

3.5 INVASIVE, NONNATIVE SPECIES

3.5.1 AREA OF ANALYSIS AND METHODOLOGY

The study area for invasive, nonnative species (invasive weeds) consists of a minimum 500-foot wide study corridor along the route alternative segments (a minimum 250 feet on each side of the centerline), which together total about 341 miles. The study corridor includes mostly public lands administered by the BLM as well as some privately owned land. This section describes the laws and regulations applicable to invasive weeds within the project area, describes the methods used to obtain information, presents the occurrence of invasive weeds in the study corridor, and describes potential impacts of the project along with mitigation measures to reduce these effects.

DEFINITION OF INVASIVE, NONNATIVE SPECIES

For the purpose of this EIS, invasive, nonnative species are introduced plants and animals that are mandated to be prevented or controlled because of their potential to cause economic harm (e.g., affect the quality of forage on rangelands, affect cropland or forest land productivity) or environmental harm (e.g., displace native plants and natural habitats) or harm to human and animal health. Prevention, control, or eradication of these species may be legally mandated by state, federal, or other laws and regulations. There are no invasive, nonnative animals that are mandated for control in the project area. Therefore, this analysis focuses on invasive weeds. Invasive weeds are typically weeds that can still be effectively controlled or eradicated. They are generally not weeds that have become too extensive and widely distributed to effectively control or eradicate. Invasive weeds are species in the following categories:

- Plant species listed or considered federal noxious weeds by the U.S. Department of Agriculture (USDA);
- Plant species listed as noxious weeds by the State of Nevada Department of Food and Agriculture (Nevada Revised Statutes 555); and
- Invasive or noxious weeds of concern to BLM.

Noxious weeds are invasive, nonnative species that are listed on state or federal noxious weed lists. They are generally weeds that cause harm to production of agriculture, range, forestry, or other commodities. Invasive nonnative species include but are not limited to noxious weeds.

REGULATORY FRAMEWORK

Executive Order 11312: Prevention and Control of Invasive Species

Executive Order 11312 (February 3, 1999) directs all federal agencies to prevent and control introductions of invasive nonnative species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. Executive Order 11312 established a national Invasive Species Council made up of federal agencies and departments and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The Invasive Species Council and Advisory Committee oversees and facilitates implementation of the Executive Order, including preparation of a National Invasive Species Management Plan.

Federal Noxious and Invasive Weed Laws

A number of federal laws pertain to noxious and invasive weeds, including the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 as amended (16 U.S.C. 4701 et seq.), Lacey Act as amended (18 U.S.C. 42), Federal Plant Pest Act (7 U.S.C. 150aa et seq.), Federal Noxious Weed Act of

1974 as amended by the Food, Agriculture, Conservation and Trade Act of 1990 (Section 1453 “Management of Undesirable Plants on Federal Lands;” U.S.C. 2801 et seq.), the Carlson-Fogey Act of 1968 (Public Law 90-583), and Federal Executive Order 11312 released February 3, 1999. The BLM and other federal, state, and local agencies are also concerned about weed infestation and dispersal on private and public lands. The BLM and U.S. Department of Agriculture maintain lists of pest plants of economic or ecological concern.

Nevada Noxious Weed Laws

Chapter 555 of the Nevada Revised Statutes pertains to noxious weeds. The Nevada Department of Agriculture (NDOA) has responsibility for jurisdiction, management, and enforcement of the state’s noxious weed law. Plants on Nevada’s noxious weeds list are to be controlled on private and public land. The law calls for the establishment of county “weed control districts” with the responsibility to control and eradicate noxious weeds. The Nevada Cooperative Extension maintains lists of state-listed noxious and invasive weeds of economic or ecological concern (www.extension.unr.edu).

METHODOLOGY

Information on invasive weeds known or with the potential to occur in the vicinity of the route alternatives was obtained from the BLM Elko and Battle Mountain Field Offices and the Nevada Cooperative Extension. Weed inventory maps were collected from the Elko Field Office, and lists of weeds to be included in the invasive weed survey for this project were obtained from the Battle Mountain Field Office and Nevada Cooperative Extension, as listed in Table 3.5-1. The Ely and Battle Mountain Field Offices did not have weed inventory maps that would be applicable for this project. Not all species identified in Table 3.5-1 have the potential to occur in the project area (Wilson 2000). One important invasive weed, cheatgrass (*Bromus tectorum*), was not included in the source lists for the survey and was not surveyed. However, cheatgrass is an extensive, very widely distributed, weed that is of great concern to BLM and other resource agencies.

Additional data on noxious weed species’ habitat requirements, blooming periods, and field identifying characteristics were obtained from information provided by the Nevada Cooperative Extension, Integrated Pest Management Office, and other references, including *Invasive Plants in Nevada: An Identification Handbook* (Stoddard et al. 1992), *Weeds of the West* (Whitson 1992), *Weed Identification and Control Guide* (Donaldson and Bowers 1998), *Noxious Weeds of Central Nevada* (BLM 1999), *The Grower’s Weed Identification Handbook* (University of California Undated), and *The Jepson Manual* (Hickman 1993).

