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May 2, 2013

Ms. Genevieve Villemaire
Erosion Control Grants Manager
Lake Tahoe Basin Management Unit
United State Forest Service
Via email: gvillemaire@fs.fed.us

Subject: Sierra Tract Erosion Control Project Phase 3 and 4

Dear Genevieve:

Enclosed is our second revised Initial NEPA Submittal for the Sierra Tract Erosion Control Project Phase 3 and 4 on behalf of the City of South Lake Tahoe. The Initial NEPA submittal was submitted in April of 2011 and a revised NEPA submittal was sent to you in December of 2012 which included a revised project description after the Phase 3 and 4 projects were combined. I have included the following items to accompany this second NEPA initial submittal revision.

- Revised Project Description and maps updated for changes to proposed improvements on USFS lots;
- Invasive Plant Risk Assessment for the project.

You have already received the following and these documents have not been revised since they were sent to you.

- Determination of Need Letter for Cultural Resource Surveys, Susan Lindstrom, Ph.D. – Consulting Archaeologist, May 21, 2010.
- Existing Conditions Analysis for Vegetation, Wetlands and Noxious Weed Risk Assessment, Western Botanical Services, July 27, 2007;
- Draft Biological Evaluation/Biological Assessment for Sierra Tract Erosion Control Project, Wildlife Resource Consultants, October 2006; and
- Project area boundary GIS layers.
- Invasive, Noxious Weed, and TES Vegetation Survey, November 2012

As you are aware, changes to the project plans and description have been incorporated for proposed improvements in USFS lots. The project description, maps and GIS layers have all been updated to reflect these changes. A new Invasive Plant Risk Assessment has been prepared based on the November 2012 Invasive, Noxious Weed, and TES Vegetation Survey which you have already received. The project is still scheduled to be constructed in 2014. I am also submitting a revised Special Use Permit application today which provides the updated information.

The California Tahoe Conservancy has only authorized a small amount of funding to extend beyond May 30 which has significantly accelerated the schedule for design and planning efforts. It is anticipated that 90 percent design will be completed prior to May 30. It is in the best interest of the project if the USFS could complete as much work as possible for the NEPA process and the Special Use Permit processes prior to May 30.

Please review the Initial NEPA submittal and contact me if you require additional information.

Very truly yours,

Suzanne Wilkins

Suzanne Wilkins, AICP, ENV SP
Environmental Planner
CDM Smith Inc.

cc:
Stan Hill, City of South Lake Tahoe

Sierra Tract Erosion Control Project Phase 3 and 4
Project Description

Project Area

The Sierra Tract neighborhood is located at the southern end of South Lake Tahoe in California approximately three miles west of the Nevada/California state line (Exhibit A). Most of the project area is southeast of Lake Tahoe Boulevard (Highway 50) and a small portion if located northwest of Highway 50. A general vicinity map and conceptual project plan (Exhibit B) are attached. This project consists of an approximately 81-acre area in the northwestern portion of the Sierra Tract. The planned improvements would be constructed in City of South Lake Tahoe (CSLT) right of way (ROW) and on public land owned by the CSLT, California Tahoe Conservancy (Conservancy) and U.S. Forest Service (USFS).

Nature and Scope of the Project

The CSLT has started implementing a series of water quality improvement projects in the neighborhoods known as Sierra Tract in South Lake Tahoe, California. The two neighborhoods have been divided into five geographically distinct project areas. Phase 2 and a portion of Phase 1 have already been constructed. All of these project areas are based upon sub watershed boundaries and drainage areas and the distinct types of water quality treatment solutions appropriate to the area. The following Project Description focuses on the Sierra Tract Erosion Control Phase 3 and 4 project.

For funding purposes, the five projects are referred to collectively as the "*Sierra Tract Erosion Control Project*." The Lake Tahoe Environmental Improvement Program (EIP) assigns Project Numbers 177 and 693 to this water quality improvement/erosion control effort. The EIP is a cooperative program administered by the Tahoe Regional Planning Agency (TRPA) that relies on a partnership of private, local, state, and Federal entities to implement its goals of preserving, restoring, and enhancing the environment of the Lake Tahoe Region.

A Technical Advisory Committee (TAC) was formed in January of 2007 for planning and design of the Project. Members of the TAC include representatives from the following agencies: Lahontan Regional Water Quality Control Board (RWQCB), the California Tahoe Conservancy (Conservancy), Tahoe Resource Conservation District (TRCD), the CSLT, Natural Resource Conservation Service (NRCS), Caltrans, U.S. Army Corps of Engineers (USACOE), U.S. Forest Service Lake Tahoe Basin Management Unit (USFS LTBMU), South Tahoe Public Utility District (STPUD), TRPA, and CDM Smith (Design, Planning and Permitting Consultant) . The TAC was formed to provide guidance and concurrence throughout the Project planning development process and making decisions regarding selection of the preferred alternative. Since the TAC includes representatives from the permitting agencies, it provides useful insights about permitting challenges early in the planning process.

The Sierra Tract Erosion Control Phase 3 and 4 project was modified in the fall of 2010 and a portion of the project area was deleted from the project and a portion of the Phase 4 project area was added. This decision was made after an analysis using the Pollutant Load Reduction Model (PLRM) identified priority areas where water quality improvement actions should be focused. The project description describes the modified Phase 3 and 4 project. Seven TAC meetings have taken place since the project started in 2007. In the fall of 2012 the project was re-started for the second time and the TAC was presented with the revised project area and comments were received from the TAC regarding the recommended alternative. A 60 percent design TAC meeting was conducted in March of 2013 to review the Final Recommended Alternative Project Report and present the 60 percent design plans. Comments were received from the TAC at this meeting and these comments are reflected in the current design plans presented with the NEPA re-submittal number 2.

Types of Erosion Control Improvements

Various types of improvements are proposed including revegetation of bare soil road shoulders and other compacted dirt areas, drainage inlets and sediment traps within the ROWs, a dissipation structure at an existing outfall, storm drain pipes for underground storm water conveyance, vegetated swales, infiltration basins and galleries, and concrete curb and gutter. Below is a general description of each type of erosion control improvement proposed.

Revegetation

Disturbed and bare soil road shoulders throughout the project area would be revegetated. Highly compacted soils in these areas would be mechanically loosened and revegetated to promote infiltration of roadway runoff. The type of revegetation treatment would depend on whether or not curb and gutter would be installed along the road. Parking barriers or concrete curb and gutter would be installed along all treated road shoulders to restrict parking to the paved area and to protect the restored areas. Revegetation seed mixes would not contain any noxious weeds.

Curb and Gutter

Targeted curb and gutter is planned throughout the Project 3 area. These structures would provide stabilization of road shoulders by keeping concentrated roadside flows off of sensitive soils and would protect the roadside soils from plowing impacts during snow removal activities. The curb and gutter also provides a means to convey runoff to areas where it can be effectively treated. Where feasible, curb breaks would be incorporated to allow a portion of storm water runoff flow to infiltrate behind the curb. The curb planned would be vertical curb, and would extend past all driveways. Driveways that are currently paved would be tied-in with AC pavement extending from the back of the curb to the existing driveway (within the City ROW). Unpaved driveways and unpaved areas in general would be backfilled with soil to meet the back of curb (within the City ROW). Disturbed soil areas behind the curb would be revegetated.

Infiltration Facilities

Infiltration basins would provide temporary storage of runoff flows to allow for settling of particulates and infiltration of stormwater. Some biological nutrient removal may also occur by vegetation growing in the basins. Infiltration galleries are proposed on a USFS owned parcel on the east side of Lodi Avenue between Elwood Avenue and William Street, and at the Conservancy-owned parcel at the corner of River Drive and SR 50.

Vegetated swales would be installed along some streets for infiltration and conveyance of storm water. The vegetated swales would be constructed with a 3:1 side slope. The project construction documents would allow the Conservancy, CSLT or engineer; as ultimately detailed in the project specifications; to "field-fit" these swales in the field during construction.

The conveyance system to Chris Basis would be improved to include various types of retention features and perforated pipe underground infiltration.

Conveyance Structures

Storm drain piping is proposed at street crossings in areas that would receive significant drainage. Storm drain piping would convey storm water to basins and swale locations throughout the project area. Relocation of some underground utilities, particularly gas mains, may be required. If required, relocation would be performed by the gas company.

Resource Protection

Parking deterrents are proposed along several roadways to discourage parking along newly revegetated areas.

Proposed Improvements by Sub Basin

The project area is divided into three sub basins as shown on the attached conceptual plan. The improvements proposed for each sub basin area are also described below.

Sub Basin SB1

Sub-basin 1 (SB1) includes the portion of Highway 50, Palmira Avenue, Stockton Avenue, Lodi Avenue, and River Drive within the Project area, which drain to Outfall 1 near the intersection of Highway 50 and River Drive. However, stormwater drainage from Highway 50 will be collected and treated by Caltrans at a sand filter upstream of Outfall 1. Privately owned lots include single family residential and commercial properties. The proposed improvements in this highly developed and high traffic area consist of a system of concrete curb and gutter, drain inlets with sand trap sumps and storm drain pipes that convey runoff to an infiltration gallery on the three Conservancy parcels at the intersection of River Drive and Highway 50. The sub-basin boundary and the proposed improvements are illustrated in Exhibit B.
To increase treatment and reduce flows to the River Drive infiltration gallery, shallow infiltration swales are proposed behind the curb and gutter on Palmira Avenue where conditions such as topography and available space allow. Breaks in the curb would

allow runoff to enter these areas and infiltrate until they were full, at which point flows would bypass and continue down the gutter.

A large percentage of the drainage area in SB1 consists of either Caltrans or private commercial property. Caltrans is currently designing drainage, water quality, and other improvements along this portion of Highway 50, and is planning to route flows generated from their property to a large Delaware Sand Filter near the Upper Truckee River bridge upstream of Outfall 1. According to Caltrans, the design calculations for the sand filter indicate that there is no excess capacity to treat additional flows from the City. The City's flows will be treated at the River Drive infiltration gallery where it will be comingled with the treated Caltrans flows downstream of the sand filter. Both Caltrans' and the City's treated flows will then be discharged at Outfall 1.

Private commercial runoff in SB1 currently commingles with both Caltrans and City runoff and will continue to do so until the private property owners implement BMPs on their properties to retain their required volume of runoff. The proposed River Drive infiltration gallery on Conservancy property does have some excess capacity to treat commercial runoff, and opportunities for the property owners to share in the costs of the basin and drainage system, in exchange for receiving their BMP certificates from the TRPA, will be pursued.

The Conservancy property on River Drive contains existing public access to a trail network along the Upper Truckee River. This public access point will be maintained during the Project, and after construction the trails will be re-established over the new underground facility.

Sub Basin Lower SB2

Sub basin Lower SB2 is shown on the conceptual plan (Exhibit B). The existing Chris basin outlet and associated structures between Chris Avenue and William Street, northeast of Stockton Avenue, would be rehabilitated and cleaned. The vegetated swale between Chris Avenue and William Street, southwest of Stockton Avenue will be abandoned (Exhibit B-2). A new basin outlet would redirect runoff through storm drain piping from the Chris basin to a new basin on USFS-owned property on William Street near the intersection of Stockton Avenue (Exhibit B-1). Storm water would then discharge from the new basin via vegetated swale to existing storm drain piping crossing Stockton Avenue, down William Street, crossing Lodi Avenue to Outfall 2.

Northwest of William Street, road shoulders on Stockton Avenue and Lodi Avenue would be revegetated between driveways behind the new curb and gutter for source control and for infiltration of stormwater to occur near the source. Road shoulders along Chris Avenue, between Stockton Avenue and Lodi Avenue, and along River Drive would also be revegetated between driveways. Parking deterrents will be installed to prevent vehicle access to revegetated areas. Existing drainage pathways would direct excess storm water flow to the existing Outfall 2.

