INVASIVE PLANT RISK ASSESSMENT

COUNTRY CLUB HEIGHTS ECP
EIP PROJECT #01.01.01.0021

LAKE TAHOE BASIN MANAGEMENT UNIT
USDA FOREST SERVICE

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1 INTRODUCTION

In 2003, the United States Forest Service (USFS) 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 et al. 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 (USDA Forest Service 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 (USDA Forest Service 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 (USDA Forest Service 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 Forest Service 2004a)—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 Forest Service 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 (USDA Forest Service 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 the 2004 Sierra Nevada Forest Plan Amendment (SNFPA) to address invasive plant management.

Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004b)—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

Project improvements may include infiltrating and/or treating of stormwater from County rights of way, stabilizing eroding cut slopes with vegetation and/or rock protection, stabilizing existing drainages with rock and/or bio-engineering techniques (where feasible), and disconnecting existing storm drain conveyance systems from discharging into the Upper Truckee River. Sediment trapping devices and infiltration basins (on publicly owned parcels) will be used to capture stormwater and road abrasives, and treat pollutants to reduce the overall stormwater volume discharging to the Upper Truckee River.

The overall goal of the Project is to design and implement erosion control and water quality improvement measures that will reduce the discharge of sediment and pollutants to Lake Tahoe from County administered rights of way in the Country Club Heights Project area. Furthermore, it will assist the County in achieving goals associated with the EIP. The County of El Dorado will perform this Project in general agreement with the guidelines of the CTC Grants Program (CTC 2004), including the Preferred Design Approach.

2.2 Location and Extent

The Project area is located in the County of El Dorado, California. The Project is located in Sections 20, 21, 28, and 29 in Township 12 North and Range 18 East of the Mt. Diablo Meridian which may be found on the following U.S. Geological Survey 7.5 minute quadrangle maps: Echo Lake, Freel Peak, and South Lake Tahoe in El Dorado County, California. It is within a TRPA Priority Two Watershed (Upper Truckee River).

The Country Club Heights ECP is located between Highway 50 and Pioneer Trail (Figure 1). The Project area is primarily a residential neighborhood with gradual elevation change from west to east. The Project area covers approximately 269 acres; however, the survey area is approximately 67 acres.

Two plan area statements (PAS) present general land use zoning information for the Project area. PAS are considered land use and zoning guidance documents for both the TRPA and the County of El Dorado. The majority of the Project area is included within PAS 120 Tahoe Paradise Meadowvale, while a small portion of the northwest section of the Project Area is part of PAS 119, Country Club Meadow (TRPA 2002a & 2002b). Land use in the majority of the Project area is primarily characterized as single family residential. The area is 30 percent built out with 15 percent of the land covered and 25 percent disturbed. Additional planning considerations mentioned in the PAS documents note "steep and high cutbanks now protected by gunnite may start to erode within the next 20 years (TRPA 2002a)" in PAS 120 Tahoe Paradise Meadowvale, and that "most of the homes and other developed facilities are located within stream environment (TRPA 2002b)" of PAS 119, Country Club Meadows.

3 Non-Project Dependent Factors

3.1 Inventory

3.1.1 *Surveys and existing data*

A literature and database review was conducted to identify documented noxious weed species within and adjacent to the Project area. All of the references utilized for this Assessment are listed in Section 6.0. The most relevant searches, reviews, and requests are listed below.

Table 1. Database and Literature Review Summary

Agency/Entity	Date	Information Received
USDA	Accessed 10/3/2016	• SNFPA Table 3.6a: Invasive non-native plant species occurrence by Sierra Nevada National Forest (USDA 2004b)
CDFA	Accessed 10/3/2016	• Noxious Weed Species List (CDFA 2016)
LTBWCG	Accessed 10/3/2016	• Priority Invasive Weeds of the Lake Tahoe Basin (LTBWCG 2011)

Field investigations were conducted to identify the presence of noxious weeds on Forest Service (FS) and non-Forest Service land (Non-FS) by NCE biologists on August 22, 2016. The focus of this investigation was to document all noxious weeds occurring within County rights of way and areas immediately adjacent to the right of way, as well as parcels of interest (Figure 2). The methods used for the NCE survey included a walking transect survey of the extended Project area to identify invasive plants to the extent necessary to determine listing status. Infestations were mapped in the field using a hand held electronic tablet and ESRI ArcGIS Collector (used to collect photographs, spatial, and attribute information).

3.1.2 *Assessment summary*

During field surveys, it was determined that the phenology of vegetation on site was appropriate for identification of invasive plants. It was therefore concluded that the timing was appropriate for

presence/absence surveys of the invasive plant species assessed in this evaluation. This survey, in conjunction with the review of existing data of known infestations, is sufficient to complete this IPRA.