Invasive weed surveys were conducted between May 24 and July 15, 1999, and April 26 and 27, 2000, by Summit EnviroSolutions, Inc. (SEI) and Tetra Tech EMI. The invasive weed surveys were conducted concurrently with the vegetation baseline surveys described in Section 3.4, Vegetation Resources of this EIS. Surveys were conducted on foot and/or by vehicle within the 500-foot-wide study corridor and along many adjacent roadways and drainages. Weed occurrences observed within these survey areas were identified and are included as Appendix 8 of the Vegetation Survey Report (SEI and Tetra Tech EMI 2000). Surveys were not conducted along most access roads that might be improved outside of the 500-foot wide study corridor, since they were not known at the time of surveys. Surveys and mapping for invasive weeds and sensitive resources along access roads would be conducted prior to construction, once a preferred alternative is selected.

TABLE 3.5-1: NOXIOUS AND INVASIVE WEEDS INCLUDED IN THE SURVEY

Common Name Scientific Name	Noxious/ Invasive	Plant Type	Habitat	Dispersal
African Rue <i>Peganum harmala</i>	N	Shrub	Desert scrub, waste places	Seeds, planting
Camelthorn * <i>Albaji pseudalhagi</i>	N	Shrub	Arid waste places, washes, arid agricultural areas	Seeds
Common Crupina * <i>Crupina vulgaris</i>	I	Annual herb	Range and disturbed non-crop lands	Seeds
Dyer's Woad * <i>Isatis tinctoria</i>	N/I	Annual to short-lived perennial herb	Rangelands, cultivated fields and orchards, pastures, waste places, roadsides, fencerows.	Seeds
Eurasian Water-milfoil * <i>Myriophyllum spicatum</i>	I	Aquatic submergent	Lakes, ponds, canals	Stem fragments, runners
Goatsrue <i>Galega officinalis</i>	N	Perennial subshrub	Nutrient rich loam and clay soils in moist meadows	Seeds
Hemlock, Poison * <i>Conium maculatum</i>	N	Biennial herb	Moist disturbed places, streamsides	Seeds
Hemlock, Western Water * <i>Cicuta douglasii</i>	N	Perennial herb	Streams, irrigation canals, pastures	Seeds, rhizomes
Hoary Cress or Short Whitetop * <i>Cardaria draba</i>	N/I	Perennial herb	Disturbed alkaline sites	Seeds and root fragments
Horsenettle, White * <i>Solanum elaeagnifolium</i>	N	Perennial herb	Dry, disturbed sites, fields	Seeds, rhizomes
Houndstongue <i>Cynoglossum officinale</i>	I	Biennial herb	Disturbed sites	Seeds
Klamath Weed/St. Johnswort <i>Hypericum perforatum</i>	N/I	Perennial herb	Dry, sandy or gravelly soils in pastures, open woods, waste places, and roadsides	Seeds, creeping stems (stolons)
Knapweed, Diffuse * <i>Centaurea diffusa</i>	N/I	Annual to short-lived perennial herb	Roadsides, waste places, pastures, disturbed sites; can dominate rangelands with less than 8 inches annual precipitation	Seeds
Knapweed, Russian * <i>Centaurea repens</i>	N/I	Perennial herb	Roadsides, pastures, orchards; can dominate cultivated fields and rangelands where the water table is within 20 feet of the soil surface	Seeds, adventitious roots
Knapweed, Spotted * <i>Centaurea maculosa</i>	N/I	Biennial to short-lived perennial herb	Disturbed sites; can dominate rangelands with less than 8 inches annual precipitation	Seeds
Knapweed, Squarrose * <i>Centaurea virgata</i> spp. <i>squarrosa</i>	I	Perennial herb	Rangelands	Seeds
Leafy Spurge * <i>Euphorbia esula</i>	N/I	Perennial herb	Rangelands	Seeds, deep vigorous roots, root buds, root fragments
Licorice, Wild <i>Glycyrrhiza</i> spp.	N	Perennial herb	Moist open disturbed sites, creekbanks, roadsides	Seeds, roots
Mediterranean Sage <i>Salvia aethiopsis</i>	N	Perennial herb	Fields, roadsides, rangeland	Seeds
Medusahead * <i>Taeniatherum caput-medusae</i>	I	Annual grass	Semi-arid rangeland	Seeds
Perennial Pepperweed /Tall Whitetop * <i>Lepidium latifolium</i>	N/I	Perennial herb	Waste sites, wet areas, ditches, roadsides, cropland	Seeds, spreading roots
Puncture Vine * <i>Tribulus terrestris</i>	N	Annual herb	Croplands, roadsides, pastures, urban areas	Spiked seeds and burs
Purple Loosestrife <i>Lythrum salicaria</i>	I	Perennial herb	Aquatic sites, streambanks, shorelines of ponds, reservoirs, canals and ditches	Seeds, rhizomes, ornamental planting

TABLE 3.5-1: NOXIOUS AND INVASIVE WEEDS INCLUDED IN THE SURVEY (CONT.)