To the southeast of William Street, runoff would be conveyed by curb and gutter with storm drain piping/drainage inlets or vegetated swale. Curb and gutter would be constructed on portions of Elwood Avenue, Armstrong Avenue, Lodi Avenue and Stockton Avenue. The southeast shoulders of Armstrong Avenue, Knox Avenue, and Bertha Avenue have wide right-of-way. On these streets a vegetated channel would be constructed to convey runoff. Runoff from streets would be conveyed via new drain inlets and associated storm drain pipes on Elwood Avenue, Armstrong Avenue, Stockton Avenue and Lodi Avenue to a new infiltration gallery on two adjacent USFS parcels on Lodi Avenue (Exhibit B-3) and a new basin on another USFS parcel on the southwest side of Lodi Avenue (Exhibit B-4). These new infiltration structures provide opportunity to infiltrate storm water runoff prior to discharge at Outfall 2.

Source control for road shoulders consists of a combination of curb and gutter, vegetated swale, and shoulder revegetation with parking deterrents on portions of Chris Avenue, River Drive, Knox Avenue, Bertha Avenue, and Osborne Avenue to prevent vehicle access. A special use agreement with the USFS will be required for proposed improvements on federal property. Due to indications of shallow groundwater, structures in some areas of Lower SB2 (Chris Avenue to Armstrong Avenue) collecting groundwater (i.e. perforated drainage inlets) should be sealed to prevent groundwater intrusion.

Sub Basin Upper SB2

Upper sub-basin 2 (SB2) includes the entire area that drains to the existing Chris Avenue basin. The sub-basin generally lies between Highway 50 and William Street, but also includes some drainage from the northwest side of Highway 50. Upper SB2 generates runoff from City, Caltrans, commercial, single family residential, and multi-family residential sources. The flows from these different sources commingle, and are conveyed through an existing stormwater drainage system to the Chris Avenue basin. Runoff from Upper SB2 is ultimately conveyed to Outfall 2 near the Upper Truckee River. The Upper SB2 boundary and the proposed improvements are illustrated in Exhibit B.

The modifications proposed for the existing conveyance system focus on disconnection and dispersed infiltration. The improvements include various types of retention features and perforated pipe underground infiltration systems on Rubicon Trail, Brockway Avenue, Palmira Avenue, Reno Avenue, and Chris Avenue. In addition, a portion of the flow to the Chris Avenue basin will be intercepted and rerouted to a new wet basin proposed on William Street in Lower SB2. With this configuration, the two wet basins will operate in parallel rather than in series. The condition of the existing storm drain piping leading to the Chris Avenue basin will be evaluated, and the piping will be replaced and/or slip lined if deemed necessary.

In the residential portion of Upper SB2, where no previous drainage or water quality improvements have been installed, a combination of concrete curb and gutter, drainage inlets with sediment traps and vegetated swales and shoulders is proposed

to protect shoulders and eliminate ponding, while also reducing surface runoff and pollutant loads.

Caltrans is currently planning improvements that may incorporate an additional infiltration gallery on two vacant Conservancy owned parcels on Sierra Boulevard near the existing Chris basin. This would further reduce flows to the existing Chris Avenue basin and would improve the overall effectiveness of the Project. Drainage piping upstream of the Chris basin will be shared with Caltrans and a flow splitter will be constructed on Sierra Boulevard to separate between the two City basins and Caltrans infiltration gallery.

Construction Controls

The construction control measures described below are being incorporated into the project specifications and plans. The contractor would be required to incorporate all the policies discussed below into their construction activities.

Air Quality During Construction

The El Dorado County APCD has developed a *Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act* (February 2002). This guide provides construction control measures for incorporation into the project to reduce construction emissions to a less-than-significant level. Some of the following construction control measures are taken directly from this guide. Other measures are taken from CSLT specifications for Dust Control.

Exhaust Emissions Mitigation

- Construction equipment and vehicles will not be left idling and will be shut down when not in use.

- Construction equipment shall be maintained in accordance with manufacturers' specifications to avoid excessive emissions.

Fugitive Dust Mitigation

- The Contractor shall prevent the generation of dust due to his operations in the construction zones, along the haul routes, or equipment parking zones. This may consist of water sprinkling, or an equivalent service, provided it is not in conflict with requirements of any agency's water quality regulations having jurisdiction in that area. The Contractor shall endeavor, whenever possible, to restrict the use of water to control dust nuisance due to the current need to conserve water.

- Dust control shall be in strict accordance with the Storm Water Pollution Prevention Plan (SWPPP) for the project, as approved by the Regional Water Quality Control Board (RWQCB). Under no circumstances shall the contractor violate any of the terms of the plan. In the event the RWQCB or TRPA issues fines or stop work orders, it shall be the contractor's sole responsibility to pay the fines,

whether issued to the CSLT or Contractor and no additional working days will be granted.

Biological Resources

The management recommendations incorporated into the project to reduce the potential effects of project activities to a level that is less than significant are described below.

- All trash created during construction will be properly contained (wildlife-proof containers) and removed at the end of each day.

- Construction equipment used in construction must be free of invasive weed seed. The project area will be monitored for any weed colonization after construction is complete, and any infestations will be removed. The consulting botanist will determine how removal will be implemented and who will be responsible for the removal.

- All off-road equipment and vehicles used for project implementation are required to be weed-free. All equipment and vehicles will be cleaned of all attached mud, dirt, and plant parts. This will be done at a vehicle washing station or steam cleaning facility (power or high-pressure cleaning) before the equipment and vehicles enter the project area, and before vehicles enter the Basin (if they originate from outside the Basin).

- All earth-moving equipment, gravel, fill, or other materials are required to be weed-free. Use onsite sand, gravel, rock, or other organic matter when possible. Otherwise, obtain weed-free materials from gravel pits and fill sources that have been surveyed and approved by Nevada Department of Agriculture or by a botanist or ecologist at the Lake Tahoe Basin Management Unit.

- Salvage topsoil from the Project area for use for onsite revegetation, unless contaminated with invasive or noxious weeds. All activities that require seeding or planting must utilize native (not hybrid) seed sources preferably originating from sources above 4000 feet. The USFS recommended seed mix includes: *Bromus carinatus* (California brome var. carinatus), *Elymus glaucus* (Blue wild rye), *Poa Secunda* ssp. *Juncifolia* (Big Bluegrass), *Achillea millefolium* (Western yarrow), *Eriogonum umbellatum* (Sulfur flower), and *Lupinus argenteus* (Silver Lupine). This requirement is consistent with the USFS Region 5 policy that directs the use of native plant material for revegetation and restoration for maintaining "the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems." Any alteration of seed mixes must be approved by a USFS botanist.

- Staging areas for equipment, materials, or crews will not be sited in weed infested areas.

- Weed infestations identified before project implementation that are within the project area or along travel routes near the project area will be hand treated or "flagged and avoided" according to the species present and project constraints.

Geology and Soils

The following construction controls are recommended during construction to avoid potential impacts to geology and soils.

- Temporary erosion control devices shall be placed on the downhill side of all excavation and dirt piles. These shall include: sediment fencing and/or sediment rolls.
- Dirt piles shall be covered during non working hours and during times of precipitation.
- All open trenches shall be covered during periods of precipitation.
- Vegetation protection fencing shall be placed around all vegetated areas near construction.
- All construction equipment shall be parked on paved areas.
- Stabilize all disturbed areas with vegetation and heavy mulch until vegetation is established.
- Clean up and remove all construction site waste including trash, debris and spoil piles.

Hazards and Hazardous Materials

- Construction vehicles will be serviced in specific paved areas to prevent accidental spills of fluids, oils and lubricants into groundwater. All spills shall be reported to Lahontan RWQCB and procedures and response protocols for immediate cleanup outlined in the SWPPP shall be implemented. These procedures shall include placement of sandbags, gravel, boards or other TRPA approved methods to prevent spilled material from entering groundwater or leaving the site. Contact Underground Service Alert (USA) 48 hours prior to grading activities to mark underground utility locations.

Hydrology and Water Quality

In addition to the construction controls identified above under Geology and Soils, the measures stated below would also help to protect hydrology and water quality. Additional requirements and protocols will be outlined in the SWPPP.

- Temporary erosion control devices shall be constructed as shown on the plans and as required by the TRPA. These devices shall be maintained and left in a stable condition on site or later removed, as directed by the Engineer, and as specified in the Special Provisions.

- When no longer required, temporary erosion control devices and the retained silt and any trapped solids from runoff shall be removed and disposed of in accordance with the Standard Specifications.

- Dirt shall not be tracked off site. Construction equipment shall be cleaned to remove any loose dirt or sediment prior to exiting the site.

- Place construction fencing around SEZ and wetland areas as identified on the TRPA Land Capability Verification and Wetlands Delineation map that are located outside of the proposed disturbance area to avoid direct impacts during construction.

Noise During Construction

- Any normal construction activities shall be conducted between the hours of 8:00 a.m. and 6:30 p.m., Monday through Friday, holidays excluded. Any construction activities conducted between the hours of 6:30 p.m. and 8:00 a.m. Monday through Friday, or at any time on Saturday, Sunday and holidays, shall comply with the noise standards applicable to the corresponding TRPA Plan Area Statements 103 and 105.

- Said noise level requirement shall apply to all equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of project personnel or the public.

- Construction equipment shall be maintained in proper working conditions with appropriate muffler devices installed.

Traffic and Circulation During Construction

The following traffic controls shall be implemented during construction.

- A traffic control plan shall be prepared by a California Licensed Civil Engineer or Traffic Engineer, or by an American Traffic Safety Services Association certified person for CSLT approval. No lane closures shall take place until this plan has been approved by the CSLT.

- All guide signs shall be installed to maintain continuity of destination. In addition to the existing warning and directional signs, the Contractor shall erect, within or adjacent to the limits of the work, such supplemental warning and directional signs as ordered by the Engineer.

- Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders, including any section closed to public traffic.

- The Contractor shall notify local authorities of his intent to begin work at least 5 days before work is begun. The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make his own arrangements relative to keeping the working area clear of parked vehicles.

- Whenever vehicles or equipment are parked on the shoulder within 6 feet of a traffic lane, the shoulder area shall be closed with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. A minimum of 9 cones or portable delineators shall be used for the taper. A C23 (Road Work Ahead) or C24 (Shoulder Work Ahead) sign shall be mounted on a telescoping flag tree with flags.

- For work within the CSLT right-of-way, the contractor shall provide for a minimum of one 11-foot paved travel lanes during construction hours. In the event the contractor chooses to reduce traffic to one lane the contractor must provide for traffic control to allow for travel in both directions along the street. The contractor shall employ a minimum of two "flaggers" that will be provided with radios so that they can coordinate the flow of traffic. The Engineer shall review all proposed detours. No detour can begin until approved by the Engineer, and must be appropriately signed. All detours and lane closures are to be suspended during non working hours and the roadways shall be reopened to vehicular traffic at the end of each working day.

- When lane closures are made for work periods only, at the end of each work period, all components of the traffic control system, except portable delineators placed along open trenches of excavation adjacent to the traveled way, shall be removed from the traveled way. If the Contractor so elects, said components may be stored at selected central locations, approved by the Engineer, within the limits of the highway right-of-way.

- For work within Caltrans right-of-way, the contractor shall provide for a minimum of four 11-foot paved travel lanes during non-construction hours.