3.2 Known Invasive Plants in Analysis Area

The results of the field surveys found four invasive plant species in the Project area: cheat grass (*Bromus tectorum),* bull thistle (*Cirsium vulgare*), poison hemlock (*Conium maculatum*), and yellow toadflax (*Linaria vulgaris*). USFS 2008 invasive plant data supplied by the USFS documents an additional species in the Project area: oxeye daisy (*Leucanthemum vulgare*). All five species and their locations are shown on Figures 2 and 3.

Table 2. Invasive plant species within the project area [botany analysis area].

Species	Common Name	CDFA rating[1]	Cal-IPC rating[2]	Number of sites within:	
				Project area (FS)	Botany analysis area (FS + Non-FS)
Bromus tectorum	cheat grass	n/a	High	0	1
Cirsium vulgare	bull thistle	n/a	Moderate	3	13
Conium maculatum	poison hemlock	n/a	Moderate	0	3
Leucanthemum vulgare	oxeye daisy	n/a	Moderate	1	1
Linaria vulgaris	yellow toadflax	n/a	Moderate	0	1
TOTAL				**4**	**19**

[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. (California Department of Food and Agriculture 2009)

[2] Cal-IPC 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. (California Invasive Plant Council 2010)

3.2.1 Cheat grass *(Bromus tectorum)*

3.2.1.1 Species description and summary of management options

Cheat grass is a winter annual in the grass family (*Poaceae*), bearing many finely hairy, drooping, yellowish-green, bristly spikelets in a loose, much-branched, terminal cluster. It forms small tufts 8 to 24 inches tall, and has a fine, fibrous root system. Stems are erect and slender; leaf blades are flat and pubescent. At maturity, the foliage and seed heads often become reddish; after maturity the fine herbage is characterized by a light tan reflectance. Cheat grass reproduces by seed that germinates in the fall, over-winters as a seedling, then flowers in the spring. Seeds have the potential to remain viable in the seed bank for 2 to 5 years. Cheat grass commonly grows on roadsides, open areas, and eroded sites, and is most commonly found on coarse textured soils that are low in nitrogen. Mulch and litter promote germination and establishment of seedlings. Cheat grass was found along road shoulders and vacant lots throughout the botany analysis area.

Cheat grass is not a ranked species on the CDFA list. It has a high rating on the Cal-IPC list, which implies that “attributes conducive to moderate to high rates of dispersal and establishment; usually widely distributed among and within ecosystems (Cal-IPC 2010).” Cheat grass is a low priority on the LTBMU list, which suggests it is a lower priority species managed on LTBMU but not always treated. It is not

ranked on the LTBWCG top priority weed list. Within the LTBMU, the primary focus for this species is to prevent further spread where possible through management practices including a combination of chemical control, cultural control, seeding perennial grasses, and proper land management (USFS 2010).

3.2.1.2 Infestations in the Project Area

There is one infestation of cheat grass in the project area for a total of 0.01 acres (435 square feet) of infested area; no infestations occur on FS parcels. This occurrence was found by NCE biologists and subsequently was not assigned USFS occurrence numbers. This infestation is located 0.77 miles southwest of FS parcel APN 033-291-06.

3.2.1.3 Management Actions

Management outside of project areas focuses on avoidance and prevention. When this species intersects proposed project activities, it is mapped and managed (avoided or treated); recommended management will be project and site-specific.

Manual: Preferred treatment method for small infestations. Pull plants prior to seed set. Plants without flowers can be left on site. Plants with flowers should be bagged and disposed properly. Repeat as new plants appear. May not be feasible for large infestations.

Mechanical: Disk/till live plants in spring (prior to seed set). Repeat as new plants appear. Revegetate with native species. Do not mow; mowed plants can still produce seed. May not be feasible for large infestations.

Cultural (small infestations only): Flaming in late spring-early summer may be considered in consultation with the Forest Botanist and Forest Fuels Officer (requires an approved burn plan). Not feasible for large infestations.

Manage to avoid spread (large infestations): Use a combinations of the following techniques: 1) flag and completely avoid infestations; 2) lay down barriers over infestations during staging and construction; 3) work in infested areas first, then wash equipment before moving to uninfested areas; and/or 4) use manual or mechanical techniques (above) in staging or construction areas.

Chemical: Chemical treatment of cheat grass is not approved.

3.2.2 Bull Thistle *(Cirsium vulgare)*

3.2.2.1 Species description and summary of management options

Bull thistle is a conspicuous biennial plant that can grow to a height of 6 feet. It has large, pinnately divided, spiny leaves that extend down the stem. It produces spiny, purple flower heads about 2 inches wide starting in June and continuing until first snowfall or frost. Bull thistle produces large numbers of seeds that are transported by wind to disturbed areas where new plants can be established. This species is somewhat aggressive and is now widely distributed throughout the west up to 7,546 feet in elevation.