Common Name <i>Scientific Name</i>	Noxious/ Invasive	Plant Type	Habitat	Dispersal
Rush Skeletonweed * <i>Chondrilla juncea</i>	I	Perennial herb	Well-drained, light textured soils in disturbed soils, roadsides, rangelands, grain fields, and pastures	Seeds
Saltcedar/Tamarisk * <i>Tamarix ramosissima</i>	I	Shrub	Alkaline soils, streamsides, washes	Seeds, roots
Sorghum/Johnson Grass <i>Sorghum halepense</i>	N	Perennial grass	Disturbed areas, ditchbanks, roadsides	Seeds, rhizomes
Star thistle, Yellow <i>Centaurea solstitialis</i>	N/I	Annual herb	Cultivated fields, pastures, grassland, rangeland, and waste sites	Seeds
Sulfur Cinquefoil <i>Potentilla recta</i>	I	Perennial herb	Disturbed areas, roadsides, moist rangeland	Seeds, roots
Thistle, Canada * <i>Cirsium arvense</i>	N	Creeping perennial herb	Disturbed sites; deep, loose, cool soils	Seeds, root buds, creeping rootstock
Thistle, Iberian Star <i>Centaurea iberica</i>	N	Perennial herb	Disturbed places, pastures	Seeds
Thistle, Musk * <i>Carduus nutans</i>	N/I	Biennial or annual herb	Roadsides, wetter rangeland, cultivated pastures, forest lands, grain fields, ditchbanks, waste sites, and stream banks	Seeds, root fragments
Thistle, Perennial Sow <i>Sonchus arvensis</i>	N/I	Perennial herb	Moist sites	Seeds, rhizomes
Thistle, Scotch * <i>Onopordum acanthium</i>	N/I	Biennial to short-lived perennial	Roadsides, fencerows, ditchbanks, waste areas, and pastures	Seeds
Toadflax, Dalmation <i>Linaria dalmatica</i>	N/I	Perennial herb	Roadsides, rangeland	Seed, roots
Toadflax, Yellow <i>Linaria vulgaris</i>	N/I	Perennial herb	Rangeland, roadsides, waste places, cultivated fields	Seed, roots

* Known to have the potential to occur in the project study area.

Note: Cheatgrass (*Bromus tectorum*) was not included in the survey. It will be surveyed and mapped prior to construction (see Mitigation Measure Invasive Weeds-1j).

Locations of weed infestations were mapped on 7.5-minute quadrangles and then transferred to a GIS database. Infestations were plotted on the maps if a minimum of 25 square feet was populated by a weed species. Densities of representative weed populations were calculated by sampling roadside populations in Segment A (Dunphy quadrangle) and a meadow population in Segment F (Garden Pass quadrangle). Population densities are included in the Vegetation Survey Report (SEI and Tetra Tech EMI 2000). Additionally, satellite populations of species were noted and plotted on quadrangle maps if they were adjacent to roadways or streams. Satellite populations (i.e., possible new colonies) were defined as very small infestation areas (less than 25 square feet) that had only a few individual plants and were found apart from dense or large weed populations. Satellite populations were not indicated as discrete populations, but rather were indicated as a continuous infestation zone, specifically around the town of Eureka.

3.5.2 AFFECTED ENVIRONMENT

This discussion of affected environment is based on the invasive weeds baseline surveys performed by SEI. Numerous weed infestations occur throughout the project area, primarily along roadways, in cultivated areas and other disturbed areas. A table of the specific weed occurrences, organized by 7.5-minute quad maps, is included in the Vegetation Survey Report (SEI and Tetra Tech EMI 2000).

The primary type of invasive weed identified during surveys was hoary cress (*Cardaria draba*), also known as low whitetop. Hoary cress occurs primarily along roads, cultivated areas, and other disturbed areas in the region (i.e., predominantly pasturelands). A few infestations occur in wet meadows away from roadways. Representative photos of the hoary cress populations are provided in Figures 3.5-1, 3.5-2 & 3.5-3.

Preliminary measurements indicate that densities of established roadside hoary cress infestation range from about 1 to 10 plants per square meter, with an average of roughly 6 plants per square meter. Meadow, cultivated area, drainage, and riparian area populations were found generally to be much higher in density than roadside populations. The sampled meadow population was found to be approximately 70 plants per square meter. Average weed densities of hoary cress populations found in the study corridor are provided in the Vegetation Survey Report (SEI and Tetra Tech EMI 2000). One other invasive weed population was identified within the 500-foot wide study corridor. Perennial pepperweed (*Lepidium latifolium*), also known as tall whitetop, occurs near the Rose Canal (in the Dunphy quadrangle).

Other invasive weeds observed in the area, although outside the study corridor, include Russian knapweed (*Centaurea repens*) and Canada thistle (*Cirsium arvense*), which were located in a few pasturelands and other areas of disturbance (i.e., a water discharge ditch from the Geysers power plant in Whirlwind Valley). A single specimen of poison hemlock (*Conium maculatum*) and a single tamarisk (*Tamarix* spp.) shrub were noted outside the study corridor. Hoary cress also occurred with high frequency outside the study corridor. Cheatgrass was not surveyed for, but is extensive and widely distributed throughout the project area. It is expected to be extensive in portions of the project corridor, such as in the northwest portions of the project area.

