Resolution Copper Project and Land Exchange
Environmental Impact Statement

USDA Forest Service
Tonto National Forest
Arizona

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Process Memorandum to File

Soils and Vegetation Resource Analysis: Assumptions; Methodology Used; Relevant Regulations, Laws, and Guidance; and Key Documents

This document is deliberative and is prepared by the third-party contractor in compliance with the National Environmental Policy Act and other laws, regulations, and policies to document ongoing process and analysis steps. This document does not take the place of any Line Officer's decision space related to this project.

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Revision History

Date	Personnel	Revisions Made
08/06/18	Emily Newell	Process memorandum created.
10/29/18	Emily Newell	Revisions to memorandum title, revision history table added, edits to purpose of process memorandum section, references and key documents section added.
10/30/18	Emily Newell	References added, applicability section of relevant laws table updated.
11/15/18	Emily Newell	Further updates to applicability table.
01/14/19	Emily Newell	Prepare for project manager review.
05/24/19	Eleanor Gladding	Added additional information on vegetation communities and special-status plant species.
5/27/19	Mandy Bengtson	Added additional information on soils and previous/existing disturbance, including Appendix 2.
6/10/19	Mandy Bengtson	Further updates to soils, vegetation, and disturbance sections.
7/30/19	Donna Morey	Updated process memorandum to draft environmental impact statement section.
9/17/20	Sarah Epstein	Updated noxious weeds tables, alternative footprints, and disturbance acreages; special-status species likelihood to occur; and results of preferred alternative vegetation survey.
12/30/20	Chris Garrett	Updated references.
3/17/2023	Eleanor Gladding	Added and updated information about the 2021 Telegraph Fire and about the Huachuca water-umbel (Lilaeopsis schaffneriana var. recurva) because the U.S. Fish and Wildlife Service expanded this species' range in April 2022.
01/09/2025	Stacy Campbell	Updated noxious weed tables to reflect new Arizona noxious weed list; updated special-status species tables to be consistent with the *Tonto National Forest Land Management Plan* (U.S. Forest Service 2023) by adding additional species (no species were removed); added information about the Carlota fire; updated soils acreages to include RUG areas; added Appendix 3: Ecological Response Units.

Purpose of Process Memorandum

To provide a concise and accessible summary of resource impacts, certain detailed information has not been included directly in the environmental impact statement (EIS). The purpose of this process memorandum is to describe additional supporting resource information in detail. The soils and vegetation section of Chapter 3 of the final EIS (FEIS) provides brief summaries of the information contained in this process memorandum. This process memorandum covers the following topics:

- Resource analysis area
- Analysis methodology and selected outcomes
- Regulations, laws, and guidance
- Key documents and references cited
- Vegetation community descriptions
- Special-status plant and noxious weed species analysis

Detailed Information Supporting Environmental Impact Statement Analysis

Resource Analysis Area

The analysis area used for the soils and vegetation section is the project footprint and a buffer of 1 mile around the project footprint for reasons further explained below.

Analysis Methodology and Selected Outcomes

This section includes a discussion of soils, revegetation, vegetation communities, special-status plant species, and noxious weeds. The project footprint (consisting of all alternatives and facility components) is the analysis area for soils, soil productivity, and revegetation potential, as it encompasses all ground-disturbing activities (see Figure 3.3.2-1 in the FEIS; see FEIS Section 3.3). The analysis area for vegetation communities, noxious and invasive weeds, and special-status plant species is the project footprint with a 1.00-mile buffer, as well as areas along Queen Creek and Devil's Canyon where changes to vegetation communities from groundwater drawdown and changes in surface water hydrology may occur (see Figure 3.3.2-2 in the FEIS; see FEIS Section 3.3). The buffer for the compensatory mitigation parcels was set at 0.25 mile to account for all direct and indirect impacts of those proposed activities. The area beyond the project footprint is informed by the water analyses for riparian areas (see FEIS Section 3.7.1); reduction in surface runoff due to the project (see FEIS Section 3.7.3); air quality analyses, particularly those focused on the general and likely dispersion of fugitive dust (see FEIS Section 3.6); lighting effects (see FEIS Section 3.11); and the potential for noxious weed invasion (Foxcroft et al. 2010).

In accordance with the air quality analysis, ambient air quality standards would be achieved at the project footprint boundaries. As such, the 1-mile buffer is sufficient to address potential impacts from ambient air quality changes. Additional light associated with project construction and facilities is

anticipated to increase night sky brightness by 1% to 9% on average (Dark Sky Partners LLC 2018). With the additional average light increase of 1% to 9% over existing conditions, the 1-mile buffer would be sufficient to capture potential project-related impacts to plants from additional light.

The temporal parameters for this analysis involved the time frames for 1) construction, mine years 1 through 9; 2) operations, mine years 6 through 46; and 3) closure and reclamation, mine years 46 through 51 to 56. This analysis also extends to the time it takes to complete reclamation because arid soils and vegetation communities in the analysis area can take long periods (hundreds to thousands of years) to recover and reestablish, and, in some cases, complete recovery may not be possible.

The scope of this analysis takes an ecological perspective to describe the interrelated impacts of disturbance of soils and vegetation communities, with focus on the regulatory framework that drives vegetation management within Tonto National Forest (TNF). In particular, special-status plants and noxious and invasive weeds will receive special attention in this analysis due to their presumed rarity, conservation and land management impacts, and legal mandates. This analysis will also consider the potential outcomes of revegetation efforts and the expected feedback cycles (e.g., erosion, soil development) that will influence long-term impacts to soil productivity and stability.

Soils

The goal of the soils analysis is to identify the reasonably foreseeable impacts to soil resources from all project activities from each alternative. In this analysis, soils are considered nonrenewable resources, as their formation in desert environments (particularly those characteristics that control biological community establishment) occur over hundreds to thousands of years (Webb et al. 1988; Williams et al. 2013). Soil losses within the project footprint are therefore treated as permanent unless soils are 1) salvaged and reapplied during the construction and reclamation processes and 2) revegetation efforts successfully stabilize soils and reduce long-term erosion.

No single data set covers the entire project footprint; therefore, the soils analysis relied on 1) the Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) (NRCS 2017) and 2) the U.S. Forest Service (Forest Service) General Terrestrial Ecosystem Survey (GTES) (Forest Service 2018a), applied to areas for which SSURGO data were unavailable. Data analyzed included acreage of unique map units and soil erosion potential, as available from each data source. SSURGO map units are named according to an alphanumeric soil map unit, and soil descriptions were derived from three soil surveys: AZ655, AZ661, and AZ687. GTES map units are named according to vegetation symbol names and numerical identification numbers. Acreage calculations of individual soil map units impacted were calculated to determine the potential impacts to each soil type. Soil erosion susceptibility, soil morphological characteristics, and potential productivity were assessed according to the following metrics:

1. **SSURGO water erosion susceptibility.** SSURGO water erosion susceptibility is reported as a soil erodibility factor (known as the "K factor"), which can be applied to the Universal Soil Loss Equation and the Revised Universal Soil Loss Equation (NRCS 2017). The K factor is a numeric value ranging from 0.02 (least erodible soils) to 0.64 (most erodible soils). SSURGO data report

two K factors to individual soil map units or soil map unit components: 1) the Kf factor applies to fine-grained surface soils (i.e., soil particles less than 2 millimeters in diameter), and 2) the Kw factor applies to fine-grained surface soils adjusted for the impacts of rock fragments that reduce potential erodibility and decrease the K factor value. Soil unit erodibility potential can be categorized into three classes: Low Erodibility (Kf or Kw 0.02–0.24), Moderate Erodibility (Kf or Kw 0.25–0.4), and High Erodibility (Kf or Kw greater than 0.4) (Michigan State University 2002). For the purposes of this analysis, any soil map unit that contained a soil horizon (from any of its map unit components) with a Kf or Kw greater than 0.4 was considered to have high water erosion susceptibility.