- The full width of the traveled way and all business/residence driveway accesses shall be open for use by public traffic on Saturdays, Sundays, designated legal holidays, after 12:00 noon on Fridays and the day preceding designated legal holidays. Designated legal holidays are: January 1, the third Monday in February, the last Monday in May, July 4, the first Monday in September, November 11, Thanksgiving Day, and December 25. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated a legal holiday. When November 11 falls on a Saturday, the preceding Friday shall be a designated legal holiday.

Level of Disturbance

The total amount of disturbance would be approximately 2.75 acres.

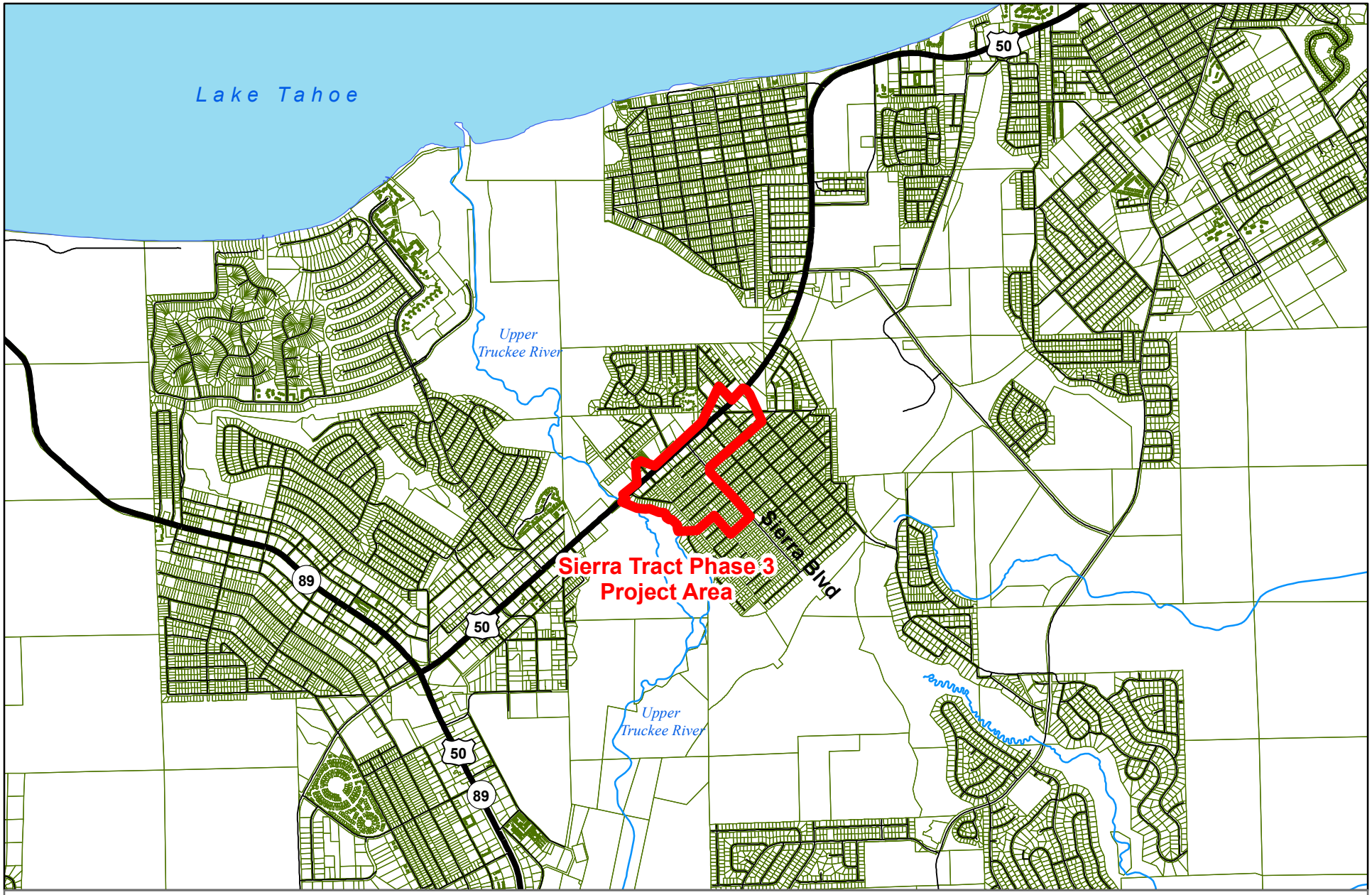
Equipment Type and Use

The type of equipment proposed for use is general construction equipment which may include dump trucks, water trucks, curb and gutter forming machines, concrete trucks, backhoes, excavators, loaders, compactors, jackhammers, paving equipment, front end loaders and hand tools.

Implementation Schedule

The current implementation is shown on the table below. Timeframes may change and are dependent upon project approvals and funding.

Proposed Project Schedule	
60% Design Complete	February 28, 2013
90% Design Complete	June 28, 2013
Final Design Package	August 8, 2013
Bid Award	2013 or early 2014
Construction	May through October 15, 2014



CDM Smith

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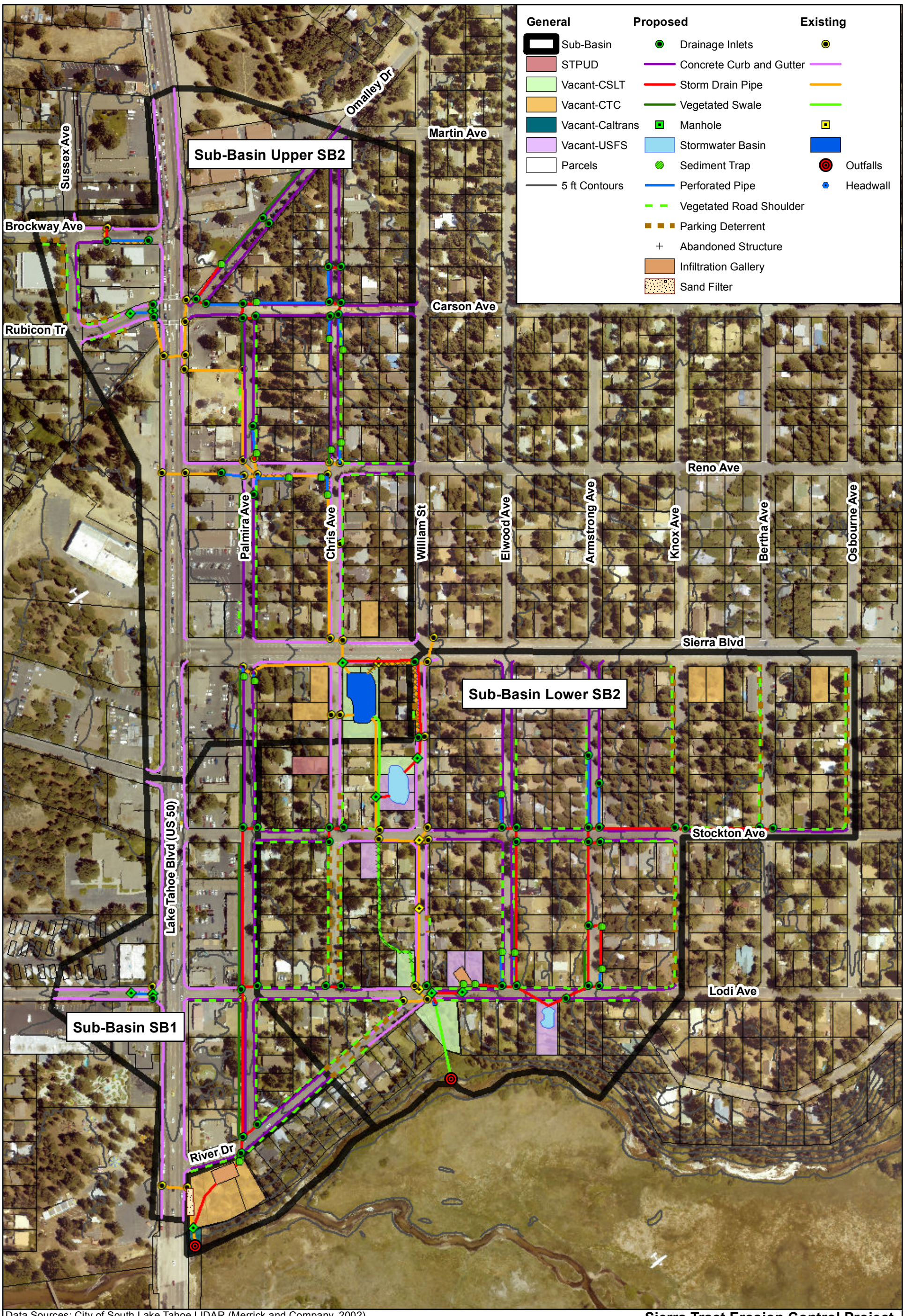
Sierra Tract Erosion Control Project Phase 3 and 4

Exhibit A
Vicinity Map



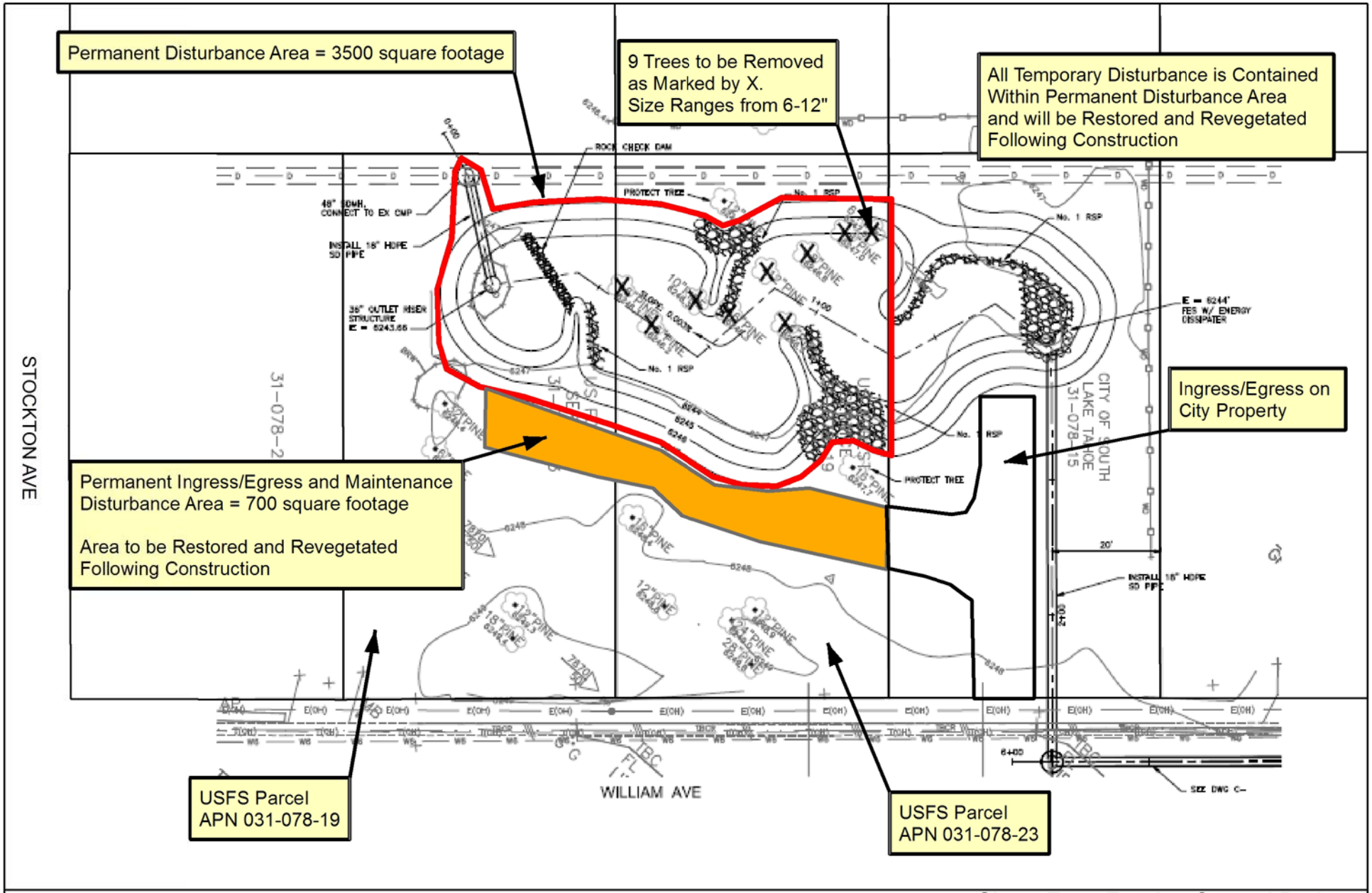
Data Sources: City of South Lake Tahoe LIDAR (Merrick and Company, 2002)
El Dorado County Parcel Database, 2007
West Sierra Tract ECP As-Built Drawings, 1990
City of South Lake Tahoe Aerial Photography, 2002