Since the Vegetation Baseline Survey was conducted 1999, a BLM biologist had the opportunity to visit the Humboldt River where it would be crossed by Segment A and noticed a weed infestation of tall whitetop, Russian knapweed, hoary cress and musk thistle in the area (personal communication with Joe Ratliff, BLM Battle Mountain Field Office, August 2001). This is not surprising as weeds can move in quickly and change composition from year to year. Segment A and the Humboldt River crossing is common to all five of the route alternatives. Mitigation measures to address this and other noxious weed infestations are addressed in the following section.

FIGURE 3.5-1: HOARY CRESS (*Cardaria draba*)

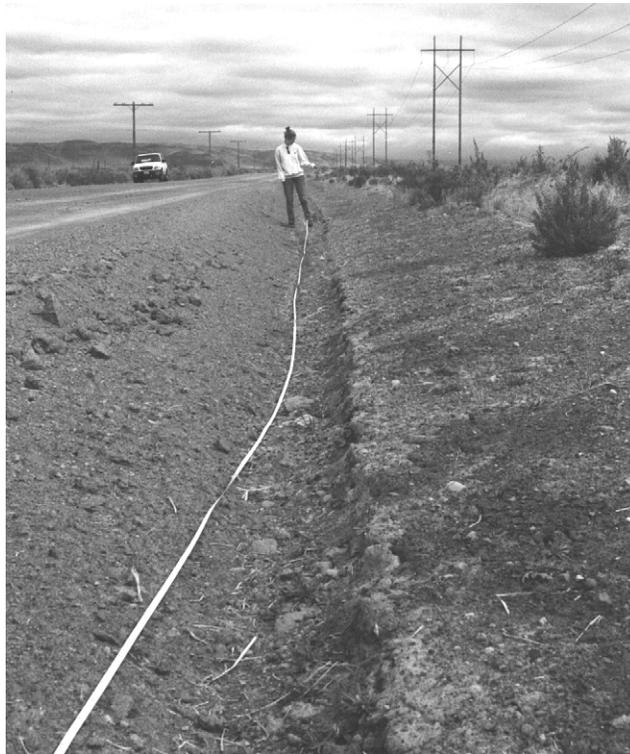


FIGURE 3.5-2: HIGH DENSITY MEADOW POPULATION OF HOARY CRESS (*Cardaria draba*)



Photograph taken on private land outside the study corridor.

FIGURE 3.5-3: TYPICAL ROADSIDE POPULATION OF HOARY CRESS (*Cardaria draba*)



*Only basal rosettes are noticeable in this early season photograph.
Photograph taken on road north of Dunphy on April 18, 2000.*

3.5.3 ENVIRONMENTAL CONSEQUENCES

This section discusses the potential impacts of the project related to invasive weeds. Criteria for assessing invasive weed impacts are provided below.

SIGNIFICANCE CRITERIA

Impacts related to invasive weeds would be considered significant if project construction, operation, or maintenance would result in:

- Introduction or spread of invasive weeds into previously uninfested areas.
- Substantial spread of invasive weed infestations beyond an existing infestation zone. An infestation zone is defined as an area containing a single large infestation or several separate infestations after which none occur for several miles.
- Substantial increase in invasive weed population size or extent within an existing infestation zone.
- Substantial direct or indirect adverse effects on listed or non-listed special-status plant or wildlife species or sensitive communities.
- Substantial loss of a plant community, fish habitat, or wildlife habitat.

ENVIRONMENTAL IMPACTS – COMPARISON OF ALTERNATIVES

The abatement of invasive weed infestations is legally mandated by state and federal laws and regulations. Invasive weeds produce adverse effects when they displace native plants, degrade wildlife habitat, affect the quality of forage on rangelands, affect cropland and forest land productivity, or cause harm to human health. Project construction, operation, and maintenance could result in impacts related to invasive weeds. These impacts are interrelated to effects on other resources, such as vegetation resources, wildlife and wildlife habitat, special-status plant and animal species, soils, and range resources. Weed propagules (seeds, stems, and root material) may be spread by vehicles and equipment from infested sites to previously uninfested sites. Weed propagules also may be transported via materials (e.g., weed-infested straw or soil).

Once weeds become established in new areas, they generally continue to spread where conditions are suitable. Disturbed areas such as burned areas, eroded slopes, river channels, and construction disturbance areas are generally more conducive to the spread of weeds, partly because competing vegetation is temporarily removed. Once invasive weeds are established, it is often difficult for native vegetation to reestablish on the site. The immediate effects of invasive weeds in previously degraded areas without sensitive resources may be small. However, because invasive weeds can grow and spread to areas with sensitive resources, the effects can be substantial and the infestations difficult to control.