2. **SSURGO wind erosion susceptibility.** SSURGO wind erosion susceptibility is reported as wind erodibility groups (WEGs). A soil map unit component's WEG is assigned according to the following influential factors: 1) soil texture, 2) organic matter content, 3) effervescence due to carbonate reaction with hydrogen chloride, 4) rock and pararock fragment content, and 5) mineralogy (NRCS 2017). WEG values range from 1 to 8. Erosion potential of the WEGs is commonly categorized as follows: high wind erosion susceptibility (WEG 1 or 2); moderate wind erosion susceptibility (WEG 3, 4, or 4L); slight soil erosion susceptibility (WEG 5, 6, or 7); and no susceptibility to wind erosion (WEG 8). For the purposes of this analysis, any soil map unit that contained a map unit component of 1 or 2 was identified as having high susceptibility to wind erosion.

3. **GTES erosion susceptibility.** GTES data sets report erosion susceptibility as a map unit's Erosion Hazard (indicated as "EROS" in GTES spatial data). Erosion hazards are classified into the following six groups: EROS 1 (Severe), EROS 2 (Moderate), EROS 3 (Slight), EROS 4 (Severe/Moderate), EROS 5 (no erosion hazard defined), and EROS 6 (no erosion hazard defined) (Earth Data Analysis Center 1998). For the purposes of this analysis, any GTES map unit that contained an EROS value of 1 or 4 was identified as having high susceptibility to erosion.

- **Soil morphological characteristics and soil productivity.** Where available, SSURGO (NRCS 2017) provided information regarding general soil morphological characteristics, soil depth, soil productivity, soil fertility, and soil wind and water erosion potential (NRCS 2017). For this analysis, soil productivity is defined as "capacity of soil, in its normal environment, to support plant growth" (Forest Service 2019a). GTES data provide some information on erosion susceptibility in other areas (Forest Service 2018a). For areas lacking SSURGO data, information regarding the nature and thickness of alluvial deposits and soil cover were taken from the *Resolution Copper Project: Near West Tailings Storage Facility Geotechnical Site Characterization Report* (corresponding directly to Alternatives 2 and 3) (Klohn Crippen Berger Ltd. 2017) and extrapolated to other alternatives. Data and interpretations could be reasonably extrapolated across alternatives because all sites are within similar ecosystems of central Arizona. Site-specific interpretations of soil map units and erosion potential are limited by the resolution and accuracy of geographic information system (GIS) data, which varied by data source and survey effort.

Interpretations of soil map units and erosion susceptibility metrics are limited by resolution, accuracy, and source of GIS data. SSURGO data from three different soil survey efforts were mapped at differing

scales; however, most of the mapping was completed at the U.S. Department of Agriculture (USDA) Order 3 soil survey level. The Order 3 mapping comprises composite map units called associations, which include multiple unique soil map unit components that occur together within the landscape. With this scale of mapping, a map unit polygon delineates the occurrence of multiple soil types, each with potentially differing erosion susceptibilities. To conservatively estimate soil erosion susceptibility, any Order 3 map units with a soil component (or horizon within a component) that was mapped as having high soil, wind, or water erosion susceptibility was coded to have high erosion susceptibility. GTES data are also potentially limited by the scale of mapping. GTES data are delineated for the entire southwestern United States and are mapped at a scale of 1:250,000, which limits the accuracy of site-specific interpretations.

The results of the soil analysis are provided in Section 3.3 of the FEIS and in Appendix 2 of this document.

Revegetation

A complete description of the revegetation meta-analysis methods and outcomes is provided in Bengtson (2019). Additional revegetation analyses and considerations are provided in FEIS Section 3.3 Soils and Vegetation.

The type of reclamation materials is more or less common among all alternatives (Gila Conglomerate or alluvial materials), as would be the reclamation and closure techniques. The revegetation potential does not appear to represent a point of difference between alternatives; therefore, the primary concern is that the disclosure of impacts is reasonable and conservative (i.e., not underestimating impacts). The methodologies described above and in the FEIS acknowledge the fact that revegetation may not be fully successful, regardless of the material or technique used.

Vegetation Communities, Noxious Weeds, and Special-Status Plant Species

The main goal of this analysis is to identify the reasonably foreseeable impacts to vegetation, including vegetation communities, special-status plant species, and noxious weeds, from all activities associated with each project alternative. The factors for analysis identified during the National Environmental Policy Act (NEPA) scoping process, review of survey and records data provided as part of this project, and scientific examination using current literature on species and how environmental changes (human or natural) affect species and their habitat constitute the backbone of this analysis.

The uncertainties, unknowns, and assumptions of this analysis include 1) limitations in the use of GIS data (e.g., mapping data may be inaccurate, calculations could be an overestimation or underestimation); 2) lack of current scientific data on how certain environmental changes affect species (e.g., only a few studies regarding dust effects on plants are available); and 3) reliance on other resource analyses, which brings into the vegetation analysis the assumptions, uncertainties, and unknowns from the other resource analyses.

After publication of the draft EIS, WestLand Resources Inc. (WestLand) (2020) performed a vegetation assessment within the tailings storage facility footprint of the preferred alternative (Alternative 6 – Skunk Camp) in response to Forest Service mitigation measure FS-225. Bureau of Land Management

(BLM) Assessment, Inventory, and Monitoring Strategy and the Spring Stewardship Institute Springs Ecosystem Inventory Protocols were performed to assess the presence, density, and abundance of vegetation in disturbance areas. The vegetation assessment identified four vegetation alliances (Table 1), measured the density and abundance of native and nonnative species, assessed the presence of special-status plant species, and identified potential special-status plant species habitat within the proposed disturbance area. In total, 175 plant taxa were observed within the Skunk Camp tailings storage facility footprint, and 13 of those taxa were nonnative species. No special-status species or suitable habitat for special-status species were observed.

Further detail on the vegetation communities associated with the alternatives is contained within Appendix 1 of this process memorandum.

Table 1. Vegetation Communities within the Tailings Storage Facility Footprint of the Preferred Alternative (Alternative 6 – Skunk Camp)

Vegetation Alliance	Percent of Project Footprint	Mean Canopy Cover (%)	Mean Shrub Cover (%)	Mean Basal Cover (%)	Dominant Species
Juniper Woodland Alliance	66	6.9	31.7	5.7	One-seed juniper (*Juniperus monosperma*), catclaw acacia (*Acacia greggii*), scrub oak (*Quercus turbinella*)
Shrubland Alliance sparsely vegetated area	30	0.8	24.3	11.2	Prickly pear cactus (*Opuntia* spp.), turpentine bush (*Ericameria laricifolia*), one-seed juniper
Mesquite-Catclaw Acacia Alliance	3	6.1	34	7.1	Velvet mesquite (*Prosopis velutina*), one-seed juniper, netleaf hackberry (*Celtis reticulata*)
Pondweed-dominated earthen tank	0.0003	Not applicable (N/A)	N/A	N/A	Pondweed (*Potamogeton* sp.)

Source: WestLand (2020).

Ecological Response Units

The TNF, as described in the *Tonto National Forest Land Management Plan* (Forest Service 2023), uses Ecological Response Units (ERUs) to provide management direction for the vegetation communities found within the forest. ERUs are "mapped ecosystem types based off biophysical themes that represent the range of conditions (e.g., dominant species, vegetation associations, soils, landscape

features, and climate) that prevail under natural disturbance regimes (e.g., fire, insects, and disease)" (Forest Service 2023:80).

Six ERUs occur within the analysis area, with the Desert Ecosystems (Mojave-Sonoran Desert Scrub ERU being the predominant ERU for all alternatives. Descriptions and acreages of the ERUs within the analysis area are in Appendix 3.

Concern for Impacts to Stability from Revegetation

Internally arose the issue of whether revegetation of the tailings dam would potentially compromise stability of the structure. Media accounts with respect to water reservoirs suggested two concerns with large trees: 1) when vegetation dies, the decaying roots can provide paths for seepage that could lead to a possible piping failure and 2) uprooting of trees and tree root balls during high winds could leave large holes in the dam, effectively reducing the dam's cross section and shortening seepage pathways.

Long-term revegetation of the tailings dam has generally been considered desirable for stabilizing the soil surfaces, preventing erosion by air and water, rebuilding lost habitat, and improving scenic values. The NEPA team investigated the potential for revegetation to affect stability negatively and determined that it is unlikely to represent an issue for several reasons.