Bull thistle is not a ranked species on the CDFA list. It has a moderate rating on the Cal-IPC list, which implies that it's "impacts are substantial and apparent, but not severe; attributes conducive to moderate to high rates of dispersal; distribution may range from limited to widespread (Cal-IPC 2010)." Bull thistle is a low priority on the LTBMU list, which suggests it is a lower priority species managed on LTBMU but not always treated. Lastly, it is a class two weed on the Lake Tahoe Basin Weed Coordination Group list

which indicates that this species is known to be found in the Lake Tahoe Basin and the group is "currently working to manage these species and eradicate isolated infestations to prevent further spread (LTBWCG 2016)." Within the LTBMU, the primary focus for this species is to eradicate smaller, isolated infestations while exerting the best control feasible over large infestations through containment, prevention and other integrated pest management measures (USFS 2010).

3.2.2.2 Infestations in the Project Area

There are 13 infestations of bull thistle in the project area for a total of 0.0003 acres (13 square feet) of infested area. Infestation areas have an average size of 1 square foot. One infestation (occurrence 243a) occurs on FS parcel APN 033-291-09; two additional infestations occur on FS parcel APN 033-291-06 however these occurrences were found by NCE biologists and subsequently were not assigned USFS occurrence numbers. Ten infestations occur on non-FS land, all of which were found by NCE biologists and not assigned USFS occurrence numbers. Three of these are within 0.09 miles (500 feet) of FS parcel APN 033-291-06, one is 30 feet west of FS parcel APN 033-291-09, one is 0.47 miles southwest of FS parcel APN 033-291-06, three are 0.37 miles south of FS parcel APN 033-291-09, one is 0.53 miles south of FS parcel APN 033-291-06, and one is 0.57 miles south of FS parcel APN 033-291-06.

3.2.2.3 Management Actions

Bull thistles are tap-rooted biennial and can be controlled manually, if enough root is removed and no seed is produced. Manual removal is the preferred method for bull thistle treatment; chemical treatment of known bull thistle infestations is not approved. In the rosette or bolt stage: dig out getting as much of the root as possible and either bag it up or lay it on a rock or log where the roots will not be in contact with the ground. In the bud or flower stage: clip all buds and flowers, bag, and dispose properly. Pull or dig roots out and lay to dry out or bag. Leave as much of the plant behind to minimize landfill space (i.e. stems and leaves) (LTBMU 2016b).

3.2.3 Poison hemlock *(Conium maculatum)*

3.2.3.1 Species description and summary of management options

Poison hemlock is biennial native to Europe which commonly grows to 6 or 8 feet tall. It occurs on disturbed soils, commonly along pastures and croplands. Poison hemlock can tolerate poorly-drained soils and frequents stream and roadside ditches. Leaves are shiny green, finely pinnately divided three or four times and leaflets are segmented and 1/8 to ¼ inch long. Stems are erect, stout and purple-spotted with distinct ridges and extensively branched.

Poison hemlock is not a ranked species on the CDFA list. It has a moderate rating on the Cal-IPC list, which implies that it's "impacts are substantial and apparent, but not severe; attributes conducive to moderate to high rates of dispersal; distribution may range from limited to widespread (Cal-IPC 2010)." Bull thistle is a low priority on the LTBMU list, which suggests it is a lower priority species managed on LTBMU but not always treated. It is not listed on the Lake Tahoe Basin Weed Coordination Group list.

3.2.3.2 Infestations in the Project Area

There are three infestations of poison hemlock found by NCE biologists, none of which occur on FS land: one is 0.37 miles south of FS parcel APN 033-291-09, one is 0.53 miles south of FS parcel APN 033-291-06, and one is 0.3 miles south of FS parcel APN 033-291-09. Infestation areas have an average size of 1 square foot, for a total infestation of 3 square feet.

3.2.3.3 Management Actions

These plants can be controlled by repeated manual treatment and are currently known only from small infestations, so the preferred treatment is manual. Poison hemlock is poisonous and can cause an allergic reaction; wear gloves during treatment.

Manual: Hand pull, dig, or cut plants. Bag flowers, buds, and seeds and dispose properly; remaining plant material can be left onsite to decompose.

3.2.4 Yellow toadflax *(Linaria vulgaris)*

3.2.4.1 Species description and summary of management options

Yellow toadflax, also called butter-and-eggs, is an herbaceous perennial that is native to Eurasia and was introduced as an ornamental in the late 1600s (USDA 2008). It is commonly mistaken for non-invasive snapdragon due to the shape of the flowers. It grows to a height of 0.5 to 2.5 feet, has pale green leaves, bright yellow flowers from May to August, and produces seed from July to October. Yellow toadflax has a taproot up to 3 feet deep, and has long, horizontal roots which can develop adventitious buds, forming independent plants and crowding out native species (Carpenter and Murray 1998). It is commonly found in disturbed open sites, fields, roadsides, and cultivated yards.

Yellow toadflax is not a ranked species on the CDFA list. It has a moderate rating on the Cal-IPC list, which implies that it's "impacts are substantial and apparent, but not severe; attributes conducive to moderate to high rates of dispersal; distribution may range from limited to widespread (Cal-IPC 2010)." Yellow toadflax is a high priority on the LTBMU list, which suggests it is actively treated on LTBMU with the goal of eradication. Lastly, it is a class two weed on the LTBWCG list which indicates that this species is known to be found in the Lake Tahoe Basin and the group is "currently working to manage these species and eradicate isolated infestations to prevent further spread (LTBWCG 2016)."