CHEATGRASS

The frequency of wildfires in the Great Basin has increased substantially, largely as a result of the invasion by cheatgrass throughout the region. Once cheatgrass dominates an area, it is unlikely to be restored to the natural plant community due to the recurrence of wildfires. Wildfires are a natural component of the Great Basin ecosystem; however, increased wildfires can result in losses of wildlife and range habitat. Cheatgrass invasions are widespread and spreading by natural means throughout the Great Basin. However, ground disturbance activities also contribute greatly to the spread of this ecosystem-altering invasive weed.

The following is an analysis of invasive weed impacts common to all route alternatives, followed by an analysis of impacts associated with the specific route alternatives and segments.

Impacts Common to all Route Alternatives

☐ *Impact Invasive Weeds-1: Introduction and Dispersal of Invasive Weeds During Project Construction, Operations, and Maintenance*

Construction, operation, and maintenance activities could introduce or spread invasive weeds into currently uninfested areas, which would be a significant impact. Introduction or spread of invasive weeds, including cheatgrass, could have direct or indirect long-term effects on vegetation resources, wildlife and wildlife habitat, special-status plant and animal species, soils, and range forage quality. Plants, seeds, or pests may be dispersed by construction equipment, vehicles, or in imported materials if the appropriate preventative measures are not taken. The spread of invasive weeds and pests is of concern to local, state, and federal agencies, including Weed Districts, Conservation Districts, the State of Nevada Department of Food and Agriculture, U.S. Department of Agriculture, BLM, and USFWS. All areas disturbed during construction would be revegetated following construction, as described in Chapter 2 and Appendix E, Reclamation Plan. Revegetation would reduce the potential for the spread of invasive weeds. In addition, impacts associated with invasive weed introductions and spread could be avoided and mitigated to a less-than-significant level by implementing Mitigation Measures Vegetation-1 and -4, described in Section 3.4, Vegetation, as well as the following measure. Due to their widespread distribution and extent, cheatgrass populations are addressed separately below under Mitigation Measure 1j.

☐ *Mitigation Measure Invasive Weeds-1*

Construction Period Avoidance of Invasive Weeds: To prevent the spread of invasive weeds into previously uninfested areas in the transmission line corridor and around the substations, SPPC would implement the following measures:

- (a) Qualified invasive weed specialists, range ecologists, or botanists would survey the 500-foot wide study corridor, substation sites, new spur road sites, existing access roads that require improvements, and material yards and staging areas prior to construction to identify and stake all previously identified and new invasive weed infestations and to clearly identify their locations on the construction drawings. The infestation area would be staked to include an appropriate buffer area where a seed bank may be present beyond the weeds. SPPC would be responsible for flagging these infestation areas. SPPC's environmental compliance officer would ensure that construction-related activities would be prohibited within these zones through field monitoring. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities would be prohibited within the exclusion zones. SPPC would remove all stakes and flagging demarcating exclusion zones within 60 days after construction and site restoration have been completed in the area. Where avoidance is infeasible, please refer to measures d through i below. Due to extensive hoary cress infestations around Eureka, that area would be handled differently (as detailed in Mitigation Measure 1b).
- (b) All roads and ditches in the Eureka area would be considered infested, based on current conditions. Due to the substantial size and nearly continuous distribution of hoary cress infestations in the Eureka area, invasive weed infestation areas may not be feasible to stake and flag. The Eureka area would be considered a high-infestation zone, and project vehicles or equipment would be prohibited from stopping, parking, or travelling off roadways or onto dirt road shoulders, except during emergencies. The high-infestation area would be

delineated prior to project construction. All parking and staging in the Eureka area would be restricted to designated staging and parking areas that are both uninfested and also less vulnerable to infestation (e.g., paved areas, dry sites away from ditches), or sites which are being properly treated to control the spread of invasive weeds in accordance with the Weed Abatement Plan included in Appendix E, Section E.3, Implementation. These areas would be identified and staked by qualified invasive weed specialists, range ecologists, or botanists prior to construction and their locations would be clearly identified on the construction drawings. SPPC would be responsible for flagging these designated parking and staging areas, and for removing all stakes and flagging demarcating these areas, within 60 days after construction and site restoration have been completed in the area.

- (c) SPPC would be responsible to educate construction supervisors, managers, general foremen, and foremen on weed identification and the importance, per legal mandate, of controlling and preventing the spread of invasive weed infestations, including discussion of mitigation measures required with this project. Due to the high turnover rate associated with construction crews, general foremen and foremen would be required to inform all construction personnel under their supervision of the importance, per legal mandate, of controlling and preventing the spread of invasive weed infestations, including discussion of mitigation measures required with this project.