The tailings embankment structures are massive and thick. The perimeter embankment crest itself is 100 feet wide, and this represents the narrowest point. At a 3:1 outer slope, the base width of a 500-foot-high centerline tailings embankment is 1,500 feet. The average root depth of trees and shrubs is generally no greater than 20 feet, although mesquites (*Prosopis* spp.) have been known to extend roots as deep as 174 feet (53 meters) to access groundwater (Canadell et al. 1996). In most cases, it is likely that root systems would penetrate only a fraction of the embankment profile.

Resolution Copper Mining LLC (Resolution Copper) has anecdotally noted that vegetation growing on the existing tailings piles at the West Plant Site tends to restrict root growth to the soil cover and does not extend root systems into the tailings. Guittonny-Larchevêque et al. (2016:1036) observed restricted root development over tailings because the tailings had unstable properties for growth and low airfield porosity. It is fair to note, however, that these observations are not universal. The study cited above tested this very hypothesis and reached different conclusions: "Our main finding is that roots were able to colonize underlying mine tailings when trees were planted in soil layers" (Guittonny-Larchevêque et al. 2016:1041).

Ultimately, much will depend on the exact species planted or recruited, site preparation, and tailings properties. On the whole, though, given the sheer size of the tailings embankment, compromise of the structure by root systems is unlikely under typical conditions.

Previous or Existing Disturbance

Existing Disturbance of Vegetation and Soils

A variety of land uses and other disturbances have affected the condition of vegetation and soils within and near the project area. Historical and ongoing mining and mineral exploration, land development, grazing, recreation, and fires have left a legacy of disturbances on the landscape within and surrounding the project area. Table 2 shows disturbance acreage by alternative. Most alternatives had approximately 1,500 to 2,000 acres of previous disturbance, except for Alternative 4, which had 3,008 acres of previous disturbance (including 2,590 acres of fire disturbance).

Facilities Disturbance (Existing Mineral and Land Development)

The project area and surrounding land have been affected by mineral extraction and exploration since the late 1800s. Historic mining activities in the area included within and adjacent to the project area are the Silver King Mine and Silver Queen Mine (now known as the currently inactive Magma Mine). Within the region, local mines include several active and inactive copper and other mines as well as perlite and limestone quarries (WestLand 2004). Disturbances from mineral exploration and extraction (and supporting townsites) include roads, buildings/structures, surface disturbance and excavation, and placement and reclamation of tailings and mine waste. Total facilities disturbance for all alternatives was approximately 1,000 acres.

Table 2. Disturbance Acreage by Alternative

Alternative	Facilities Disturbance (acres)	Road Disturbance* (acres)	Fire Disturbance (acres)	Total Disturbance (acres)
Alternative 2 Near West Proposed Action	1,086	372	1,161	**2,619**
Alternative 3 Near West – Ultrathickened	1,086	372	1,161	**2,619**
Alternative 4 Silver King	1,083	379	2,590	**4,052**
Alternative 5 Peg Leg	1,088	329	1,472	**2,889**
Alternative 6 Skunk Camp	1,086	799	10,743	**12,628**

* Single-track recreational trails excluded from area calculations.

Existing Grazing-Related Disturbance

Ranching and livestock grazing are common activities that occur year-round within much of the TNF and surrounding areas (see Section 3.16 in the FEIS). Horse and cattle are known to occupy the general project area and vicinity, and at least one grazing lease has been identified within Devil's Canyon Allotment (WestLand 2004). Currently, grazing permits are leased out by the Forest Service in the areas encompassing the project area as well as Alternatives 2 through 4, by the BLM in a portion of Alternative 5, and by the Arizona State Land Department in the remaining portion of Alternative 5

as well as approximately half the area of Alternative 6. The remainder of the land within Alternative 6 is privately held and is primarily used for ranching. Current and historic-era grazing have likely caused surficial soil disturbance and impacts to native vegetation. In addition, grazing infrastructure such as stock tanks, cattle guards on access roads, barbed-wire fencing, and holding pens are within parts of the project area.

Existing Fire Disturbance

Fire disturbance has occurred on the TNF and surrounding areas, including the project area (Table 3). The largest wildfire in recent years was the 2005 Peachville Fire, which disturbed more than 1,200 acres of Alternative 4 and 35 acres of Alternative 6. Overall, Alternative 6 has the greatest area of fire disturbance, with approximately 10,743 acres impacted.

Table 3. Fire Disturbance Acreage by Alternative

Fire Name	Year	Alternative 2 Near West Proposed Action (acres)	Alternative 3 Near West – Ultrathickened (acres)	Alternative 4 Silver King (acres)	Alternative 5 Peg Leg (acres)	Alternative 6 Skunk Camp (acres)
Silverona	1979	–	–	920	–	–
Peachville	2005	60	60	1,262	60	35
Picket	2011	–	–	–	–	–
257	2012	–	–	–	1	–
Queen	2012	1	1	1	1	–
Peachville	2014	–	–	12	–	–
Whitlow	2020	15	15	15	15	15
Telegraph Fire	2021	1,085	1,085	380	1,395	10,693
Total Acres	**All Years**	**1,161**	**1,161**	**2,590**	**1,472**	**10,743**

Existing Recreation- and Transportation-Related Disturbance

Recreational activities have caused disturbance of soils and vegetation throughout much of the project area. Levels of recreational impact range from primitive areas (remote zones with no motorized vehicle use and minimal signs of human impact) to semi-primitive areas with some non-motorized and motorized vehicle traffic to areas where anthropogenic facilities and established roads are common. Recreational activities are diverse within the project area, especially within TNF land, and include camping, hiking, biking, bird watching, hunting, off-highway vehicular use, rock climbing, prospecting, canyoneering, and historical/archaeological exploration (WestLand 2004). Disturbance from roads varies by alternative, ranging from 329 to 799 acres (see Table 2). Single-track trails exist in the analysis area but are not included in these calculations.

Assessment of Need to Collect Additional Information

For the EIS, the approach used when dealing with incomplete or uncertain information related to a reasonably foreseeable significant adverse effect was to make clear that such information is lacking. Obtaining that information was considered only if the information was essential to making a reasoned choice among alternatives and it was feasible to obtain.

Regulations, Laws, and Guidance

Mine operations are subject to a wide range of federal, State, and local requirements. Table 4 provides a summary of soil and vegetation laws, regulations, policies, and plans at the federal, State, and local levels.

Table 4. Laws, Regulations, Policies, and Plans

Laws, Regulations, Policies, and Plans	Description	Applicability
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 United States Code [U.S.C.] 9601 et seq.)	Establishes standards and requirements for handling closed and abandoned hazardous waste sites and assigns the persons responsible for releases of hazardous waste within these sites.	All buildings, infrastructure, and roads not needed for monitoring, maintenance, or surface water management will be decommissioned and reclaimed.
Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.)	Establishes policy to a) to retain lands for public use or to withdraw or dispose of specific parcels to serve national interest; b) establish goals and objectives for public land use planning, and that management be to support multiple use and sustained yield; and c) to manage public lands to support the quality of multiple resources.	All federal land (Forest Service and BLM) is subject to the Federal Land Policy and Management Act of 1976.
Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1600 et seq.)	Authorizes long-range planning by the Forest Service to ensure the future supply of forest resources while maintaining a quality environment. The act requires that a renewable resource assessment and a Forest Service plan be prepared every 10 and 5 years, respectively, to plan and prepare for the future of natural resources.	The *Tonto National Forest Land Management Plan* (Forest Service 2023) is the management authority for all areas of analysis on TNF land.

Laws, Regulations, Policies, and Plans	Description	Applicability
Forest Service locatable mineral regulations (36 Code of Federal Regulations 228)	Require that 1) adverse environmental impacts to NFS surface resources be minimized and 2) final plans of operations include provisions for reclaiming Forest Service land disturbed by mineral operations and associated activities, including a financial assurance to cover the cost of closure and reclamation and post-closure monitoring.	Resolution Copper currently operates under a prefeasibility plan of operations. Closure and reclamation of drill roads, roads, and boreholes are described in this plan. Financial assurance in the form of a surety bond has been obtained for the associated closure and reclamation of those facilities. A final closure plan with the required financial assurance for closure, reclamation, and post-closure monitoring will be obtained for facilities on Forest Service and State lands prior to the issuance of a final mining plan of operations.
Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528)	Establishes the policy and purpose of the National Forests to provide for multiple use and sustained yield of products and services.	Forest Service land is subject to locatable mineral exploration and development.
National Forest Management Act of 1976 (16 U.S.C. 1600 et seq.)	Reorganized, expanded, and otherwise amended the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on National Forest System (NFS) land. The National Forest Management Act requires the Secretary of Agriculture to assess forest lands; develop a management program based on multiple use, sustained yield principles; and implement a resource management plan for each unit of the NFS. It is the primary statute governing the administration of National Forests.	The *Tonto National Forest Land Management Plan* (Forest Service 2023) is the management authority for all areas of analysis on TNF land.
Plant Protection Act (7 U.S.C. 7701)	Establishes a federal program to control the spread of noxious weeds.	Federal noxious weed species were analyzed for potential occurrence in each alternative analysis area.