Sierra Tract Erosion Control Project
Phase 3 and 4

CDM Smith

0 125 250 500
Feet

Exhibit B
Project Plan



CDM Smith

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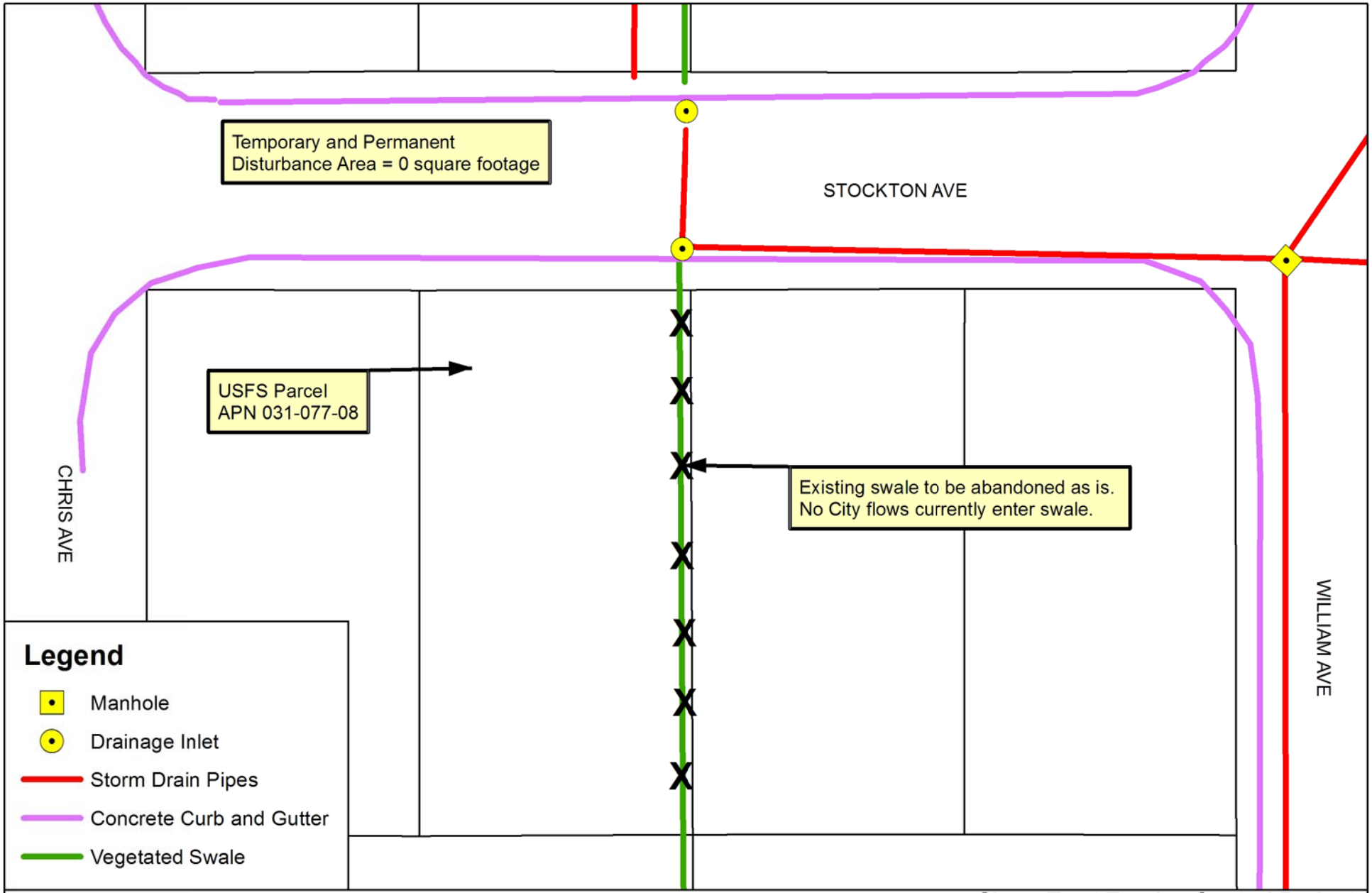
Feet

Sierra Tract Erosion Control Project
Phase 3 and 4

Exhibit B-1
William Ave Detention Basin



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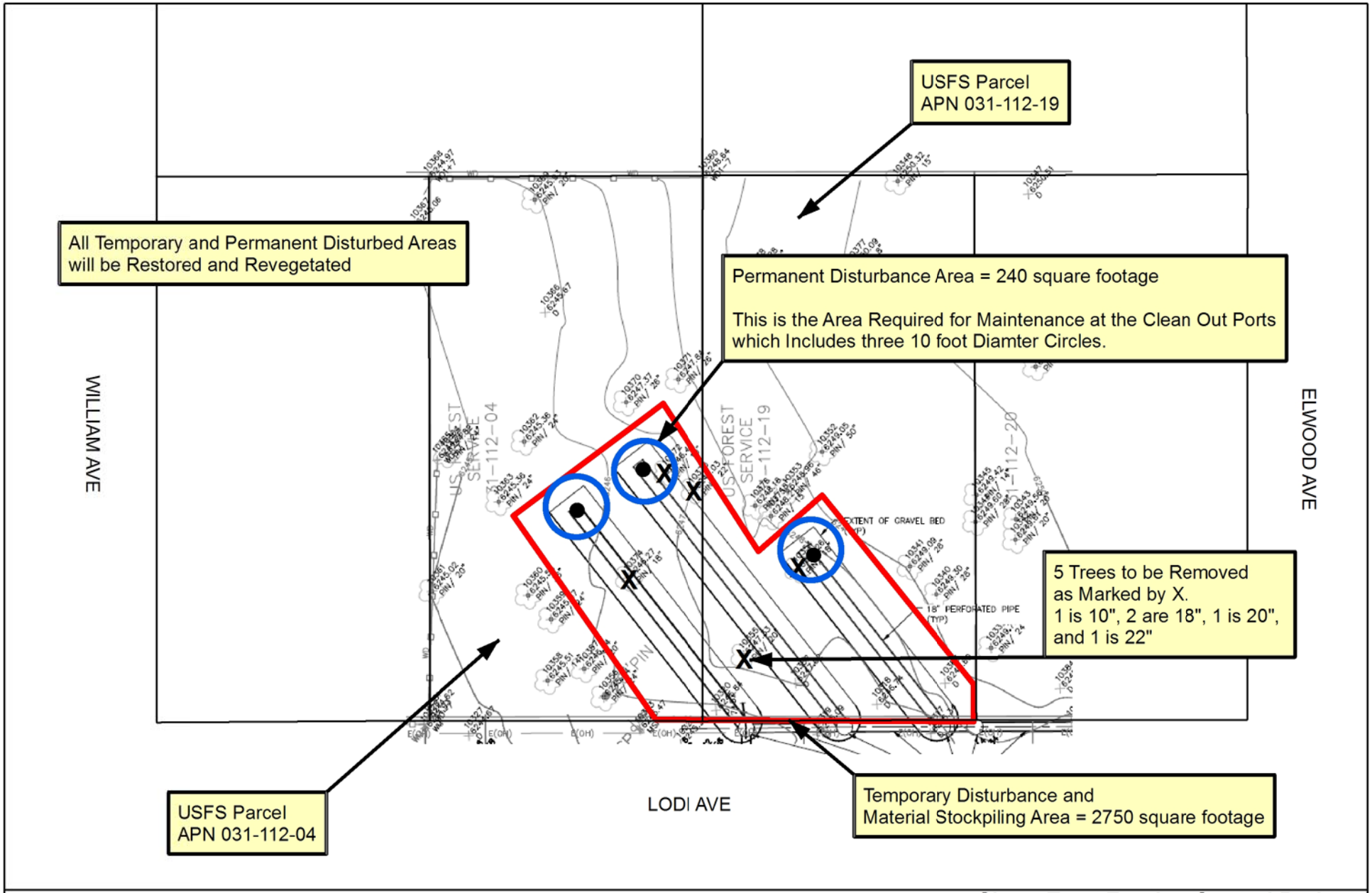
Sierra Tract Erosion Control Project
Phase 3 and 4