Construction Period Control of Unavoidable Invasive Weeds: To prevent the spread of invasive weeds, including cheatgrass, from unavoidable infestation zones into previously uninfested areas, implement the following measures:

- (d) Before beginning construction activities, employ acceptable mechanical, cultural, or herbicidal methods of invasive weed control and removal in all areas that will be disturbed during construction of the transmission line and substation (refer to Appendix E, Section E.3, Implementation–Weed Abatement Plan).
- (e) If control or removal of invasive weed infestations in construction disturbance areas is not feasible prior to construction, the plants may be cut and disposed of (e.g., in a landfill) or destroyed in a manner acceptable to the Nevada Division of Agriculture Bureau of Plant Industry and Nevada Cooperative Extension. One or both of the following will be implemented to minimize the spread of seeds and plant materials by equipment and vehicles during construction: 1) topsoil will be excavated, stored on site, monitored, and treated during construction, if necessary, to prevent the buildup of new weeds and seedbank, and replaced, monitored, and treated following construction; and 2) layer(s) of mulch, degradable geotextiles, or similar materials will be placed over the infestation area and secured in a manner so they would not be washed away.
- (f) SPPC’s contractors would be required to clean equipment and vehicles at designated high pressure air or water cleaning stations located away from waterways prior to use in the project area and after leaving unavoidable infestation zones in the construction corridor and along access roads, including Eureka. An infestation zone is defined as an area containing a single large infestation or several separate infestations, after which none occur for several miles. Cleaning stations would be identified prior to construction by a qualified invasive weed specialist, range ecologist, or botanist. Cleaning stations would be selected to prevent infestations from moving into the uninfested landscape expanses outside of infestation zones. The cleaning would concentrate on the undercarriage, axles, frame, cross members, on and under steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs would be swept and refuse disposed of in waste receptacles.

- (g) Cleaning stations would be periodically monitored, invasive weeds would be treated, and if needed, native vegetation would be re-established following construction to prevent the spread of invasive weeds. Environmental compliance monitors and construction workers would routinely inspect transmission line and substation construction equipment to verify that equipment is being cleaned of soil and plant matter at designated cleaning stations. Material collected at the cleaning stations will be disposed of properly to avoid dispersing invasive weed seeds.
- (h) Use certified invasive weed-free imported materials (e.g., straw bales, erosion control seed) when and where needed during construction, reclamation, maintenance, and operations.
- (i) Conduct follow-up invasive weed surveys and weed control treatments (see Appendix E, Section E.3, Implementation - Weed Abatement Plan) during the growing season following completion of construction and revegetation activities in all construction and reclamation areas. The surveys may be conducted concurrently with reclamation monitoring activities. New hoary cress infestations, if any, would be visible in late winter to early spring and would be expected to spread to moist areas (e.g., moist meadows, roadside ditches) and waterways (e.g., ditch banks) in the project area. New cheatgrass infestations would be visible in spring through early summer and would be expected to spread to highly susceptible sites as described in Mitigation Measure Invasive Weeds-1j below. Perennial pepperweed infestations would be visible in late winter through summer and would be expected to spread to moist areas similar to hoary cress. Control would be considered successful when:
- The extent and density of the infestations in the construction disturbance areas, by species, are not greater than the baseline conditions measured just prior to project construction; and
 - Revegetation criteria (see Appendix E, Reclamation Plan) are met.
- (j) **Cheatgrass:** Due to the widespread distribution and extent of cheatgrass expected in portions of the study corridor, it may not be feasible to stake and flag all cheatgrass infestation areas. During pre-construction weed surveys, dense cheatgrass infestation areas and areas highly susceptible to cheatgrass would be identified. Highly susceptible areas would include largely uninfested sites located near dense cheatgrass infestations, especially those that were recently burned or are on soil types (e.g., Tenabo Series) that are frequently dominated by cheatgrass. To the extent feasible, staging and parking areas would be located outside the dense cheatgrass infestation zones. Where dense and extensive cheatgrass zones are unavoidable, cleaning stations would be located at the edge of the zone. Vehicles and equipment would be cleaned prior to entry to highly susceptible areas (see Mitigation Measure Invasive Weeds-1f).

Areas disturbed by project construction which are highly susceptible to cheatgrass invasion would be monitored and treated during the reclamation process. Areas currently dominated by cheatgrass may, in some cases, be revegetated with greenstrips to help prevent wildfire spread and to provide access for firefighting crews. Site-specific cheatgrass control and revegetation protocols shall be included in the COM plan for reclamation of highly susceptible areas and cheatgrass-dominated areas to be selected for greenstripping. The prescribed seed mixes for greenstrips and areas highly susceptible to cheatgrass invasion would include, where necessary, the use of competitive nonnative, noninvasive plants (e.g., crested wheatgrass) to compete with cheatgrass. Greenstrip locations would not be placed in all cheatgrass-infested areas. They would be chosen based on the likelihood of effectively suppressing fires and protecting resources from future wildfires and cheatgrass infestations.

Areas proposed for greenstripping would be determined in cooperation with BLM, NDOW, and the Nevada Department of Forestry.