Laws, Regulations, Policies, and Plans	Description	Applicability
Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.)	Establishes and reaffirms the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; charge an equitable fee for public grazing; continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros that pose a threat to themselves and their habitat and to other rangeland values.	Rangelands occur throughout the analysis area and consist of the Millsite, Superior, and Devil's Canyon allotments on Forest Service land; Helmwheel, Teacup Ranch, and A-Diamond allotments on BLM land; and many grazing leases managed by the Arizona State Land Department.
Taylor Grazing Act of 1934 (43 U.S.C. 315–315(o))	Establishes policy to avoid overgrazing and associated soil deterioration on public lands and establishes a framework for orderly use, improvement, and development on public rangelands for grazing and other purposes.	There are currently 17 established grazing allotments totaling approximately 462,000 acres within the analysis area on lands managed by the Forest Service, BLM, or Arizona State Land Department or on privately owned lands. Most allotments are some combination of land management and/or ownership. The condition of vegetation and soil resources depends on future grazing and development.
Soil remediation levels, as defined by Arizona Administrative Code (AAC) R18-7-201	Establishes remediation standards and cleanup thresholds for soil contamination.	Prior to removal of structures and facilities, areas would be inspected for evidence of potential soil contamination. Any areas of contamination would be evaluated, excavated, and removed as appropriate. Removed soils would be disposed of on- or off-site, depending on the results of the evaluation.

Laws, Regulations, Policies, and Plans	Description	Applicability
AAC R18-9	Establishes standards for water quality and permit requirements within the state of Arizona.	Permits currently held by Resolution Copper as required by Arizona Administrative Code R18-9 include an Aquifer Protection Permit, Aquifer Protection Permit Closure and Financial Assurance, Arizona Pollutant Discharge Elimination System General Stormwater Permit, and Section 401 State Water Quality Certification.
AAC Title 11, Chapter 1, Article 2	Defines roles for the state mine inspector and establishes state guides and requirements for reclamation planning and implementation on mined lands in Arizona.	Resolution Copper currently operates under a prefeasibility plan of operations. Closure and reclamation of drill roads, roads, and boreholes are described in this plan. Financial assurance in the form of a surety bond has been obtained for the associated closure and reclamation of those facilities. A final closure plan with the required financial assurance for closure, reclamation, and post-closure monitoring will be obtained for facilities on Forest Service and State lands prior to the issuance of a final mining plan of operations.
Arizona Native Plant Law (Arizona Revised Statutes 3-904)	Establishes a list of protected plants in Arizona and prohibits the removal or destruction of wild-growing, protected plants without a permit, whether on public, State, or private land.	Protected plants under this law were analyzed for potential occurrence in the analysis area for each alternative.
Arizona noxious weeds, as defined by AAC R3-4-245 and Arizona Revised Statutes 3-201	Establishes regulation of the management of noxious weeds in the state of Arizona and categorizes species into Class A, Class B, or Class C weeds based on their current distribution; threat to crop, commodity, or habitat; and risk assessment.	Arizona Department of Agriculture noxious weed species were analyzed for potential occurrence in each alternative analysis area.
FSM 1900 - Planning, Chapter 1940 -Inventory, Monitoring, and Assessment Activities (Forest Service 2009a)	Establishes an information management framework for Forest Service inventory, monitoring, and assessment activities. Rules would apply to data collection and monitoring on development projects on Forest Service land.	In general, Resolution Copper will implement best management practices such as settling basins, covering of stockpiles, runoff diversions, silt fences, and other site-specific measures as determined to control soil erosion during construction activities (Resolution Copper 2016).

Laws, Regulations, Policies, and Plans	Description	Applicability
FSM 2000 - National Forest Resource Management, Chapter 2070 - Vegetation Ecology (Forest Service 2008)	Provides guidelines on the use of native plant materials in revegetation, rehabilitation, and restoration of ecosystems on Forest Service lands.	Areas disturbed during project activities would be reclaimed and revegetated as soon as practicable after disturbance. Where possible, reclamation and revegetation efforts would occur concurrently with project activities, with maintenance after final reclamation.
FSM 2800 - Minerals and Geology, Chapter 2840 – Reclamation (Forest Service 1990)	Establishes basic requirements and objections by the Forest Service for reclamation of land disturbed by mineral activities.	The reclamation plan was and will be developed specifically in response to Forest Service reclamation requirements.
FSM 2500 -Watershed and Air Management, Chapter 2550 - Soil Management (Forest Service 2009b)	Provides guidance on management of soil resources to maintain or improve soil quality and hydrologic function on NFS lands.	Wind and water erosion would be controlled through dust mitigation and the implementation of stormwater pollution protection plan compliance measures.
National Best Management Practices for Water Quality Management on National Forest System Lands, Vol. 1: National Core BMP Technical Guidance (Forest Service 2012a)	Provides guidance to improve agency performance, accountability, and consistency in managing water quality in compliance with federal Clean Water Act and State water quality programs. These practices include management of soil and vegetation resources to maintain water quality.	The Forest Service and Resolution Copper should follow guidance set forth by the National Best Management Practices to maintain water quality through soil and vegetation resources.
Native Plant Materials Policy: A Strategic Framework (Forest Service 2012b)	Establishes guidelines for use of native plants for land management projects, including reclamation and revegetation efforts.	Application of native seed mixes or direct planting would be used for revegetation efforts as soon as practicable after disturbance. Saguaros (*Carnegiea gigantea*) would be salvaged for reclamation purposes.
Terrestrial Ecological Unit Inventory Technical Guide: Landscape and Land Unit Scales (Winthers et al. 2005)	Provides national standards, suggested methods, and a list of criteria for defining, describing, and classifying terrestrial ecological units and types.	A total of 16 vegetation communities and land cover types occur within the analysis area.
Tonto National Forest Land Management Plan (Forest Service 2023)	Establishes the long-term management of the TNF. The plan accommodates multiple use and maximizes long-term net public benefits in an environmentally sound manner through sustained yield of goods and services from the TNF.	Consistency with the plan is addressed in the FEIS, including any necessary amendments that may be required for vegetation, habitat, and invasive species.

Laws, Regulations, Policies, and Plans	Description	Applicability
Training Guide for Reclamation, Bond Estimation, and Administration (Forest Service 2004)	Provides guidance for accurate estimation of reclamation costs for new reclamation bonds and updating existing bonds. The document further outlines standards and requirements for reclamation.	The reclamation plan was developed specifically in response to Forest Service reclamation requirements.
Soil Survey Manual (USDA 2017)	Provides a reference manual for executing soil surveys and for assembling and applying related data.	Fifty-four soil mapping units exist within the analysis area. During development of the General Plan of Operations, site-specific soil data were collected, and soil maps were generated from NRCS soil surveys for eastern Pinal and southern Gila Counties in 2008 and 2009; eastern Maricopa and northern Pinal Counties in 2008; and the TNF and parts of Gila, Maricopa, Pinal, and Yavapai Counties in 2010.

Key Documents and References Cited for Soils and Vegetation

The following list is meant to highlight key process or analysis documents available in the project record. It should not be considered a full list of all available documentation considered within this process memorandum or the EIS analysis.

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Appendix 1: Additional Information for Vegetation Communities Affected Environment

The following sections and table provide details on the vegetation communities, special-status species, and noxious and invasive weeds for each alternative (see below and Tables A1-1 through A1-9).

Alternative 2 – Near West Proposed Action

The elevational range is 1,565 to 4,688 feet above mean sea level (amsl) with the highest elevations in the northeast and the lowest elevations in the southwest.