3.2.4.2 Infestations in the Project Area

There is one infestation of yellow toadflax that was documented by NCE biologists, which is not located on FS land. This infestation is located 0.53 miles south of FS parcel APN 033-291-09 and encompasses 0.003 acres (130 square feet) of land.

3.2.4.3 Management Actions

There are very few effective treatment methods for yellow toadflax; both manual and chemical control methods yield erratic results. Clipping, mowing, and prescribed burning alone are not recommended as they can stimulate regrowth.

Manual (small infestations only): Dig, bag, and dispose of properly. Remove lateral roots completely; they can tear and underground portions can survive to grow new plants. Revisit infestation several times per season. Schedule 5-10 years of follow-up treatment. Revegetation with natives is highly recommended.

Chemical: Chlorsulfuron is preferred. Secondary preference is for glyphosate as an early summer application (plants ~3").

Cultural (small infestations only): Flaming is a tertiary consideration for small infestations, but is not feasible for large infestations. Conduct in early summer. Requires consultation with the Forest Botanist and Forest Fuels Officer (requires an approved burn plan).

3.2.5 Oxeye Daisy *(Leucanthemum vulgare)*

3.2.5.1 Species description and summary of management options

Oxeye daisy is a rhizomatous perennial forb. The thin stems grow 7 to 11 inches tall and produce one or more flowers with leaves that are generally pinnately lobed or divided. The flowers are about 2 inches across, with 15 to 30 pure white rays surrounding a yellow central disc. This species was originally introduced as an ornamental and has become a common weed. It is commonly confused with Shasta daisy, a native plant in the Tahoe Basin. The oxeye daisy reproduces vegetatively and by seed. Seeds drop to the ground and are dispersed by human or animal traffic and machinery. It forms dense populations and competes aggressively with native plants.

Oxeye daisy is not a ranked species on the CDFA list. It has a moderate rating on the Cal-IPC list, which implies that it's "impacts are substantial and apparent, but not severe; attributes conducive to moderate to high rates of dispersal; distribution may range from limited to widespread (Cal-IPC 2010)." Oxeye daisy is a low priority on the LTBMU list, but is still actively treated on LTBMU. Lastly, it is a class two weed on the LTBWCG list which indicates that this species is known to be found in the Lake Tahoe Basin and the group is "currently working to manage these species and eradicate isolated infestations to prevent further spread (LTBWCG 2016)." Within the LTBMU, the primary focus for this species is to prevent further spread where possible through management practices including a combination of chemical control, cultural control, seeding perennial grasses, and proper land management (USFS 2010)

3.2.5.2 Infestations in the Project Area

There is one infestation of oxeye daisy (occurrence 243b) that occurred on FS parcel APN 033-291-09. It contained 1.5 square feet of infestation and was treated in 2008 by the USFS.

3.2.5.3 Management Actions

Manual treatment is preferred for this small infestation. Hand pull, bag and dispose properly. Manual control is most effective when done before oxeye daisy flowers and seed is dispersed (LTBMU 2016).

3.2.6 *Assessment summary*

Weediness is most common along road side areas, disturbed areas due to parking and/or human use, and residential landscaping.

3.3 HABITAT VULNERABILITY

The project area is characterized by predominantly urban development intermixed with fragmented Jeffrey Pine forest and perennial grasslands. This area produces concentrated storm water runoff that flows from County rights of way to pervious, naturally vegetated land and ultimately the Upper Truckee River. Current sediment sources within project area include residential and vehicular traffic, road sand/cinder accumulation from both arterial and collector roadways, and eroding cut slopes and roadside ditches throughout the project area. Existing evidence of erosion is seen on road shoulders, unimproved parking areas, and stream banks. No fires, cultivation, or grazing practices are in the recent history of this area.

3.3.1 *Assessment summary*

Overall habitat vulnerability is considered medium because: a) invasive plants were identified in the project area; B) there are established roads, foot and animal traffic, and large areas of cultivated landscape and/or turf in the area; and c) spread can be limited by proper treatment and eradication (if applicable) both pre and post construction.

3.4 Non-Project Dependent Vectors

Residential roads and informal trails exist in the project area. The analysis area is predominantly single-family residential with a lower degree of conservation and public land. Traffic and visitor use is moderate as the area borders a well-used open space comprised of informal trails. Livestock is not grazed in this area, but wildlife could pass through the neighborhood to gain access to natural surrounding area.

3.4.1 *Assessment summary*

Non-project vectors are considered medium because although these vectors are found in the area, such activities are not heavy on parcels considered for improvement.