Operation and Maintenance Control: To prevent the introduction and spread of invasive weeds into previously uninfested areas during project operation and maintenance, SPPC would:

- (k) Conduct follow-up invasive weed surveys in the 160-foot wide transmission line right-of-way, around substations, and along access roads used exclusively or primarily for project operations and maintenance following construction until revegetation and weed abatement criteria have been met (see Appendix E, Section E.4). Locate, map, monitor and treat invasive weeds introduced or spread by operation, maintenance, or other activities in these areas.
- (l) Educate operations and maintenance supervisors and managers on weed identification and the importance of controlling and preventing the spread of invasive weed infestations.
- (m) Regularly clean equipment and vehicles prior to and after use in the transmission line corridor and around substations, especially after leaving unavoidable infestation zones.
- (n) Reseed substantial-sized (e.g., greater than 0.5 acre) areas disturbed during operations and maintenance activities that are at risk to weed invasion (see Appendix E, Reclamation Plan).
- (o) Continue to coordinate with land management agencies to ensure that the appropriate BMPs are implemented to minimize weed introductions and dispersal. Participate in weed management programs and meetings in coordination with land management agencies and weed management groups in the region including the BLM and others, such as the Nevada Cooperative Extension, Nevada Division of Agriculture Bureau of Plant Industry, Weed Management Districts, and the Nevada Weed Management Association.

Alternative-Specific Impacts

In addition to the impacts common to all route alternatives described above, the following addresses impacts that would be associated with specific route alternatives. Because the route alternatives differ by one or more segments, these alternative-specific impacts are best discussed in terms of their differentiating segments.

Several hoary cress noxious weed infestations and one population of perennial pepperweed have been documented in the project area, primarily on Segments A, B, and I and to a lesser extent in Segments D and J. Additional populations of these and other invasive weed species are known or likely to occur within the region but outside the study corridor, especially in disturbed areas, such as along existing access roads and potential material yards/staging areas. Cheatgrass was not surveyed, but is known to be extensive and widely distributed throughout the region. It is expected to be extensive in north west portions of the project area. Pre-construction weed surveys would be required, including surveys for dense cheatgrass infestations and areas highly susceptible to cheatgrass (see Mitigation Measure Invasive Weeds-1j).

Invasive weed infestation acreages and locations determined by the survey are provided in [Figure 3.5-4](#) and [Tables 3.5-2](#) and [3.5-3](#). Precise locations of infestations are shown in the oversized maps accompanying the Vegetation Survey Report (SEI and Tetra Tech EMI 2000). These maps are available for public review at the Ely, Battle Mountain, and Elko BLM Field Offices. The extent of invasive weed infestation is summarized by segment in [Table 3.5-2](#), and by route alternative in [Table 3.5-3](#).

TABLE 3.5-2: NOXIOUS WEED INFESTATION BY SEGMENT

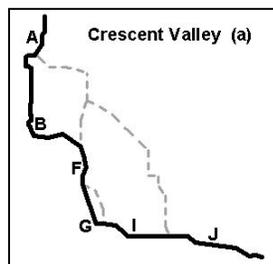
Noxious Weed Cover in 500-Foot Project Study Corridor (Acres/Percent of Segment/Number of Infestation Sites)										
Noxious Weed	A	B	C	D	E	F	G	H	I	J
Hoary Cress	--	3.34 0.1% 7 sites	--	0.23 0.02% 2 sites	--	--	--	--	14.63 0.8% 27 sites	0.24 0.01% 3 sites
Perennial Pepperweed / Hoary Cress / Cultivated	5.64 0.6 % 1 site	--	--	--	--	--	--	--	--	--
Total – All Weeds	5.64 (0.6 %)	3.34 (0.1%)	--	0.23 (0.02%)	--	--	--	--	14.63 (0.8%)	0.24 (0.01%)

TABLE 3.5-3: NOXIOUS WEED INFESTATION BY ROUTE ALTERNATIVE

Noxious Weed	Crescent Valley (a) and (b) ¹	Pine Valley (a) and (b) ¹	Buck Mountain
Hoary Cress	18.21 acres (37 sites)	15.1 acres (32 sites)	0.24 acres (3 sites)
Perennial Pepperweed / Hoary Cress / Cultivated	5.64 acres (1 site)	5.64 acres (1 site)	5.64 acres (1 site)
Total – All Weeds	23.85 acres (38 sites)	20.74 acres (33 sites)	5.88 acres (4 sites)

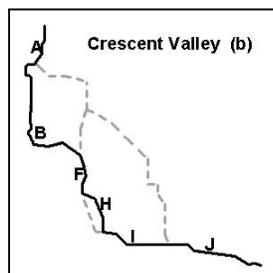
¹Note: there is no difference in weed infestations between the Crescent Valley (a) and (b) route alternatives, nor any difference between the Pine Valley (a) and (b) route alternatives; therefore, results are not presented separately.

Crescent Valley (a) and (b) Route Alternatives



Crescent Valley (a) and (b) include Segments A, B, F, G/H, I, and J, as well as the K and L re-routes, which could be used to realign portions of Segment B around sensitive resources. Site-specific infestations and potential impacts are described below.

Segment A, shared by all of the route alternatives, contains the only observed occurrence of tall whitetop in the project area. The 5.6-acre tall whitetop infestation occurs with hoary cress, near the Rose Canal in the Dunphy quadrangle. All other weed populations found within the study area during surveys were hoary cress.



In the Crescent Valley route alternatives, hoary cress infestations were documented in Segments B, I, and J, primarily along roads, cultivated areas, and other disturbed areas, which are predominantly pasturelands. The majority of hoary cress infestations in the study corridor occurs in segments associated with the Crescent Valley route alternatives, namely Segments I and B. Smaller amounts also occur in Segment J (which is also shared by all routes).