Soils: the most predominant soils found in Alternative 2 were CEMI2, LATR (54% of Alternative 2), and QUTU2 (15% of Alternative 2).

Water sources: Alternative 2 is in the lower watershed of Queen Creek, upstream of Whitlow Ranch Dam. The alternative also intersects with Roblas, Bear Tank, and Potts Canyons. Proposed actions would create a number of seepage collection ponds around the perimeter of the tailings storage facility to collect contact water runoff from the facility and also create freshwater diversion channels to divert the upper watershed of Bear Tank Canyon into adjacent watersheds of Potts Canyon and Roblas Canyon.

Alternative 3 – Near West – Ultrathickened

The elevational range is 1,565 to 4,688 feet amsl with the highest elevations in the northeast and the lowest elevations in the southwest.

Soils: the most predominant soils found in Alternative 3 were CEMI2, LATR (54% of Alternative 3), and QUTU2 (15% of Alternative 3).

Water sources: Alternative 3 is in the lower watershed of Queen Creek, upstream of Whitlow Ranch Dam. The proposed footprint for the alternative intersects with Roblas, Bear Tank, and Potts Canyons. Proposed actions would create a number of seepage collection ponds around the perimeter of the tailings storage facility to collect contact water runoff from the facility and also create freshwater diversion channels to divert the upper watershed of Bear Tank Canyon into adjacent watersheds of Potts Canyon and Roblas Canyon.

Alternative 4 – Silver King

The elevational range is 1,565 to 4,688 feet amsl with the highest elevations in the northeast and the lowest elevations in the southwest.

Soils: the most predominant soils found in Alternative 4 were CEMI2, LATR (11% of Alternative 4), FOSP2, QUTU2, GRANITE OUTCROP (51% of Alternative 4), and QUTU2 (14% of Alternative 4).

Water sources: Alternative 4 is in Queen Creek Valley to the northwest of Superior. The proposed footprint of the alternative intersects with Potts Canyon, Happy Canyon, and Silver King Wash.

Proposed actions would create two freshwater diversion channels and dams to minimize impacts to streamflow. The diversion channels would convey surface water runoff to diversion dams in Reevis Rail Canyon, a tributary to Potts Canyon, and in Comstack Wash, a tributary to Silver King Wash.

Alternative 5 – Peg Leg

The elevational range is 1,565 to 4,688 feet amsl with the highest elevations in the northeast and the lowest elevations in the southwest.

Soils: the most predominant soils found in Alternative 5 were Pantano-Anklam-Rock outcrop complex, 3 to 20 percent slopes (25% of Alternative 5) and Tubac-Rillino complex, 3 to 25 percent slopes (25% of Alternative 5).

Water sources: Alternative 5 is south of the Queen Creek watershed in the Donnelley Wash basin. The proposed footprint of the alternative intersects with Potts and Happy Canyons, as well as Silver King Wash. Proposed actions would create a tailings storage facility in the mid reaches of Donnelley Wash that would impact a small tributary to the north of Donnelley Wash. Both tributaries, which discharge into the Gila River, would be diverted around the facility in either a north or south diversion channel.

Alternative 6 – Skunk Camp

The elevational range is 1,565 to 5,394 feet amsl with the highest elevations in the northeast and the lowest elevations in the southwest.

Soils: the most predominant soils found in Alternative 6 were QUTU2 (8% of Alternative 6) and White House-Stronghold complex, 5 to 60 percent slopes (48% of Alternative 6).

Water sources: Alternative 6 is within the upper reaches of Dripping Spring Wash, east of the town of Superior. Proposed actions would create freshwater diversion channels and dams to either side of the tailings storage facility. One proposed channel would discharge into Dripping Spring Wash whereas the other would divert surface runoff into the upper reaches of Mineral Creek.

Table A1-1. Vegetation Communities Acreage

Crosswalk Name	Brown and Lowe Name*	Brown and Lowe Description*	Southwest Regional Gap Analysis Project Name	Southwest Regional Gap Analysis Project Description	Alternatives 2 and 3 (acres)	Alternative 4 (acres)	Alternative 5 (acres)	Alternative 6 (acres)
Human Dominated	Not applicable (N/A)	N/A	Inter-Mountain Basins Playa (S015); Developed, Open Space - Low Intensity (N21); Developed, Medium - High Intensity (N22); Barren Lands, Non-specific (N31); Agriculture (N80)	Developed: unable to make distinction between Developed, Open Space-Low Intensity and Developed, Medium-High Intensity. Developed, Open Space - Low Intensity (Open Space): includes areas with a mixture of some construction materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes. Developed, Low Intensity: includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20%–49% of total cover. These areas most commonly include single-family housing units. Developed, Medium Intensity: includes areas with a mixture of constructed materials and vegetation. Impervious surface accounts for 50%–79% of the total cover. These areas most commonly include single-family housing units. Developed, High Intensity: includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80%–100% of the total cover. Agriculture: unable to make distinction between Pasture/Hay (N81) and Cultivated Crops and Irrigated Agriculture (N82). Barren Lands, Non-specific (rock/sand/clay): barren areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulation of earthen material. Generally, vegetation accounts for less than 15% of total cover. Inter-Mountain Basins Playa: composed of barren and sparsely vegetated playas (generally <10% plant cover). Salt crusts are common throughout, with small saltgrass beds in depressions and sparse shrubs around the margins.	5,646	5,646	5,646	5,646

Crosswalk Name	Brown and Lowe Name*	Brown and Lowe Description*	Southwest Regional Gap Analysis Project Name	Southwest Regional Gap Analysis Project Description	Alternatives 2 and 3 (acres)	Alternative 4 (acres)	Alternative 5 (acres)	Alternative 6 (acres)
Interior Chaparral	Interior Chaparral	Interior chaparral discontinuously occupies mid-elevation (3,445–6,561 feet amsl) foothills, mountain slopes, and canyon habitats. It is present from the Virgin Mountains in the northwest to central sub-Mogollon portions of the state; isolated and disjunct chaparral communities continue into the drier mountains of southeastern Arizona.	Great Basin Semi-Desert Chaparral (S053); Mogollon Chaparral (S057)	Great Basin Semi-Desert Chaparral (S053): includes chaparral on side slopes transitioning from low-elevation desert landscapes up into pinyon-juniper woodlands as well as typically fairly open-canopy shrublands with open spaces either bare or supporting grasses or forbs. Mogollon Chaparral (S057): occurs in mid-elevation transition from the Mojave, Sonoran, and northern Chihuahuan Deserts into mountains (3,280–7,218 feet amsl). Occurs on foothills, mountain slopes, and canyons in drier habitats below the encinal and *Pinus ponderosa* woodlands.	9,382	11,500	9,483	16,180
Sonoran Desertscrub	Sonoran/Mohave Desertscrub	N/A	Sonora-Mojave Creosotebush-White Bursage Desert Scrub (S069); Sonora-Mojave Mixed Salt Desert Scrub (S070)	Sonora-Mojave Creosotebush-White Bursage Desert Scrub: this ecological system forms the vegetation matrix in broad valleys, lower bajadas, plains, and low hills in the Mojave and lower Sonoran deserts. This desertscrub is characterized by a sparse to moderately dense layer (2%–50% cover) of xeromorphic microphyllous and broad-leaved shrubs. *Larrea tridentata* and *Ambrosia dumosa* are typically dominants, but many different shrubs, dwarf-shrubs, and cacti may codominate or form typically sparse understories. Associated species may include *Atriplex canescens*, *Atriplex hymenelytra*, *Encelia farinosa*, *Ephedra nevadensis*, *Fouquieria splendens*, *Lycium andersonii*, and *Opuntia basilaris*. The herbaceous layer is typically sparse but may be seasonally abundant with ephemerals. Herbaceous species such as *Chamaesyce* spp., *Eriogonum inflatum*, *Dasyochloa pulchella*, *Aristida* spp., *Cryptantha* spp., *Nama* spp., and *Phacelia* spp. are common. Sonora-Mojave Mixed Salt Desert Scrub: This system includes extensive open-canopied shrublands of typically saline basins in the Mojave and Sonoran deserts. Stands often occur around playas. Substrates are generally fine-textured, saline soils. Vegetation is typically composed of one or more *Atriplex* species such as *Atriplex canescens* or *Atriplex polycarpa* along with other species of *Atriplex*. Species of *Allenrolfea, Salicornia, Suaeda*, or other halophytic plants are often present to codominant. Graminoid species may include *Sporobolus airoides* or *Distichlis spicata*) at varying densities.	72,764	69,484	100,645	68,899