4 Project-Dependent Factors

4.1 Habitat Alteration Expected as a Result of the Project

Proposed project activities will include ground disturbance, particularly near roadsides and in other disturbed areas. Revegetation of disturbed areas with native species will limit the potential for invasive plant species to re-colonize in the project area. No fuels reductions or fire use are proposed.

4.2 Increased Vectors as a Result of Project Implementation

Proposed project activities will improve stormwater facilities and erosion control measures. Furthermore, infestations will be removed prior to construction, and vegetation will be restored after construction activities are completed; therefore, vectors that can be expected as a result of the project are not likely to increase invasive plant establishment in the area.

Although there will be a short-term increase in traffic due to construction activities during implementation, this project is not expected to increase traffic or visitor use in the area. Sub-surface water quality systems require ongoing monitoring and could require utilities relocations during construction. Construction equipment will be used throughout implementation but will adhere to mitigation measures to minimize impacts in the area. Grazing is not a component of the project. 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 and the LTBMU LRMP as amended by the SNFPA.

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. ***Early Detection****— Any additional infestation discovered prior to or during project implementation should be reported to the Forest Botanist or their designated appointee for prioritization and assessment for treatment.*
7. ***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.*
8. ***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 certified as weed-free. If an LTBMU inspector is not available to inspect material source, then the project proponent will provide a weed-free certificate for its material source.*
9. ***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.*
10. ***Livestock—*** *If supplemental fodder (e.g hay, silage) is required for livestock, including horses and other pack animals, it will be certified weed-free.*
11. ***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*

Table 3. Management Measures

Species	Common Name	Occurrence	Management Action
Cirsium vulgare	bull thistle	243a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Cirsium vulgare	bull thistle	n/a	Manual removal of infestation
Bromus tectorum	cheat grass	n/a	Manual removal of infestation
Conium maculatum	poison hemlock	n/a	Manual removal of infestation
Conium maculatum	poison hemlock	n/a	Manual removal of infestation
Conium maculatum	poison hemlock	n/a	Manual removal of infestation
Leucanthemum vulgare	oxeye daisy	277	This historic occurrence was treated in 2008 and not observed during the field visit. If observed at time of Project implementation, then manual removal of infestation
Linaria vulgaris	yellow toadflax	n/a	Manual removal ; follow-up treatments for 5-10 years; revegetation with natives

4.3.3 *Assessment summary*

The populations of invasive plants, located within the County rights of way and parcels of interest within the project area where improvements are installed, will be removed prior to or during project construction or at any time when ground disturbing activities are taking place. By removing infestation prior to construction and revegetating the areas with native species after construction, the risk of spreading invasive plants as a result of the project will be minimized.

5 Anticipated Weed Response to Proposed Action

There is a Moderate overall risk of invasive plant establishment as a result of the project. This determination is based on the following:

1. A total of 5 noxious weed species and 19 infested locations were identified in the Project area. The surveys were conducted during an appropriate identification period in August 2016
2. There are established roads in the Project area, foot and animal traffic, and large areas of cultivated landscape and/or turf.
3. The majority of construction activity will take place in previously disturbed areas.

4. Construction will result in a short-term increase in traffic in the area.

A mitigation plan will be adopted as a part of the proposed action (Section 4.3). The mitigation plan should decrease habitat vulnerability to or below pre-construction levels. The mitigation plan includes elements to address noxious weeds before, during, and after construction

Table 3. Summary of Risk Factors

	Factor	Risk	Assessment summary
NON-PROJECT DEPENDENT FACTORS	Inventory	N/A	Adequate
	Known invasive plants	Moderate	There are 5 known infestations of high management priority species present in the project area
	Habitat vulnerability	Moderate	Moderate level of historic and recent disturbance. Variable plant cover.
	Non-project dependent vectors	Moderate	Infestations are present along existing road shoulders and vacant 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
ANTICIPATED WEED RESPONSE		**Moderate**	Low risk of new introduction; moderate risk of spread as a result of the project.