Exhibit B-2
Stockton Ave Swale to be Abandoned

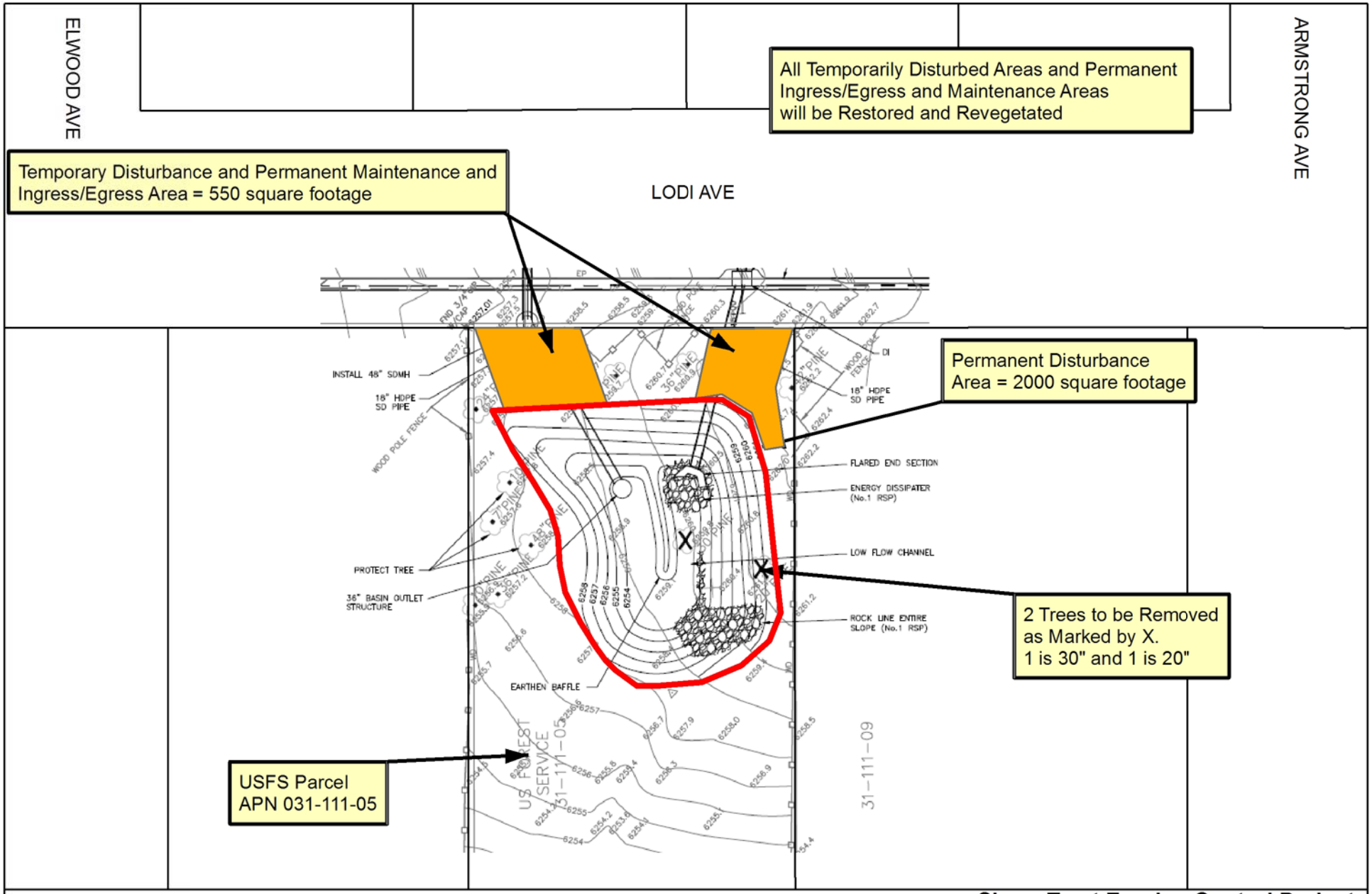


CDM Smith

0 12.5 25 50
Feet

Sierra Tract Erosion Control Project
Phase 3 and 4

Exhibit B-3
Lodi Ave Underground Infiltration Gallery



Sierra Tract Erosion Control Project
Phase 3 and 4

Exhibit B-4
Lodi Ave Detention Basin

CDM Smith

INVASIVE PLANT RISK ASSESSMENT
SIERRA TRACT EROSION CONTROL PROJECT PHASE 3 AND 4

LAKE TAHOE BASIN MANAGEMENT UNIT
USDA FOREST SERVICE

Prepared by: _Suzanne Wilkins, Planner, CDM Smith, Inc. Date: _May 2, 2013_____

Approved by: _____ Date: _____
Courtney Rowe, Forest Botanist

TABLE OF CONTENTS

1 Introduction 1
1.1 Analysis Framework: Pertinent Laws, policies, and direction 1
2 Project Description 2
2.1 Proposed Activities 2
2.2 Location and Extent 2
3 Non-Project Dependent Factors 5
3.1 Inventory 5
3.2 Known Invasive Plants 6
3.3 Habitat Vulnerability 7
3.4 Non-Project Dependent Vectors 8
4 Project-Dependent Factors 8
4.1 Habitat Alteration Expected as a Result of the Project 8
4.2 Increased Vectors as a Result of Project Implementation 8
4.3 Management Measures 8
5 Anticipated Weed Response to Proposed Action 10
6 References 11

1 INTRODUCTION

In 2003, the United States Forest Service identified invasive species as one of four critical threats to the nation's ecosystems (Bosworth 2003). Invasive plants pose a significant threat to ecological function due to their ability to displace native species, alter nutrient and fire cycles, decrease the availability of forage for wildlife, and degrade soil structure (Bossard, Randall, and Hoshovsky 2000). Infestations can also reduce the recreational or aesthetic value of native habitats.

Forest management activities can contribute to the introduction and spread of invasive plants by creating suitable environmental conditions for establishment and by acting as vectors for spread. The following risk assessment has been prepared to evaluate the risk associated with invasive plant introduction and spread as a result of the proposed project.

1.1 ANALYSIS FRAMEWORK: PERTINENT LAWS, POLICIES, AND DIRECTION

A comprehensive summary of principal statutes governing the management of invasive plants on the National Forest System is available in FSM 2900. A brief summary of the pertinent laws, policies, and direction is provided below.

1.1.1 Federal Laws and Executive Orders

Executive Order 13112 (1999)—directs federal agencies to prevent the introduction of invasive species; detect and respond rapidly to control such species; and to minimize the economic, ecological, and human health impacts from invasive species on public lands.

1.1.2 Forest Service Policies and Direction

Forest Service Manual 2080 (1995)—Was replaced by FSM 2900 in 2011. FSM 2080 revised USFS national policy on noxious weed management to emphasize integrated weed management, which includes prevention and control measures, cooperation, and information collection and reporting.

Forest Service Manual 2900 (2011)—directs the Forest Service to manage invasive species with an emphasis on integrated pest management and collaboration with stakeholders, to prioritize prevention and early detection and rapid response actions, and ensure that all Forest Service management activities are designed to minimize or eliminate the possibility of establishment or spread of invasive species on the NFS or to adjacent areas.

Forest Service Manual 2070 (2008)—provides guidelines for the use of native material on National Forest System lands. It restricts the use of persistent, non-native, non-invasive plant materials and prohibits the use noxious weeds for revegetation, rehabilitation and restoration projects. It also requires that all revegetation projects be reviewed by a trained or certified plant material specialist for consistency with national, regional, and forest policies for the use of native plant materials.

USFS National Strategy and Implementation Plan for Invasive Species Management (USDA 2004)—identifies for all Forest Service programs the most significant strategic actions for addressing invasive species. It emphasizes prevention, early detection and rapid response, prioritization in control and management, and restoration or rehabilitation of degraded areas.

Region 5 Noxious Weed Management Strategy (USDA 2000)—guides regional Forest Service goals and objectives for invasive plant management, emphasizing actions necessary to: promote the overall management of noxious weeds; to prevent the spread of weeds; control existing stands of weed infestations; promote the integration of weed issues into all forest service activities.

1.1.3 Forest Plan Direction

LTBMU Land and Resource Plan (LTBMU 1988)—Does not specifically address invasive plants (except the removal of noxious plants in grazing allotments), though it does provide for the protection and enhancement of threatened and sensitive plant habitat. It is amended by 2004 Record of Decision on the Sierra Nevada Forest Plan Amendment (SNFPA) final supplemental EIS (USDA 2004) to address invasive plant management.

Sierra Nevada Forest Plan Amendment (USDA 2004)—Establishes goals, standards, and guidelines for invasive plant (noxious weed) management for the Sierra Nevada forests. It emphasizes prevention and integrated weed management. It establishes the following invasive plant management prioritization: 1) prevent the introduction of new invaders; 2) conduct early treatment of new infestations; 3) contain and control established infestations. It also requires forests to conduct an invasive plant risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of proposed management activities and develop mitigation measures for high and moderate risk activities with reference to the weed prevention practices in the Regional Noxious Weed Management Strategy.

2 PROJECT DESCRIPTION

2.1 PROPOSED ACTIVITIES

The project is within the Sierra Tract area of South Lake Tahoe, California. Various types of erosion control and stormwater drainage improvements are proposed including revegetation of bare soil road shoulders and other compacted dirt areas, drainage inlets, sediment traps, storm drain pipes for underground stormwater conveyance, vegetated swales, retention facilities, treatment basins, underground infiltration galleries, concrete curb and gutter, and parking deterrents on road shoulders. All work is proposed on public lands or within the City public right-of-way.

2.2 LOCATION AND EXTENT

The entire project area is comprised of 81 acres. The project proposes approximately 2.75 acres of disturbance throughout the entire project area. The project proposes approximately 6990 s.f. of permanent disturbance and 4000 s.f. of temporary disturbance on USFS land. Disturbance on each individual USFS urban lot will be less than one acre

The project area is within USGS South Lake Tahoe quad in the Sierra Tract area. The legal descriptions and parcel numbers for each USGS quad is described below.

- APNs 031-078-19 and -23 – Lot 16 and portions of Lots 17 and 18, Block 14 of the Tahoe Sierra 1 Subdivision, Tract Number 35, El Dorado County, California. Section 4, Township 12N, Range 18E, MDM
- APN 031-077-08 – Lot 8 of Block 13 of the Tahoe Sierra 1 Subdivision, Tract Number 35, El Dorado County, California. Section 4, Township 12N, Range 18E, MDM

- APNs 031-112-04 and -19 – Lots 2 and 15, Block 19 of the Tahoe Sierra 1 Subdivision, Tract Number 35, El Dorado County, California. Section 4, Township 12N, Range 18E, MDM
- APN 031-111-05 – Lot 22, Block 1 of the Tahoe Sierra 1 Subdivision, Tract Number 35, El Dorado County, California. Section 4, Township 12N, Range 18E, MDM

A project overview map is included in Appendix B.

The Special Use Permit summary table on the following page provides a description of the amount and type of disturbance proposed on each USFS-owned parcel

Sierra Tract Erosion Control Project Phase 3 and 4 Special Use Permit Application Summary Table											
USFS Property	***Permanent Improvements Description***	***Temporary Disturbance including Ingress/Egress***				***Total Permanent Disturbance includes Designated Maintenance Ingress/Egress***				***Maintenance Needs***	***Permanent Designated Ingress/ Egress Routes***
		Max. Length (Ft)	Max. Width (Ft)	SF	AC	Max. Length (Ft)	Max. Width (Ft	SF	AC		*Maintenance access ways are not constructed and will be restored after each use* (SF)
Property B-1 APNs: 031-078-19 & -23	Infiltration basin, storm drain pipe and designated ingress/egress maintenance access	72.5	11.3	700	0.016	80	62.5	4200	0.096	20 years, periodic sediment removal with backhoe	700
Property B-2 APN: 031-077-08	Abandon existing vegetated swale in place.	0	0	0	0	0	0	0	0	None	0
Property B-3 APNs: 031-112-04 & -19	Underground infiltration gallery, storm drain pipe and maintenance area	67.5	60	2750	0.063	30	30	240	0.005	20 years, periodic sediment removal with victor truck in City ROW	0
Property B-4 APNs: 031-111-05	Infiltration basin, storm drain pipe and designated ingress/egress maintenance route	35	35	550	0.01	45	62.5	2550	0.059	20 years, periodic sediment removal with backhoe	550
Total				**4000**	**0.089**			**6990**	**0.16**	**20 years**	**1250**

3 NON-PROJECT DEPENDENT FACTORS

3.1 INVENTORY

3.1.1 Surveys and existing data

Western Botanical Services Inc. (WBS) was contacted by CDM Smith in October of 2012 to conduct Invasive, Noxious Weed, and Threatened, Endangered and Sensitive plant species (TES) surveys on U.S. Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU) lots within the project area and in accordance with appropriate inventories and protocols.

Methodology

Pre field work

Prior to conducting the field work the following literature searches were conducted:

1. USDA Forest Service - Lake Tahoe Basin Management Unit (LTBMU) Federally Threatened, Endangered, And R5 Sensitive (TES) Plant And Fungi List, Revised August 23, 2012

2. USDA Forest Service - LTBMU invasive and noxious weed species (Appendix A): http://www.fs.usda.gov/detail/ltbmu/home/?cid=fsm9_046522, http://tahoeinvasiveweeds.org

3. California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants for South Lake Tahoe quadrant: http://cnps.site.aplus.net/cgibin/inv/inventory.cgi/Search?search=%2b%22South%20Lake%20Tahoe%20%28522B%29%203811988%22

4. California Natural Diversity Database (CNDDB) query October 2012, South Lake Tahoe quadrant.

Field Investigations

On October 16, 2012 a complete survey on foot was conducted on the LTBMU lots in the project area by botanist Julie Etra and Certified Arborist Dan Greytak. All species encountered were identified to the lowest taxonomic level possible.