The vast majority of the hoary cress roadside populations appear to be occasional, colonizing satellite populations, with the exception of infestations in and around the town of Eureka (Segment I), where nearly all roads and drainages have populations of hoary cress. The populations occur as stringers along the roadside berms and ditches. The hoary cress infestation appears to be spreading, likely the result of seed movement by road maintenance equipment and vehicles, stormwater runoff, and other means.

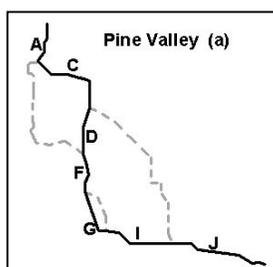
FIGURE 3.5-4: NOXIOUS WEEDS

Currently uninfested roads and drainages in and around Eureka will likely become infested with hoary cress in the future. For the purposes of this EIS, all roads and drainages that parallel or bisect the proposed alignment in and around Eureka are considered to have satellite populations of hoary cress.

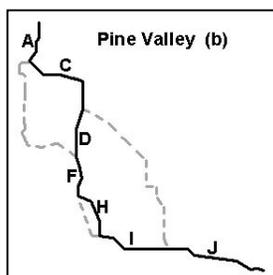
No invasive weed infestations were documented in Segments F, G, or H.

In total, 23.85 acres of invasive weeds (occurring at 38 sites) were documented along Crescent Valley, the highest of any route alternative. Impacts related to invasive weeds are discussed above, under impacts common to route alternatives. Mitigation Measure Invasive Weeds-1 would apply to infestations documented in the Crescent Valley route alternatives.

Pine Valley (a) and (b) Route Alternatives

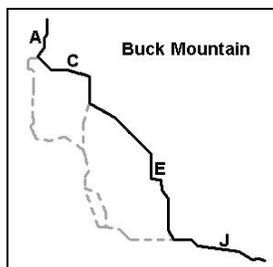


Pine Valley (a) and (b) include Segments A, C, D, F, G/H, I, and J. Thus, impacts discussed above for Segments A, I, and J apply to the Pine Valley route alternatives as well. In addition, two site locations of hoary cress infestation were documented in Segment D, which is unique to the Pine Valley route alternatives. However, these infestations total only 0.23 acre. No invasive weed infestations were documented in Segment C.



In total, 20.74 acres of invasive weeds (occurring at 33 sites) were documented along the Pine Valley route alternatives, the second highest of the route alternatives and a total quite similar to Crescent Valley (a) and (b). Impacts related to invasive weeds are discussed above, under impacts common to route alternatives. Mitigation Measure Invasive Weeds-1 would apply to infestations documented in the Pine Valley route alternatives.

Buck Mountain Route Alternative



Buck Mountain includes Segments A, C, E, and J. Thus, impacts discussed above for Segments A and J apply to the Buck Mountain route alternatives as well. No invasive weed infestations were documented in Segment E, which is unique to Buck Mountain.

In total, 5.88 acres of invasive weeds (occurring at 4 sites) were documented along the Buck Mountain route alternative, by far the lowest of the five route alternatives. Impacts related to invasive weeds are discussed above, under impacts common to route alternatives. Mitigation Measure Invasive Weeds-1 would apply to infestations documented in the Buck Mountain.

Infestations Outside the Project Area

Other invasive weeds occur in the project area, although outside the study corridor. These include a few infestations of Russian knapweed and Canada thistle in Whirlwind Valley, a single specimen of poison hemlock along Huntington Creek (in the Walker Canyon quadrangle), a single tamarisk shrub near a Cortez Canyon drainage (in the Cortez Canyon quadrangle), and several infestations of hoary cress adjacent to areas infested within the study corridor.

Summary Comparison of Route Alternatives

TABLE 3.5-4: SUMMARY OF IMPACTS BY ROUTE ALTERNATIVE

Impact	Crescent Valley (a)	Crescent Valley (b)	Pine Valley (a)	Pine Valley (b)	BUCK MOUNTAIN
Impact Invasive Weeds-1: Introduction and Dispersal of Invasive Weeds During Project Construction, Operations, and Maintenance	X	X	X	X	X

RESIDUAL IMPACTS

After mitigation and reclamation, residual impacts related to invasive weeds would be minor. Invasive weed introductions occur both naturally (e.g., seeds dispersed by wind, water, or animals) and by human access (e.g., seeds carried on vehicles). After construction, spur roads would be reclaimed to discourage new access to the right-of-way. SPPC would access the transmission line corridor for yearly inspections and occasional repairs. However, the level of invasive weed introductions after mitigation and reclamation are expected to be minor and within the range of current rates of introductions, as there are numerous existing dirt access roads, as well as ongoing livestock grazing activities in the project area.

NO ACTION ALTERNATIVE

Under the No Action Alternative, impacts related to invasive nonnative species associated with this project would not occur. However, impacts could occur in other areas as SPPC and the Nevada PUC would begin emergency planning efforts to pursue other transmission and/or generation projects to meet the projected energy shortfall.