health/Risk of Upset—Potential for Airspace Safety Hazards Associated with Restoration and Enhancement of Habitat for Hazardous Wildlife	1–5, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
3.18-C24: Cumulative Hydrology and Flooding—Long-Term Increased Stormwater Runoff Volumes and Long-Term Increased Peak Flows Generated	1–4, P. Alt.	Long term	LTS	No additional mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

**Table ES-1
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alt.	Impact Duration ¹	LOS before Mitigation ³	Mitigation Measure	LOS after Mitigation ²
3.18-C25: Cumulative Hydrology and Flooding—Long-Term Increased 100-Year Flood Hazard Area or Elevation	1–4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	Long term	LTS	No mitigation is required.	LTS
3.18-C26: Cumulative Hydrology and Flooding—Long-Term Increased Overbanking during Small Flood Events	1–4, P. Alt.	Long term	B	No mitigation is required.	B
	5	Long term	LTS	No mitigation is required.	LTS
3.18-C27: Cumulative Hydrology and Flooding—Long-Term Modified Groundwater Levels and Flow Patterns	1–3, P. Alt.	Long term	B	No mitigation is required.	B
	4	Long term	LTS	No mitigation is required.	LTS
	5	Long term	LTS	No mitigation is required.	LTS
3.18-C28: Cumulative Geomorphology and Water Quality—Short-Term Risk of Surface Water Degradation during Construction	1–4, P. Alt.	Short term	PS	All feasible mitigation measures would be expected to be incorporated into the individual restoration project plans and construction BMPs for specific projects. No additional mitigation is feasible.	SU
	5	Short term	NI	No mitigation is required.	NI
3.18-C29: Cumulative Geomorphology and Water Quality—Short-Term Risk of Surface Water Degradation following Construction	1–4, P. Alt.	Short term	S	Mitigation Measure 3.18-C29: Implement an Interim Coordinated Adaptive Management Plan on the Upper Truckee River.	SU
	5	Short term	LTS	No mitigation is required.	LTS
3.18-C30: Cumulative Geomorphology and Water Quality—Long-Term Stream Channel Erosion	1–4, P. Alt.	Long term	B	No mitigation is required.	B
	5	Long term	LTS	No mitigation is required.	LTS
3.18-C31: Cumulative Geomorphology and Water Quality—Long-Term Fine Sediment and Nutrient Retention	1–4, P. Alt.	Long term	B	No mitigation is required.	B
	5	Long term	LTS	No mitigation is required.	LTS

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.18-C32: Cumulative Geomorphology and Water Quality—Long-Term Modifications in Upper Truckee River Coarse Sediment Transport and Effects on Beach Processes	1–5, P. Alt.	Long term	TSMC	No additional mitigation is required.	TSMC
3.18-C33: Cumulative Land Use—Potential to Physically Divide an Established Community or Conflict with Land Use Plans, Policies, or Regulations	1	Long term	S	No feasible mitigation is available.	SU
	2–4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	Long term	LTS	No mitigation is required.	LTS
3.18-C34: Cumulative Noise—Short-Term or Long-Term Increased Noise and Vibration	1–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	Short term and long term	NI	No mitigation is required.	NI
3.18-C35: Cumulative Public Services—Increased Demand for and Interference of Public Services	1–4, P. Alt.	Short term and long term	LTS	No additional mitigation is required.	LTS
	5	Short term and long term	NI	No mitigation is required.	NI
3.18-C36: Cumulative Recreation—Construction-Related Loss of Recreational Opportunities and Public Access, Conflicts among Existing and Proposed Recreational Uses, and Increased Use of Existing Recreational Facilities	1–4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C37: Cumulative Recreation—Operation-Related Loss of Recreational Opportunities and Conflicts among Surrounding and Proposed Recreational Uses	1–4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

Table ES-1 Summary of Impacts and Mitigation Measures					
Resource Topic/Impact	Alt.	Impact Duration1	LOS before Mitigation3	Mitigation Measure	LOS after Mitigation2
3.18-C38: Cumulative Recreation—Construction or Expansion of Recreational Facilities That May Have an Adverse Physical Effect on the Environment	1	Short term and long term	S	No feasible mitigation is available.	SU
	2–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C39: Cumulative Scenic Resources—Short-Term Glare from Construction Activities	1–4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C40: Cumulative Scenic Resources—Short-Term and Long-Term Effects of Construction Activities and Additional Facilities on Existing Visual Character and Quality	1	Short term and long term	S	No feasible mitigation is available.	SU
	2–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C41: Cumulative Socioeconomics, Population and Housing, and Environmental Justice—Short-Term Increase in Population and Housing Demand Resulting from Construction-Related Activities	1–4, P. Alt.	Short term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C42: Cumulative Socioeconomics, Population and Housing, and Environmental Justice—Potential Long-Term Increases in Sales or Incomes of Local Businesses Resulting from Additional Visitors to the Study Area	1–4, P. Alt.	Long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

**Table ES-1
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alt.	Impact Duration ¹	LOS before Mitigation ³	Mitigation Measure	LOS after Mitigation ²
3.18-C43: Cumulative Transportation, Parking, and Circulation—Construction and Operation Impacts on the Local and Regional Circulation System	1–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI
3.18-C44: Cumulative Utilities— Short-Term and Long-Term Impacts on Sanitary Sewer, Potable Water, Natural Gas, Electrical, Storm Drain, and Solid Waste Utilities	1–4, P. Alt.	Short term and long term	LTS	No mitigation is required.	LTS
	5	NA	NI	No mitigation is required.	NI

Notes:

Alt. = alternative.

P. = Preferred.

NA = not applicable.

¹ Long term = persisting for years to decades.

Short term = construction-related or otherwise persisting from one to several years.

² B = beneficial.

LOS = level of significance.

LTS = less than significant.

NI = no impact.

PS = potentially significant.

S = significant.

SU = significant unavoidable.

TSMC = too speculative for meaningful consideration.