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REQUIRED APPEDICES

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

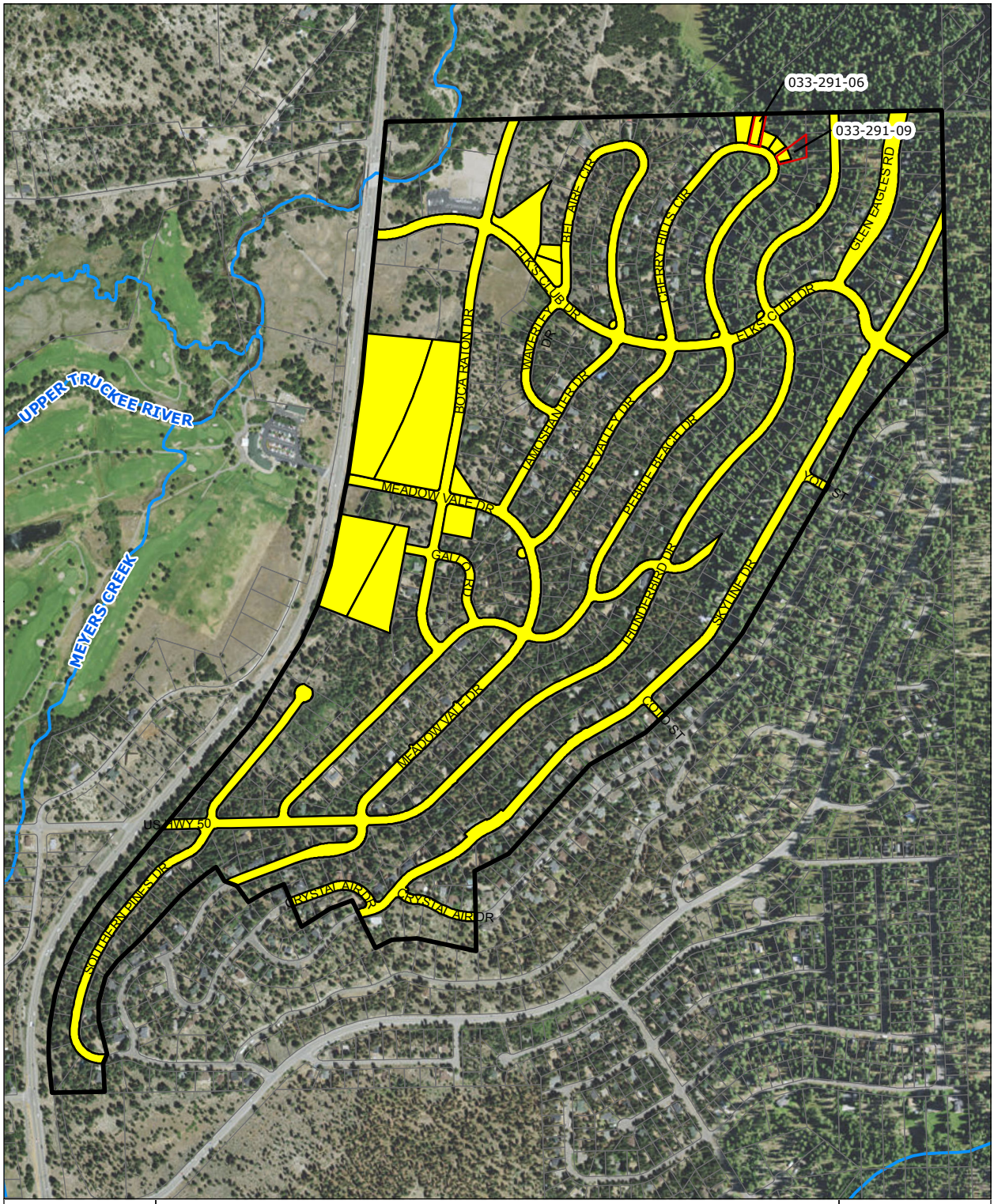
USDA FOREST SERVICE
LAKE TAHOE BASIN MANAGEMENT UNIT

MANAGEMENT REQUIREMENTS FOR INVASIVE PLANTS OF MANAGEMENT CONCERN

Scientific Name	Common Name	2015 LTBMU Priority	Known on LTBMU?	Map	Treat
Species actively reported, mapped and treated on LTBMU					
Acroptilon repens	Russian knapweed	Medium	Yes	X	X
Carduus nutans	musk thistle	High	Yes	X	X
Centaurea diffusa	diffuse knapweed	High	Yes	X	X
Centaurea maculosa	spotted knapweed	High	Yes	X	X
Centaurea solstitialis	yellow starthistle	Medium	Yes	X	X
Centaurea virgata ssp. squarrosa	squarrose knapweed	High	Yes	X	X
Chondrilla juncea	rush skeletonweed	High	Yes	X	X
Cirsium arvense	Canada thistle	High	Yes	X	X
Conium maculatum	poison hemlock	Low	Yes	X	X
Cytisus scoparius	Scotch broom	Medium	Yes	X	X
Hypericum perforatum	St. Johnswort; Klamathweed	Medium	Yes	X	O
Isatis tinctoria	Dyer's woad	High	Yes	X	X
Lepidium appelianum	globe-podded hoary cress; hairy whitetop	Medium	Yes	X	X
Lepidium draba	heart-podded hoary cress; whitetop	Medium	Yes	X	X
Lepidium latifolium	tall whitetop; perennial pepperweed	High	Yes	X	X
Leucanthemum vulgare	oxeye daisy	Low	Yes	X	O
Linaria genistifolia spp. dalmatica	Dalmatian toadflax	High	Yes	X	X
Linaria vulgaris	yellow toadflax; butter & eggs	High	Yes	X	X
Onorpordum acanthium ssp. acanthium	Scotch thistle	High	Yes	X	X
Potentilla recta	sulfur cinquefoil	Medium	Yes	X	X
Rubus armeniacus	Himalaya blackberry	Medium	Yes	X	X
Lower priority species managed on LTBMU but not always treated These are not actively reported, mapped or treated unless they occur within a project area.					
Cirsium vulgare	bull thistle	Low	Yes	O	O
Bromus tectorum	cheat grass	Low	Yes	O	O
Myriophyllum spicatum	Eurasian watermilfoil	N/A	Yes	O	O
Species Not Currently Known on LTBMU **If any of the following species are found, immediately notify the Forest Botanist.** Collect detailed geospatial (GIS) and infestation information					
Ailanthus altissima	tree of heaven	Medium	No	X	X
Centaurea calcitrapa	purple starthistle; red starthistle	Low	No	X	X
Dittrichia graveolens	stinkwort	Low	No	X	X
Dipsacus fullonum	teasel; Fuller's teasel	Low	Yes	X	X
Elymus caput-medusae	medusahead	High	No	X	X
Elymus repense	quackgrass	N/A	No	X	X
Hydrilla verticillata	hydrilla; waterthyme	N/A	No	X	X
Lythrum salicaria	purple loosestrife	High	No	X	X
Potamogeton crispus	curlyleaf pondweed	N/A	No	X	X
Tamarix chinensis, T. ramosissima, & T. parvifolia	tamarisk; saltcedar	High	No	X	X