Table 1. USFS LTMBU lots surveyed October 16, 2012

APN	Ownership	Address	Report Reference #
031-077-08	USFS	1044 Stockton Ave., South Lake Tahoe, CA	2
031-078-19	USFS	2521 William Ave., South Lake Tahoe, CA	1
031-078-23	USFS	2519 William Ave., South Lake Tahoe, CA	1
031-111-05	USFS	1084 Lodi Ave., South Lake Tahoe, CA	3
031-112-04	USFS	1065 Lodi Ave., South Lake Tahoe, CA	3
031-112-19	USFS	1071 Lodi Ave., South Lake Tahoe, Ca	4

The species list used to survey the properties is the current LTBMU Invasive Plants of Management Concern list—included as Appendix A.

3.1.2 Assessment summary

A complete survey on foot was conducted on the LTBMU lots in the project area by botanist Julie Etra and Certified Arborist Dan Greytak. All species encountered were identified to the lowest taxonomic level possible. Both the field surveys and existing data are sufficient to complete the risk assessment.

3.2 KNOWN INVASIVE PLANTS

Table 2 provides a listing of the invasive plant species within the project area.

Table 2. Invasive plant species within the project area.

Species	Common Name	CDFA rating[1]	Cal-IPC rating[2]	Number of sites within:	
				Project area[3]	USFS lots analysis area
Bromus tectorum	cheatgrass	N/A	High	14	2
Cirsium vulgare	bull thistle	C	Moderate	2	2
TOTAL				16	4

[1] CDFA ratings - A-listed weeds: eradication or containment is required at the state or county level; B-listed weeds: eradication or containment is at the discretion of the County Agricultural Commissioner; C-listed weeds: eradication or containment required only when found in a nursery or at the discretion of the County Agricultural Commissioner.
[2] CalIPC ratings- High: attributes conducive to moderate to high rates of dispersal and establishment; usually widely distributed among and within ecosystems. Moderate: impacts substantial and apparent, but not severe; attributes conducive to moderate to high rates of dispersal; distribution may range from limited to widespread. Limited : ecological impacts are minor or information is insufficient to justify a higher rating, although they may cause significant problems in specific regions or habitats; attributes result in low to moderate rates of invasion; distribution generally limited, but may be locally persistent and problematic.
[3] Number of sites specified within project area outside of the USFS properties is from 2007 survey.

3.2.1 Cheatgrass (Bromus tectorum)

3.2.1.1 Species description and summary of management options

Cheatgrass , a non-native invasive annual grass, had already set seed. Removal would only enhance distribution at the time of the survey. Specify use of weed free materials and the Stormwater Pollution Prevention Plan (SWPPP) will require equipment cleaning and inspection of construction material and imported material sources to limit weed contamination and spread of existing stands.

Threat Level:
Cal-IPC Red Alert (species that have the potential to become widely invasive, or already-established species that are rapidly expanding their range(s) in the state)
LTBWCG: defers to the Cal-IPC inventory for invasive species
LTBMU: ranked as low priority

Any disturbance associated with construction will most likely result in the spread of the invasive species identified.

3.2.1.2 Infestations in project area [botanical analysis area]

Any disturbance associated with construction will most likely result in the spread of the invasive species identified. Cheatgrass had already set seed. Removal would have enhanced distribution and infestations at the time of the survey. A map of the infestation areas on USFS properties is provided in Appendix C. Mechanically remove Cheatgrass prior to seed set if possible.

3.2.2 Bullthistle (Circium vulgare)

Bullthistle is a coarse biennial, annual or short-lived perennial that grows up to 2 meter tall. It has stiff-hairy foliage and conspicuous prickly-winged stems. They are erect prickly plants with purple, pink or white flower heads consisting only of disk flowers. Management recommendations to discourage survival include mowing or hand removal with shovels just before flowering to control infestations. Cut flower heads should be disposed of offsite because they can still develop viable seed. This process should be repeated as needed to reduce infestations.

Threat Level:
Cal-IPC List B (Wildland Pest Plants of Lesser Invasiveness; invasive pest plants that spread less rapidly and cause a lesser degree of habitat disruption; may be widespread or regional)
LTBWCG: Group 2: manage infestations with a goal of eradication
LTBMU: ranked as medium priority

Removal of plants will be described in the contractor specifications for the project. In the Stormwater Pollution and Prevention Plan (SWPPP) equipment will be required to be cleaned and inspected of construction material and material sources will included specifications to limit weed contamination and spread of existing stands.

Feasibility and Effectiveness of Management:
There are a variety of treatment options for both species, including mechanical, chemical, and mechanical/chemical, and emerging methodology for pathogen (fungi) control of cheatgrass. Prevention of cheatgrass spread is difficult if it is not treated, and it rapidly invades disturbed surface. Humans and pets are vectors for both species.

3.2.3 Assessment summary

This assessment summary is only for USFS lots within the project area.

Cheatgrass was scattered along Lodi Avenue on both USFS lots (APNs 031-112-04 and -19) for a total of approximately 200 sf. (Category A – small scattered occurrences less than 10 percent relative cover) and in the middle of the riverside lot on Lodi (APN 031-111-05) for a total of 200 sf. (Category A).

Bull thistle was located at the back of the two USFS lots on William Street (APNs 031-078-19 and -23). Approximately 20 stems were counted (Category A).

The location of the invasive plants are shown on the maps in Appendix C.

3.3 HABITAT VULNERABILITY

The lots surveyed can be characterized as *Pinus contorta ssp. murrayana* Forest Alliance and *Salix lemmonii* Shrubland Alliance (Sawyer, J.O. et al. 2008. A Manual of California Vegetation Second Edition. California Native Plant Society. 1299 p.). Lodgepole (*Pinus contorta ssp. murrayana*) dominates the overstory along with Lemmon's willow (*Salix lemmonii*). Other dominant species include Woods rose (*Rosa woodsii*), Kentucky bluegrass (*Poa pratensis)*, upland sedges (*Carex spp.*) and introduced rangeland grass and for species.

Hydrology: The area is dry most of the time with some residual moisture in the early spring.

General Disturbance: Road shoulder, pedestrian traffic from surrounding residential neighborhood.

Invasive species were found in the area. There is no history of cultivation.

3.3.1 Assessment summary

Vulnerability is considered moderate and spread can be limited by treating the weeds both prior to construction and as a part of post-construction monitoring. Infestations, however, occur in the vicinity of the project and re-infestation is not unlikely.

3.4 Non-Project Dependent Vectors

Existing roads and trails: The USFS lots are adjacent to existing City roads in a residential neighborhood. Some use created trails exist on some of the properties.

Traffic / visitor use: The area is in an urban area (Sierra Tract neighborhood).

Livestock/wildlife migration: The area is not used for grazing, however, the adjacent Upper Truckee River meadow was historically used from grazing.

3.4.1 Assessment summary

Non-project vectors are considered medium as the lots where plants occur are not currently heavily used for recreation. However, with the addition of drainage improvements, the lots may become more attractive to foot traffic.

4 Project-Dependent Factors

4.1 Habitat Alteration Expected as a Result of the Project

Vegetation: The project involves temporary removal of vegetation during construction and some permanent removal for permanent structures. All areas disturbed temporarily during construction will be revegetated.
Ground disturbance: There will be soil disturbance during construction to construct the infiltration gallery and infiltration basins. Heavy equipment will be used during construction of these facilities. Temporary ingress/egress driveways will be used during construction.
Fire & fuels: No applicable.

4.2 Increased Vectors as a Result of Project Implementation

Roads & trails: Stormwater improvements will be constructed in adjacent roadways and redundant trails will be restored with vegetation.
Traffic/visitor use: This will not increase or change as a result of the project.
Equipment: Equipment used for construction will be used throughout the project area.
Utility Corridors: Underground storm water facilities will be constructed and require maintenance throughout the project area. Some utilities may need to be relocated during construction.
Grazing: Not applicable.
Materials: The project does include the use of mulches, compost, wood chips, soil, and road base. All materials imported to the site are required to weed free as stated in the project specifications.

4.3 Management Measures

4.3.1 Standard management measures for invasive plants

The following measures are designed to minimize risk of new weed introductions, minimize the spread of weeds within units, and minimize the spread of weeds between units. These measures are consistent with Forest Service policy and manual direction (USDA 2000, USDA 2004, FSM 2900) and the LTBMU LRMP (1988) as amended by the SNFPA (USDA 2004).

1. **Inventory—**
   - ***a)*** *As part of site-specific planning, project areas and adjacent areas (particularly access roads) will be inventoried for invasive plants.*
   - ***b)*** *Any additional infestation discovered prior to or during project implementation should be flagged and avoided, then reported to the Forest Botanist or their designated appointee for prioritization and assessment for treatment.*
2. ***Equipment Cleaning—***
   - *a) All equipment and vehicles (Forest Service and contracted) used for project implementation must be free of invasive plant material before moving into the project area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material or other such debris. Cleaning shall occur at a vehicle washing station or steam-cleaning facility before the equipment and vehicles enter the project area.*
   - *b) When working in known invasive plant infestations or designated weed units, equipment shall be cleaned before moving to other National Forest Service system lands. These areas will be identified on project maps.*
3. ***Staging areas—****Do not stage equipment, materials, or crews in invasive plant-infested areas.*
4. ***Control Areas—****Where feasible, invasive plant infestations will be designated as Control Areas—areas where equipment traffic and soil-disturbing project activities would be excluded. If Control Areas are designated, they will be identified on project maps and delineated in the field with flagging.*
5. ***Project-related disturbance—****Minimize the amount of ground and vegetation disturbance in staging and construction areas. Where feasible, reestablish vegetation on disturbed bare ground to reduce invasive species establishment; revegetation is especially important in staging areas.*
6. ***Post Project Monitoring–****After the project is completed the Forest Botanist should be notified so that (as funding allows) the project area can be monitored for invasive plants subsequent to project implementation.*
7. ***Gravel, fill, and other materials—****All gravel, fill, or other materials are required to be weed-free. Use onsite sand, gravel, rock, or organic matter when possible. Otherwise, obtain weed-free materials from sources that have been surveyed and approved by Nevada Department of Agriculture or LTBMU.*
8. ***Mulch and topsoil—****Use weed-free mulches and topsoil. Salvage topsoil from project area for use in onsite revegetation, unless contaminated with invasive species. Do not use material (or soil) from areas contaminated by cheatgrass.*
9. ***Livestock—****If supplemental fodder (e.g hay, silage) is required for livestock, including horses and other pack animals, it will be certified weed-free.*
10. ***Revegetation—***
    - *a) Seed and plant mixes must be approved the Forest Botanist or their designated appointee who has knowledge of local flora.*
    - *b) Invasive species will not be intentionally used in revegetation. Seed lots will be tested for weed seed and test results will be provided to Forest Botanist or their designated appointee.*

c) *Persistent non-natives, such as such as timothy (Phleum pretense), orchardgrass (Dactylis glomerata), ryegrass (Lolium spp.), or crested wheatgrass (Agropyron cristatum) will not be used in revegetation.*
d) *Seed and plant material will be from native, high-elevation sources as much as possible. Plant and seed material should be collected from as close to the project area as possible, from within the same watershed, and at a similar elevation whenever possible.*

4.3.2 Project-specific management measures

The following measures are included either to a) address the specific risks identified in this analysis that are not addressed by the standard measures or b) to provide site-specific direction to implement the SMRs:

Treat Bull thistle by removing the entire plant and disposing of offsite. This must be done prior to flowering and seed set next year. Mechanically remove Cheatgrass prior to seed set.

Infestations prioritized for treatment will be treated in accordance with Forest Service management direction and the design features of the LTBMU 2010 Terrestrial Invasive Plant Species Treatment Project Environmental Assessment.