Crosswalk Name	Brown and Lowe Name*	Brown and Lowe Description*	Southwest Regional Gap Analysis Project Name	Southwest Regional Gap Analysis Project Description	Alternatives 2 and 3 (acres)	Alternative 4 (acres)	Alternative 5 (acres)	Alternative 6 (acres)
Lower Colorado River Sonoran Desertscrub	Sonoran Desertscrub - Lower Colorado River Sonoran Desertscrub	This region is at the head of the Gulf of California and takes in the west half of the state of Sonora, as well as large areas in southeastern California, southwestern Arizona, and Baja California.	North American Warm Desert Active and Stabilized Dune (S018); North American Warm Desert Wash (S020)	North American Warm Desert Active and Stabilized Dune (S018): occurs across the warm deserts of North America and is composed of unvegetated to sparsely vegetated (generally less than 10% plant cover) active dunes and sand sheets derived from quartz or gypsum sands. North American Warm Desert Wash (S020): restricted to intermittently flooded washes or arroyos that dissect bajadas, mesas, plains, and basin floors throughout warm deserts of North America. This system occurs as linear or braided strips within desertscrub- or desert grassland-dominated landscapes; vegetation cover is variable.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.
Mohave Desertscrub	Mohave Desertscrub	This biome is an intermediate between Great Basin Desertscrub and Sonoran Desertscrub. It intervenes between these two biomes spatially and floristically. Main plant dominants include creosote bush (*Larrea tridentata*), brittlebush (*Encelia farinosa*), desert holly (*Atriplex hymenelytra*), and white burrobush *(Ambrosia dumosa*).	Mojave Mid-Elevation Mixed Desert Scrub (S060); Sonoran Mid-Elevation Desert Scrub (S129)	Mojave Mid-Elevation Mixed Desert Scrub (S060): occurs in the eastern and central Mojave Desert, representing the extensive desertscrub between *Larrea tridentata - Ambrosia dumosa* desertscrub and the lower montane woodlands (2,296–5,905 feet amsl). Sonoran Mid-Elevation Desert Scrub (S129): transitional desertscrub system that occurs along the northern edge of the Sonoran Desert in an elevational band along the lower slopes of the Mogollon Rim/Central Highlands region between 2,460–4,265 feet amsl.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.
Open-pit Mine	N/A	N/A	Recently Mined or Quarried (D03)	Recently Mined or Quarried: 2 hectare or greater, open-pit mining or quarries visible on imagery.	3	3	3	3
Pine-Oak (*Pinus-Quercus*)	N/A	N/A	Madrean Pine-Oak Forest and Woodland (S035)	This system occurs on mountains and plateaus in the Sierra Madre Occidentale and Sierra Madre Orientale in Mexico, Trans-Pecos Texas, southern New Mexico, and Arizona, generally south of the Mogollon Rim. These forests and woodlands are composed of Madrean pines (*Pinus arizonica*, *Pinus engelmannii*, *Pinus leiophylla*, or *Pinus strobiformis*) and evergreen oaks (*Quercus arizonica*, *Quercus emoryi*, or *Quercus grisea*) intermingled with patchy shrublands on most mid-elevation slopes (1,500–2,300 meter elevation). Other tree species include *Cupressus arizonica*, *Juniperus deppeana*, *Pinus cembroides*, *Pinus discolor*, *Pinus ponderosa* (with Madrean pines or oaks), and *Pseudotsuga menziesii*. Subcanopy and shrub layers may include typical encinal and chaparral species such as *Agave* spp., *Arbutus arizonica*, *Arctostaphylos pringlei*, *Arctostaphylos pungens*, *Garrya wrightii*, *Nolina* spp., *Quercus hypoleucoides*, *Quercus rugosa*, and *Quercus turbinella*. Some stands have moderate cover of perennial graminoids such as *Muhlenbergia emersleyi*, *Muhlenbergia longiligula*, *Muhlenbergia virescens*, and *Schizachyrium cirratum*. Fires are frequent with perhaps more crown fires than ponderosa pine woodlands, which tend to have more frequent ground fires on gentle slopes.	183	359	183	372

Crosswalk Name	Brown and Lowe Name*	Brown and Lowe Description*	Southwest Regional Gap Analysis Project Name	Southwest Regional Gap Analysis Project Description	Alternatives 2 and 3 (acres)	Alternative 4 (acres)	Alternative 5 (acres)	Alternative 6 (acres)
Pinyon-Juniper (*Pinus* spp.-*Juniperus* spp.)	N/A	N/A	Southern Rocky Mountain Pinyon-Juniper Woodland (S038); Colorado Plateau Pinyon-Juniper Woodland (S039); Great Basin Pinyon-Juniper Woodland (S040); Rocky Mountain Gambel Oak-Mixed Montane Shrubland (S046); Inter-Mountain Basins Juniper Savanna (S075); Madrean Pinyon-Juniper Woodland; Madrean Juniper Savannah (S115)	Southern Rocky Mountain Pinyon-Juniper Woodland (S038): occurs on dry mountains and foothills, prefers warm, dry sites on mountain slopes, mesas, plateaus, and ridges. Colorado Plateau Pinyon-Juniper Woodland (S039): occurs in dry mountains and foothills of the Colorado Plateau south to the Mogollon Rim. These woodlands occur on warm, dry sites on mountain slopes, mesas, plateaus, and ridges. Great Basin Pinyon-Juniper Woodland (S040): occurs on dry mountain ranges of the Great Basin region and eastern foothills of the Sierra Nevada. Rocky Mountain Gambel Oak-Mixed Montane Shrubland (S046): occurs in the mountains, plateaus and foothills in the southern Rocky Mountains and Colorado Plateau, including the Mogollon Rim. The shrublands are most commonly found along dry foothills, lower mountain slopes, and at the edge of the western Great Plains from approximately 6,562–9,514 feet amsl. Inter-Mountain Basins Juniper Savanna (S075): this widespread ecosystem occupies dry foothills and sand sheets of northern Arizona. This system is found at elevations ranging from 4,921– 7,546 feet amsl. Occurs on lower mountain slopes, hills, plateaus, basins, and flats often where juniper is expanding into semidesert grasslands and steppe. Madrean Pinyon-Juniper Woodland (S112): occurs on foothills, mountains, and plateaus in Arizona, generally south of the Mogollon Rim. Presence of *Pinus cembroides*, *Pinus discolor*, or other Madrean trees and shrubs is diagnostic of this system. Madrean Juniper Savannah (S115): occurs in lower foothills and plains of southeastern Arizona.	1,571	1,856	1,996	2,138
Riparian	Riparian/Sonoran Riparian Scrubland	This habitat type occurs along drainages within the Sonoran Desert and consists of scrublands of low to medium height (5–10 feet) that are too dense to be considered desertscrub or strand. Plant species that typically occur here include plant species found in desertscrub but also contains seepwillow (*Baccharis* spp.), desertbroom (*Baccharis sarothroides*), and arrowweed (*Pluchea sericea*).	North American Warm Desert Riparian Woodland and Shrubland (S097); North American Warm Desert Riparian Mesquite Bosque (S098); Invasive Southwest Riparian Woodland and Shrubland (D04)	North American Warm Desert Riparian Woodland and Shrubland (S097): consists of low elevation (below 3,937 feet amsl) riparian corridors along medium to large perennial streams throughout canyons and the desert valleys of the southwestern United States. Vegetation is a mix of riparian woodlands and shrublands. *Acer negundo*, *Fraxinus velutina*, *Populus fremontii*, *Salix gooddingii*, *Salix lasiolepis*, *Celtis laevigata* var. *reticulata*, and *Juglans major*. Shrub dominants include *Salix geyeriana*, *Shepherdia argentea*, and *Salix exigua*. Vegetation is dependent upon annual or periodic flooding and associated sediment scour and/or annual rise in the water table for growth and reproduction. North American Warm Desert Riparian Mesquite Bosque (S098): consists of low-elevation (<3,609 feet) riparian corridors along intermittent streams in valleys of southern Arizona and New Mexico and adjacent Mexico. Dominant trees include *Prosopis glandulosa* and *Prosopis velutina*. Shrub dominants include *Baccharis salicifolia*, *Pluchea sericea*, and *Salix exigua*. Vegetation, especially the mesquites, tap groundwater below the streambed when surface flows stop. Vegetation is dependent upon annual rise in the water table for growth and reproduction. Invasive Southwest Riparian Woodland and Shrubland (D04): *Tamarix* spp.	1,809	1,747	2,109	1,765