X=Required**, O**=Required in project areas and sensitive habitats
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.

APPENDIX B. Project Overview Map



Legend

- Project Boundary
- Survey Area
- USFS Parcel
- Streams

Country Club Heights ECP

Draft Basemap

1:10,000

0 500 1,000 ft.

N

Credits: ESRI; El Dorado County; TRPA

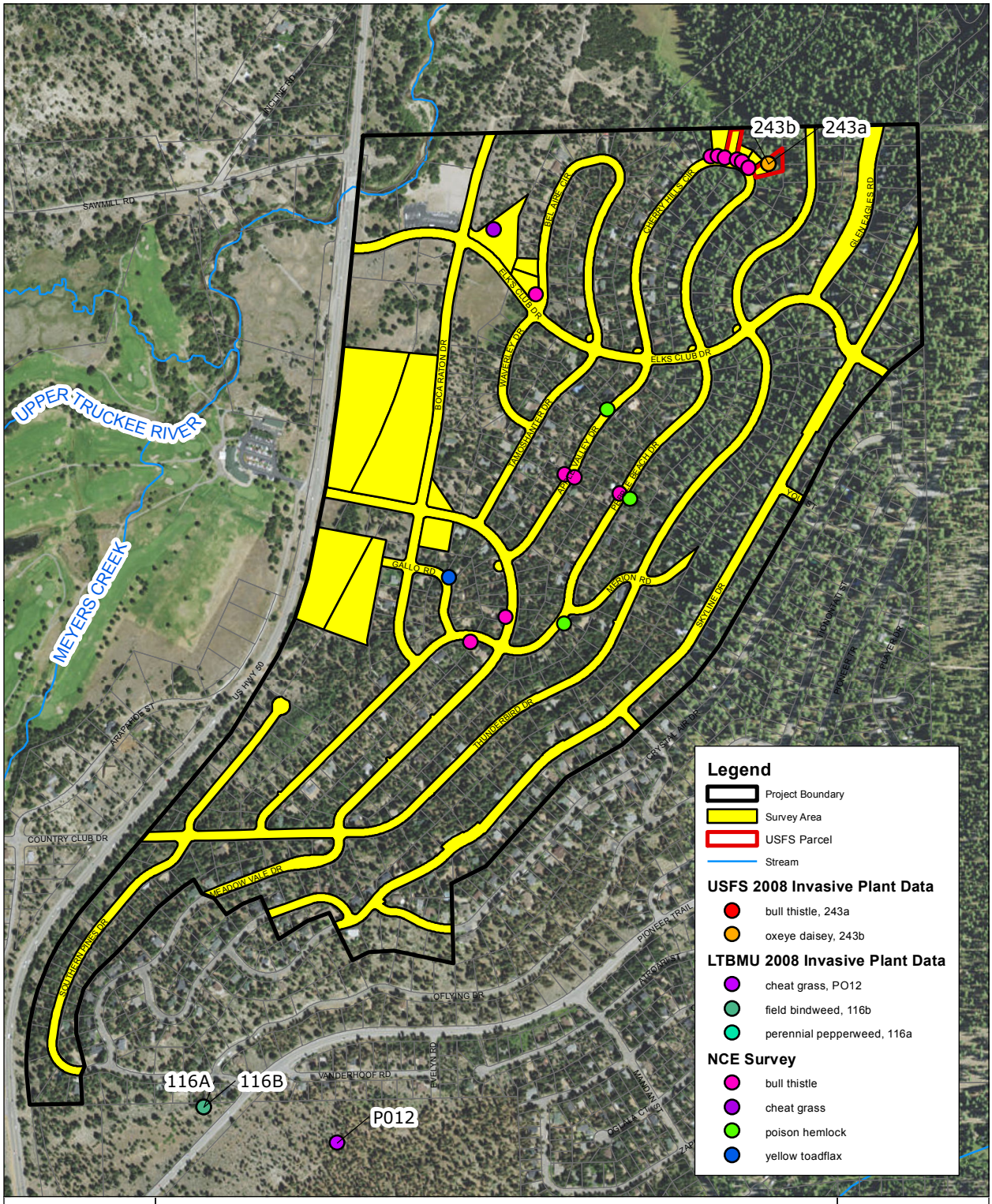
Date: 10/5/2016

Author: drios

Figure 1

NCE

APPENDIX C: Invasive Plant Infestation Locations



Country Club Heights ECP

Invasive Plant Survey

1:10,000

0 500 1,000 ft.