Project leader will notify the Forest Botanist or their designated appointee prior to project initiation to coordinate invasive plant treatment.

4.3.3 Assessment summary

Removal of plants prior to flowering and seed set for next year will reduce the risk of weed introduction and spread. Any new construction e.g., grading may result in the spread of Cheatgrass and Bull thistle.

5 ANTICIPATED WEED RESPONSE TO PROPOSED ACTION

Any new construction e.g., grading may result in the spread of Cheatgrass and Bull thistle. Risk is considered moderate.

Table 3. Summary of Risk Factors

	Factor	**Risk**	**Assessment summary**
NON-PROJECT DEPENDENT FACTORS	Inventory	N/A	Adequate
	Known invasive plants	Moderate	There are known occurrences of invasive species present in the project area
	Habitat vulnerability	Moderate	Moderate level of historic and recent disturbance. Variable plant cover.
	Non-project dependent vectors	Moderate	Occurrences are along existing roads and disturbed lots Overall, moderate level of non-project vectors.
PROJECT-DEPENDENT FACTORS	Habitat alteration expected as a result of project	Moderate	Moderate ground disturbance due to drainage improvements and associated construction activities
	Increased vectors as a result of project implementation	Moderate	Construction of drainage and erosion control improvements, soil disturbance
	Management measures	Greatly reduced risk	Standard management measures implemented in all alternatives..

		under project.	
ANTICIPATED WEED RESPONSE		**Moderate**	Low risk of new introduction; moderate risk of spread under project.

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REQUIRED APPEDICES

APPENDIX A. Invasive Species of Management Concern on the Lake Tahoe Basin Management Unit

APPENDIX B. Project Overview Map

APPENDIX C: Invasive Plant Infestation Locations

Appendix A

USDA Forest Service Lake Tahoe Basin Management Unit Invasive Plants of Management Concern

APPENDIX A. Invasive Species of Management Concern on the Lake Tahoe Basin Management Unit

USDA FOREST SERVICE
LAKE TAHOE BASIN MANAGEMENT UNIT
INVASIVE PLANTS OF MANAGEMENT CONCERN

Scientific Name	Common Name	LTBMU Priority	NDA	CDFA	Cal-IPC	LTB WCG
Acroptilon repens	Russian knapweed	Medium	B	C	Moderate	Group 1
Ailanthus altissima	tree of heaven	N/A		C	Moderate	Group 1
Bromus tectorum	cheat grass	Low			High	
Cardaria draba	heart-podded hoary cress; whitetop	Medium	C	B	Moderate	Group 1
Cardaria pubescens	globe-podded hoary cress; hairy whitetop	Medium		B	Limited	Group 1
Carduus nutans	musk thistle	High	B	A	Moderate	Group 1
Centaurea calcitrapa	purple starthistle; red starthistle	N/A	A	B	Moderate	Group 1
Centaurea diffusa	diffuse knapweed	Medium	B	A	Moderate	Group 1
Centaurea maculosa	spotted knapweed	Medium	A	A	High	Group 2
Centaurea solstitialis	yellow starthistle	Medium	A	C	High	Group 1
Centaurea virgata ssp. squarrosa	squarrose knapweed	Medium	A	A	Moderate	
Chondrilla juncea	rush skeletonweed	High	A	A	Moderate	Group 1
Cirsium arvense	Canada thistle	Medium	C	B	Moderate	Group 1
Cirsium vulgare	bull thistle	High		C	Moderate	Group 2
Conium maculatum	poison hemlock	Medium	C		Moderate	
Cytisus scoparius	Scotch broom	Medium		C	High	Group 2
Dipsacus fullonum	teasel; Fuller's teasel	N/A			Moderate	Group 1
Dittrichia graveolens	Stinkwort	N/A			Moderate	Group 1
Elytrigia repense	quackgrass	N/A		B		
Hydrilla verticillata	hydrilla; waterthyme	N/A	A	A	High Alert	
Hypericum perforatum	St. Johnswort; Klamathweed	Medium	A	C	Moderate	Group 1
Isatis tinctoria	Dyer's woad	Medium	A	B	Moderate	Group 1
Lepidium latifolium	tall whitetop; perennial pepperweed	Medium	C	B	High	Group 2
Leucanthemum vulgare	oxeye daisy	Medium			Moderate	Group 2
Linaria genistifolia spp. dalmatica	Dalmatian toadflax	High	A	A	Moderate	Group 2
Linaria vulgaris	yellow toadflax; butter & eggs	Medium	A		Moderate	Group 2
Lythrum salicaria	purple loosestrife	Medium	A	B	High	Group 1
Myriophyllum spicatum	Eurasian watermilfoil	N/A	A		High	
Onorpordum acanthium	Scotch thistle	High	B	A	High	Group 1

ssp. acanthium						
Potamogeton crispus	curlyleaf pondweed	N/A			Moderate	
Potentilla recta	sulfur cinquefoil	Low	A	A		Group 1
Rubus armeniacus	Himalaya blackberry	Low			High	
Elymus caput-medusae	medusahead	High	B	C	High	Group 1
Tamarix chinensis, T. ramosissima, & T. parvifolia	tamarisk; saltcedar	High	C	B	High	Group 1
Verbascum thapsus	woolly mullein; common mullein	N/A			Limited	

LTBMU: High—Species that have a large ecological impact or invasive potential; species that are easily controlled. Medium—Species that have a moderate ecological impact or invasive potential; species that may be difficult to control. Low—Species that have a low ecological impact or invasive potential; species that require substantial effort to control. N/A—species not evaluated.

NDA: Nevada Department of Agriculture Noxious Weed List (http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm) Category A—Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations. Category B—Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur. Category C—Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer.

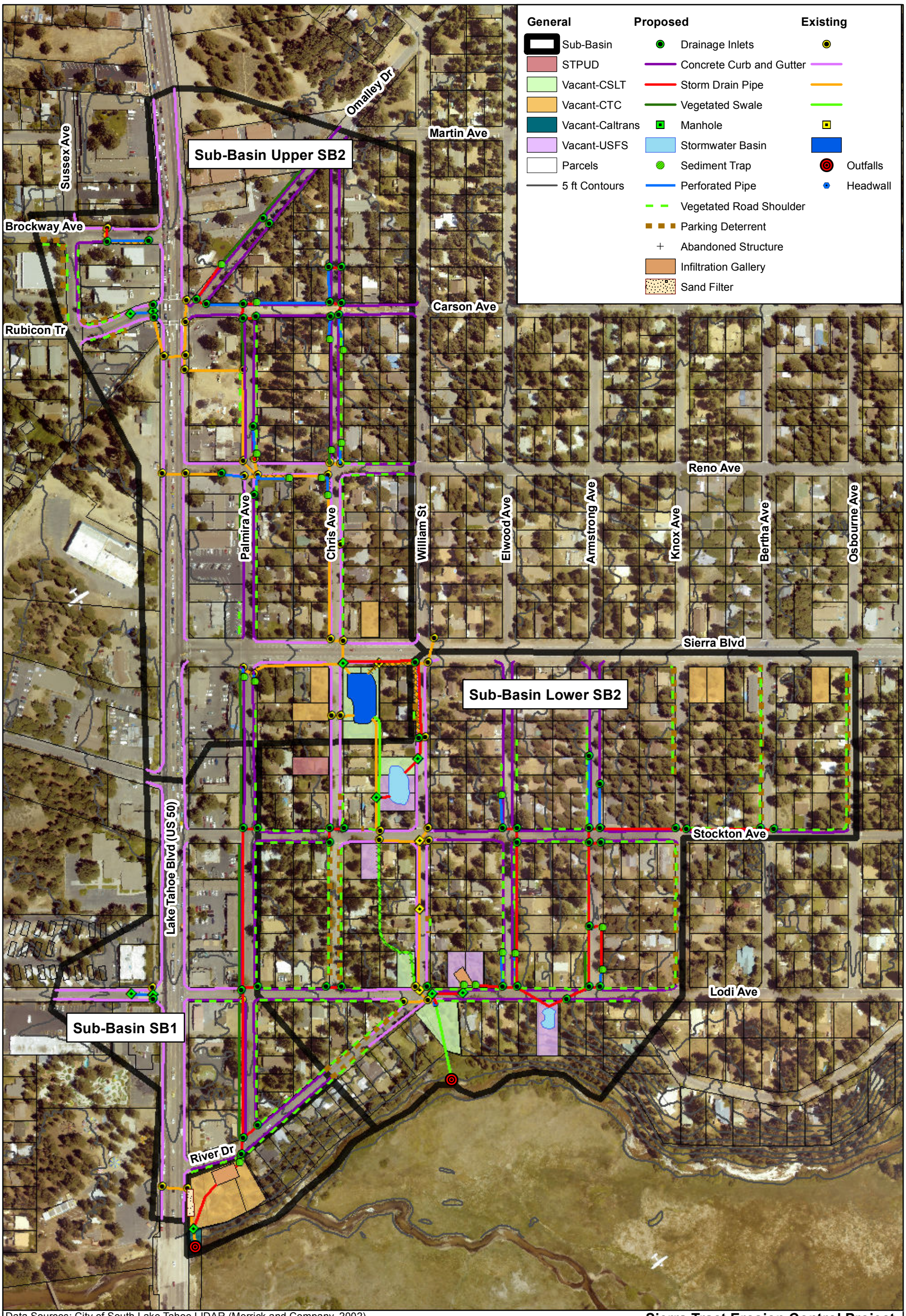
CDFA: California Department of Food and Agriculture Noxious Weed List (http://www.cdfa.ca.gov/phpps/ipc/). A--Eradication or containment is required at the state or county level. B—Eradication or containment is at the discretion of the County Agricultural Commissioner. C--Require eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner. Q—Require temporary "A" action pending determination of a permanent rating.

Cal-IPC: California Invasive Plant Council Online Invasive Plant Inventory (2006) (http://www.cal-ipc.org/ip/inventory/weedlist.php). High—Species having severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Moderate—Species having substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Limited—Species that are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Alert—Species with significant potential for invading new ecosystems.

LTBWCG: Lake Tahoe Basin Weed Coordinating Group Weed Priority List (2010). Group 1--Watch for, report, and eradicate immediately. Group 2--Manage infestations with the goal of eradication.