Crosswalk Name	Brown and Lowe Name*	Brown and Lowe Description*	Southwest Regional Gap Analysis Project Name	Southwest Regional Gap Analysis Project Description	Alternatives 2 and 3 (acres)	Alternative 4 (acres)	Alternative 5 (acres)	Alternative 6 (acres)
Rock	N/A	N/A	Rocky Mountain Cliff and Canyon (and Massive Bedrock) (S006); Colorado Plateau Mixed Bedrock Canyon and Tableland (S010); Inter-Mountain Basins Volcanic Rock and Cinder Land (S013); North American Warm Desert Bedrock Cliff and Outcrop (S016); North American Warm Desert Badland (S017); North American Warm Desert Volcanic Rockland (S019); North American Warm Desert Pavement (S021)	Rocky Mountain Cliff and Canyon (S006): ecological system of barren and sparsely vegetated landscapes (generally <10% plant cover) is found from foothill to subalpine elevations on steep cliff faces, narrow canyons, and smaller rock outcrops of various igneous, sedimentary, and metamorphic bedrock types. It is located throughout the Rocky Mountains and northeastern Cascade Ranges in North America. Also included are unstable scree and talus slopes that typically occur below cliff faces. There may be small patches of dense vegetation, but it typically includes scattered trees and/or shrubs. Characteristic trees includes species from the surrounding landscape, such as Pseudotsuga menziesii, Pinus ponderosa, *Pinus flexilis*, *Populus tremuloides*, *Abies concolor*, *Abies lasiocarpa*, or *Pinus edulis* and *Juniperus* spp. at lower elevations. There may be scattered shrubs present, such as species of *Holodiscus, Ribes*, *Physocarpus, Rosa, Juniperus,* and *Jamesia americana, Mahonia repens, Rhus trilobata,* or *Amelanchier alnifolia*. Soil development is limited, as is herbaceous cover. Colorado Plateau Mixed Bedrock Canyon and Tableland (S010): the distribution of this ecological system is centered on the Colorado Plateau where it is comprised of barren and sparsely vegetated landscapes (generally <10% plant cover) of steep cliff faces, narrow canyons, and open tablelands of predominantly sedimentary rocks, such as sandstone, shale, and limestone. Some eroding shale layers similar to Inter-Mountain Basins Shale Badland (CES304.789) may be interbedded between the harder rocks. The vegetation is characterized by very open tree canopy or scattered trees and shrubs with a sparse herbaceous layer. Common species include *Pinus edulis*, Pinus ponderosa, Juniperus spp., *Cercocarpus intricatus*, and other short-shrub and herbaceous species, utilizing moisture from cracks and pockets where soil accumulates. Inter-Mountain Basins Volcanic Rock and Cinder Land (S013): this ecological system occurs in the intermountain western United States and is limited to barren and sparsely vegetated volcanic substrates (generally <10% plant cover) such as basalt lava (malpais), basalt dikes with associated colluvium, basalt cliff faces and uplifted “backbones,” tuff, cinder cones or cinder fields. It may occur as large-patch, small-patch, and linear (dikes) spatial patterns.	102	103	102	93

Crosswalk Name	Brown and Lowe Name*	Brown and Lowe Description*	Southwest Regional Gap Analysis Project Name	Southwest Regional Gap Analysis Project Description	Alternatives 2 and 3 (acres)	Alternative 4 (acres)	Alternative 5 (acres)	Alternative 6 (acres)
Rock (continued)				Vegetation is variable and includes a variety of species depending on local environmental conditions, e.g., elevation and age and type of substrate. At montane and foothill elevations scattered Pinus ponderosa, Pinus flexilis, or Juniperus spp. trees may be present. Shrubs such as *Ephedra* spp., *Atriplex canescens*, *Eriogonum corymbosum*, *Eriogonum ovalifolium*, and *Fallugia paradoxa* are often present on some lava flows and cinder fields. Species typical of sand dunes such as *Andropogon hallii* and *Artemisia filifolia* may be present on cinder substrates. North American Warm Desert Bedrock Cliff and Outcrop (S016): this ecological system is found from subalpine to foothill elevations and includes barren and sparsely vegetated landscapes (generally <10% plant cover) of steep cliff faces, narrow canyons, and smaller rock outcrops of various igneous, sedimentary, and metamorphic bedrock types. Also included are unstable scree and talus slopes that typically occur bellow cliff faces. Species present are diverse and may include *Bursera microphylla*, *Fouquieria splendens*, *Nolina bigelovii*, *Opuntia bigelovii*, and other desert species, especially succulents. Lichens are predominant lifeforms in some areas. May include a variety of desert shrublands less than 2 hectares (ha) (5 acres) in size from adjacent areas. North American Warm Desert Badland (S017): this ecological system is restricted to barren and sparsely vegetated (generally <10% plant cover) substrates typically derived from marine shale or mudstone (badlands and mudhills). The harsh soil properties and high rate of erosion and deposition are driving environmental variables supporting sparse shrubs and dwarf-shrubs e.g., *Atriplex hymenelytra*, and herbaceous vegetation. North American Warm Desert Volcanic Rockland (S019): This ecological system occurs across the warm deserts of North America and is restricted to barren and sparsely vegetated (<10% plant cover) volcanic substrates such as basalt lava (malpais) and tuff. Vegetation is variable and includes a variety of species depending on local environmental conditions, e.g., elevation, age, and type of substrate. Typically scattered *Larrea tridentata*, *Atriplex hymenelytra*, or other desert shrubs are present. North American Warm Desert Pavement (S021): this ecological system occurs throughout much of the warm deserts of North America and is composed of unvegetated to very sparsely vegetated (<2% plant cover) landscapes, typically flat basins where extreme temperature and wind develop ground surfaces of fine to medium gravel coated with “desert varnish.” Very low cover of desertscrub species such as *Larrea tridentata* or *Eriogonum fasciculatum* is usually present; however, ephemeral herbaceous species may have high cover in response to seasonal precipitation, including *Chorizanthe rigida*, *Eriogonum inflatum*, and *Geraea canescens*.				
Semidesert Grassland	Semidesert Grassland	Semidesert grasslands are potentially perennial grass/scrub-dominated landscape positioned between desertscrub below and evergreen woodland, chaparral, or plains grassland above. Elevational limits of this habitat range from 3,609–6,234 feet amsl.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe; Chihuahuan Sandy Plains Semi-Desert Grassland	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe: Chihuahuan Sandy Plains Semi-Desert Grassland: this ecological system is a broadly defined desert grassland, mixed shrub-succulent or xeromorphic tree savanna that is typical of the borderlands of Arizona, New Mexico, and northern Mexico (Apacherian region) but extends west to the Sonoran Desert, north into the Mogollon Rim and throughout much of the Chihuahuan Desert. It is found on gently sloping bajadas that supported frequent fire throughout the sky islands and on mesas and steeper piedmont and foothill slopes in the Chihuahuan Desert. It is characterized by typically diverse perennial grasses. Common grass species include *Bouteloua eriopoda, Bouteloua hirsuta, Bouteloua rothrockii, Bouteloua curtipendula, Bouteloua gracilis, Eragrostis intermedia, Muhlenbergia porteri, Muhlenbergia setifolia, Pleuraphis jamesii, Pleuraphis mutica*, and *Sporobolus airoides*, succulent species of *Agave*, *Dasylirion*, and *Yucca*, and tall-shrub/short-tree species of *Prosopis* and various oaks (e.g., *Quercus grisea*, *Quercus emoryi*, *Quercus arizonica*). Many of the historical desert grassland and savanna areas have been converted, some to Chihuahuan Mesquite Upland Scrub (CES302.733) (*Prosopis* spp.–dominated), through intensive grazing and other land uses.	3,415	6,683	3,248	21,483