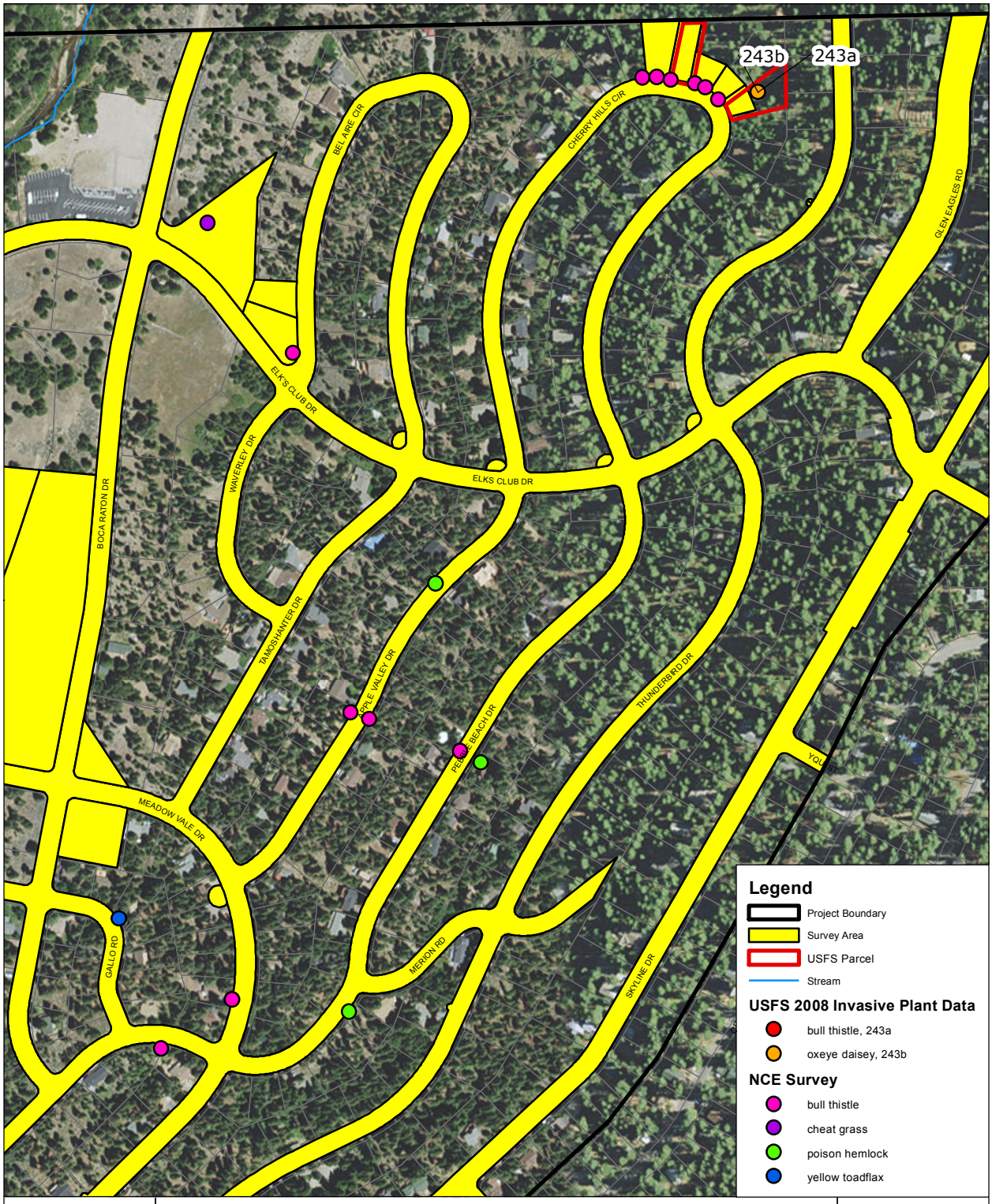
N

Credits: ESRI; EL Dorado County; TRPA; USFS; NCE

Date: 10/5/2016

Author: mcasterman, mrios

Figure 2



Country Club Heights ECP

Invasive Plant Survey

1:5,000

0 260 520 ft.

N

Credits: ESRI; EL Dorado County; TRPA; USFS; NCE

Date: 10/5/2016

Author: mcasterman, mrios

Figure 3