Appendix B

Sierra Tract Erosion Control Project Phase 3 & 4
Project Overview Map



Data Sources: City of South Lake Tahoe LIDAR (Merrick and Company, 2002)
El Dorado County Parcel Database, 2007
West Sierra Tract ECP As-Built Drawings, 1990
City of South Lake Tahoe Aerial Photography, 2002

Sierra Tract Erosion Control Project
Phase 3 and 4

CDM Smith

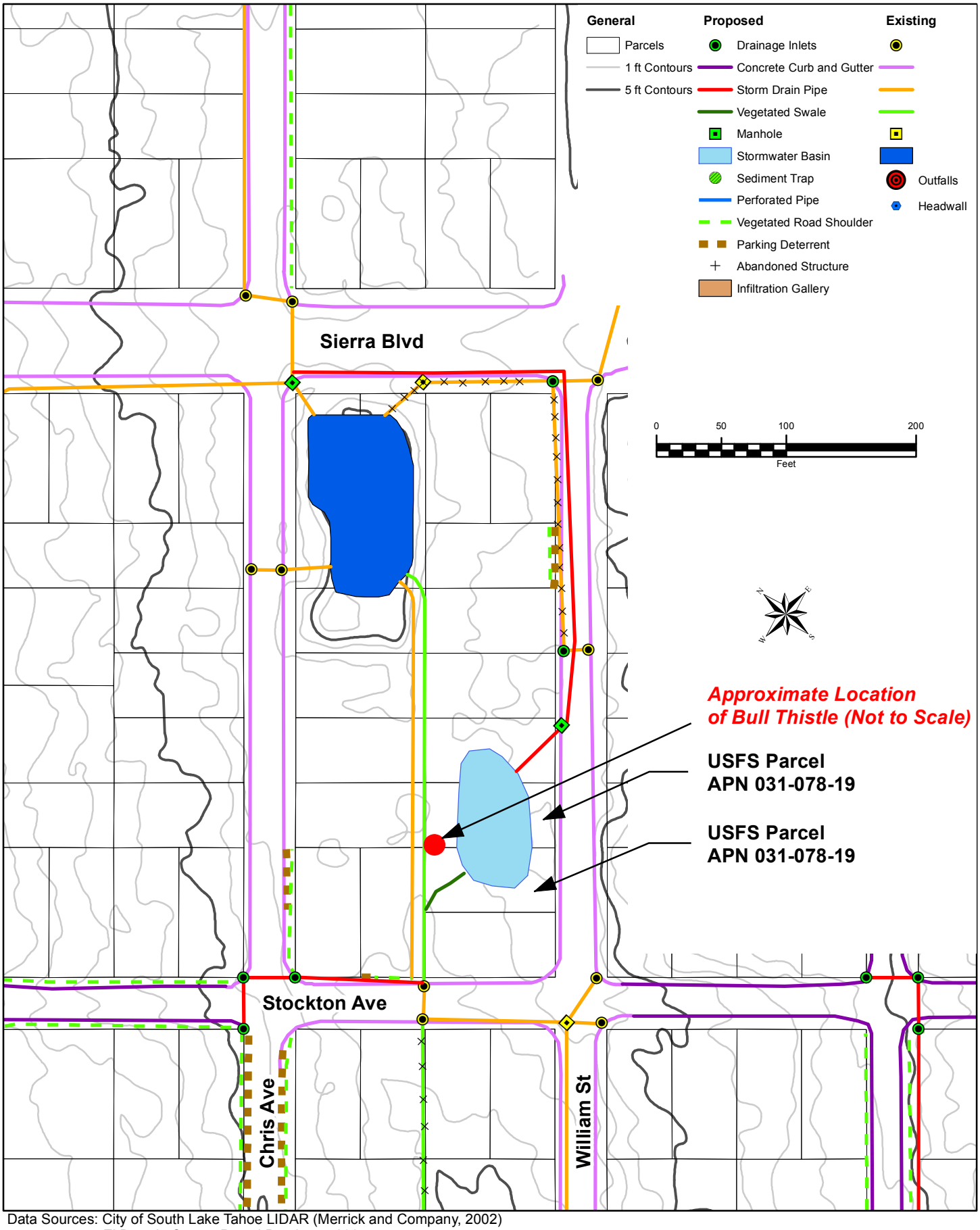
0 125 250 500
Feet

Project Plan

Appendix C

Sierra Tract Erosion Control Project Phase 3 and 4 Invasive Species Plant Locations.

Note: The plans for the project have changed since these maps were created refer to Appendix B for proposed improvements on each individual USFS lot. These maps are intended to show invasive species plant locations only.



Data Sources: City of South Lake Tahoe LIDAR (Merrick and Company, 2002)
El Dorado County Parcel Database, 2007
Western Botanical Services, Noxious Weed and TES Vegetation Survey, November, 2012

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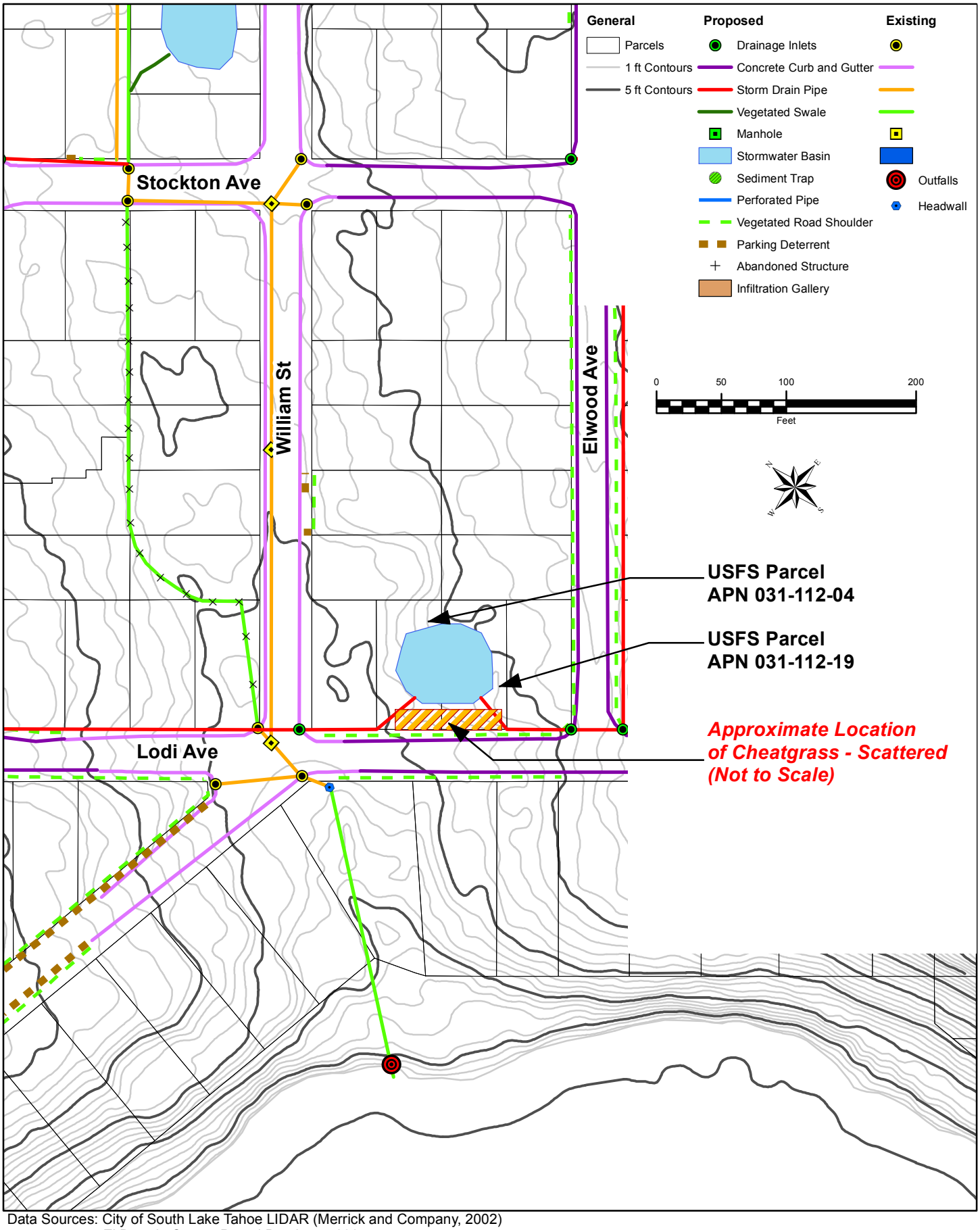
Figure 1
Invasive/Noxious Weed Locations on USFS Parcels



Data Sources: City of South Lake Tahoe LIDAR (Merrick and Company, 2002)
El Dorado County Parcel Database, 2007
Western Botanical Services, Noxious Weed and TES Vegetation Survey, November, 2012

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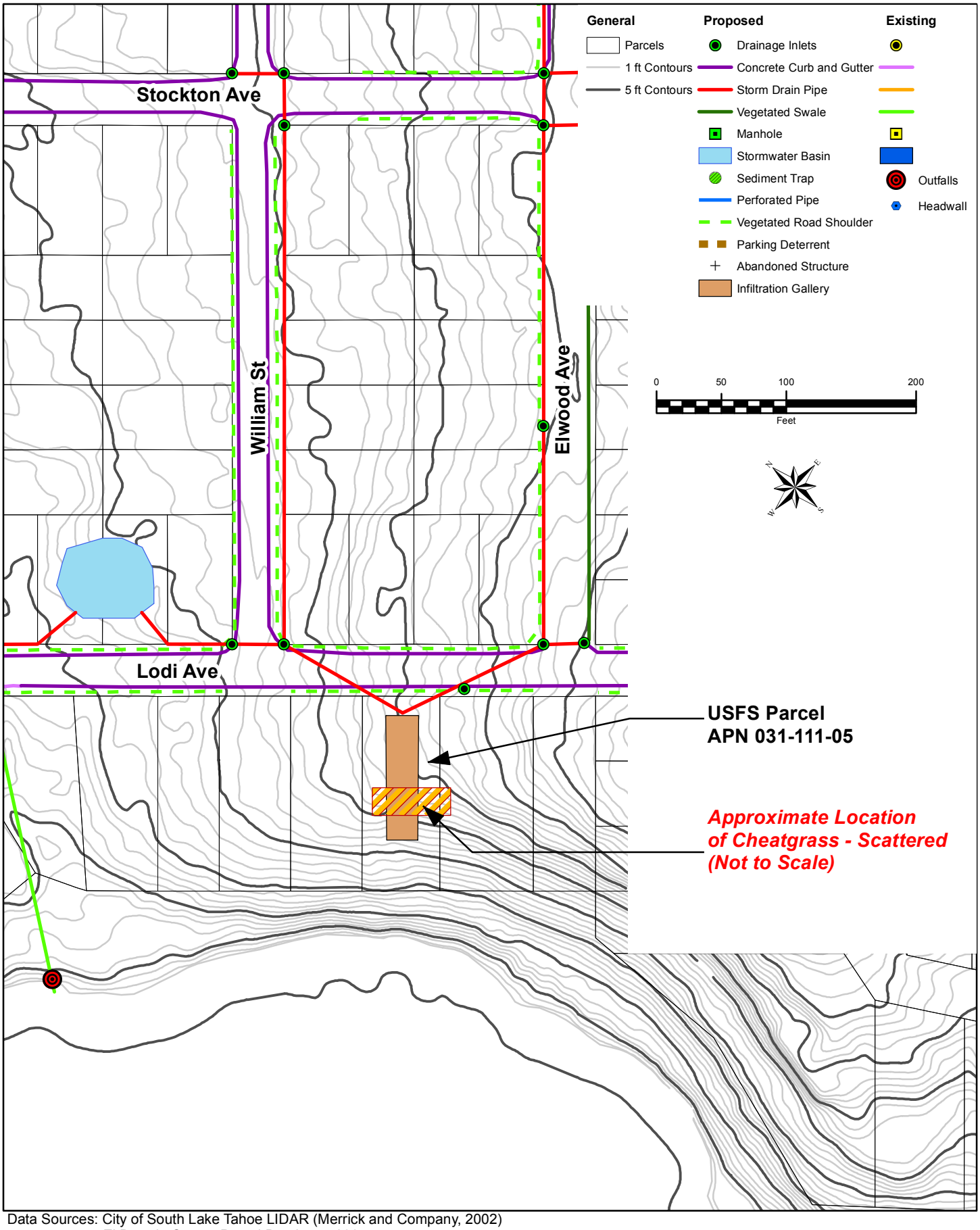
Figure 2
Invasive/Noxious Weed Locations on USFS Parcels



Data Sources: City of South Lake Tahoe LIDAR (Merrick and Company, 2002)
El Dorado County Parcel Database, 2007
Western Botanical Services, Noxious Weed and TES Vegetation Survey, November, 2012

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Figure 3
Invasive/Noxious Weed Locations on USFS Parcels