Crosswalk Name	Brown and Lowe Name*	Brown and Lowe Description*	Southwest Regional Gap Analysis Project Name	Southwest Regional Gap Analysis Project Description	Alternatives 2 and 3 (acres)	Alternative 4 (acres)	Alternative 5 (acres)	Alternative 6 (acres)
Arizona Upland Sonoran Desertscrub	Upland Sonoran Desertscrub/ Arizona Upland Division	This subdivision of the Sonoran Desert occurs from the Buckskin Mountains southeast to northeast Phoenix and south to Mexico. Most of this habitat type (90%) occurs on slopes, broken ground, and multi-dissected sloping plains. This habitat often looks like scrubland or low woodland of leguminous trees with intervening spaces held by one to several open layers of shrubs and perennial succulents.	Sonoran Paloverde-Mixed Cacti Desert Scrub (S063)	Sonoran Paloverde-Mixed Cacti Desert Scrub: This ecological system occurs on hillsides, mesas, and upper bajadas in southern Arizona and extreme southeastern California. The vegetation is characterized by a diagnostic sparse, emergent tree layer of *Carnegiea gigantea* (3–16 meters tall) and/or a sparse to moderately dense canopy co-dominated by xeromorphic deciduous and evergreen tall shrubs *Parkinsonia microphylla* and *Larrea tridentata* with *Prosopis* sp., *Olneya tesota*, and *Fouquieria splendens* less prominent. Other common shrubs and dwarf shrubs include *Acacia greggii*, *Ambrosia deltoidea*, *Ambrosia dumosa* (in drier sites), *Calliandra eriophylla*, *Jatropha cardiophylla*, *Krameria erecta*, *Lycium* spp., *Menodora scabra*, *Simmondsia chinensis*, and many cacti, including *Ferocactus* spp., *Echinocereus* spp., and *Opuntia* spp. (both cholla and prickly pear). The sparse herbaceous layer is composed of perennial grasses and forbs with annuals seasonally present and occasionally abundant. On slopes, plants are often distributed in patches around rock outcrops where suitable habitat is present.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.	Acreages for this type is included with Sonoran Desertscrub.
Wash	Wash	N/A	N/A	Ephemeral drainages also known as washes.	0	0	0	4
Water	Water	N/A	Open Water (N11)	Open Water: all areas of open water, generally with less than 25% cover of vegetation or soil.	15	15	15	15
Xeric Riparian	Xeric Riparian/Sonoran Interior Strands	Stream channels and other interior strands of tropic Sinaloan and sub-tropic Sonoran zones are typically occupied by open stands of scrub, shrubs, and weeds.	North American Warm Desert Wash (S020)	North American Warm Desert Wash: this ecological system is restricted to intermittently flooded washes or arroyos that dissect bajadas, mesas, plains, and basin floors throughout the warm deserts of North America. Although often dry, the intermittent fluvial processes define this system, which are often associated with rapid sheet and gully flow. This system occurs as linear or braided strips within desertscrub- or desert grassland-dominated landscapes. The vegetation of desert washes is quite variable, ranging from sparse and patchy to moderately dense, and typically occurs along the banks but may occur within the channel. The woody layer is typically intermittent to open and may be dominated by shrubs and small trees such as *Acacia greggii, Brickellia laciniata, Baccharis sarothroides, Chilopsis linearis, Fallugia paradoxa, Hymenoclea salsola, Hymenoclea monogyra, Juglans microcarpa, Prosopis* spp., *Psorothamnus spinosus, Prunus fasciculata, Rhus microphylla, Salazaria mexicana*, or *Sarcobatus vermiculatus*.	1,010	1,130	1,331	2,240
Total Acres					95,900	98,526	124,761	118,838

* Named and described in *Biotic Communities of the Southwestern United States and Northwestern Mexico* (Brown 1994). SWCA Environmental Consultants combined some vegetation communities within this table to depict the vegetation that exists within the analysis area more accurately.

Note: Acreages may not match the FEIS exactly, depending on which components are considered in the calculation.

Table A1-2. Special-Status Plant Species Analyzed for the Alternative 2 – Near West Proposed Action and Alternative 3 – Near West – Ultrathickened

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Acuna cactus (*Echinomastus erectocentrus* var. *acunensis*)	ESA: E with designated critical habitat	None	None	None	Occurs in valleys and on small knolls and gravel ridges of up to 30% slope in the Palo Verde-Saguaro Association of the Arizona Upland subdivision of the Sonoran desertscrub. Elevational range 1,198–3,773 feet amsl.	Found in Maricopa, western Pima, and Pinal Counties.	Unlikely to occur	Unlikely to occur
Alamos deer vetch (*Lotus alamosanus*)	TNF: SCC[†]	None	None	None	This species is a wetland obligate that occurs in wet soils or sand in springs, seeps, and streams in canyons or meadows between 3,500– 5,500 feet amsl.	Found in southern Santa Cruz County and in the Superstition Mountains.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Aravaipa sage, also known as Galiuro sage (*Salvia amissa*)	TNF: S, SCC	None	None	None	Shady canyon bottoms in stream floodplains in oak (*Quercus* spp.) or riparian woodlands. Elevational range 1,500–5,000 feet amsl.	Known to occur in south-central Arizona in several canyons in the Galiuro, Winchester, and Santa Catalina Mountains and along Fish Creek in the Superstition Mountains.	Unlikely to occur	Unlikely to occur
Aravaipa woodfern (*Thelypteris puberula* var. *sonorensis*)	TNF: S, SCC	Devil's Canyon (1959)	Yes, Devil's Canyon (WestLand 2017a)	None	Moist soil in the shade of boulders in mesic canyons. Elevational range 2,200–4,500 feet amsl.	Coconino, Maricopa, Pima, Pinal, and Yavapai Counties.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Arizona bugbane (*Actaea arizonica*)	TNF: S, SCC AZNPL: HS	None	None	None	Mixed-conifer and high elevation riparian deciduous forests in deep shade and moist soils with high humus content, near perennial or intermittent streams or seeps, especially along bottoms and lower slopes of steep, narrow canyons. Elevation between 6,000–8,300 feet amsl.	Coconino, Kaibab, and Tonto National Forests in central Arizona. On the TNF, species is only found in Sierra Ancha Mountains.	Unlikely to occur	Unlikely to occur
Arizona cliffrose (*Purshia subintegra*)	ESA: E (Graham, Maricopa, Mohave, and Yavapai Counties), no designated critical habitat AZNPL: HS	None	None	None	Occurs at four widely separated areas across central Arizona, these sights differ slightly in elevation and associated vegetation. All sites have limestone soils derived from Tertiary lacustrine (lakebed) deposits. Elevation between 2,100–2,700 feet amsl.	Found in Maricopa, Yavapai, Mohave, and Graham Counties. In Maricopa County, species is restricted to Horseshoe Reservoir.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Arizona hedgehog cactus (*Echinocereus arizonicus* ssp. *arizonicus*)	ESA: E (Maricopa, Gila, and Pinal Counties); no designated critical habitat AZNPL: HS	Queen Creek (2011, 2014, 2015), Oak Flat (2013), Whitford Canyon (2014), Rock Creek (2018), Wood Camp Canyon (2015), Rawhide Canyon (2013)	Yes, Oak Flat, East Plant Site, Queen Creek (WestLand 2017a)	None	Found on dacite or granite bedrock, open slopes, in narrow cracks, between boulders, and in the understory of shrubs in the ecotone between Madrean Evergreen Woodland and Interior Chaparral. Elevation between 3,300–5,700 feet amsl.	In Gila and Pinal Counties, central Arizona. Found on the following TNF allotments: Bohme/Sleeping Beauty, Devil's Canyon, Millsite, Pinto Creek, and Bellevue.	Known to occur; action analysis area contains 1,000.6 acres of suitable habitat where soils of igneous origin, primarily Shultze Granite and Dacite are present.	Known to occur
Arizona phlox (*Phlox amabilis*)	TNF: S‡	None	None	None	Open, exposed, limestone-rocky slopes within pinyon-juniper (*Pinus-juniperus*) woodlands and ponderosa pine-Gambel oak (*Pinus ponderosa-Quercus gambelii*) communities; elevational range of 3,500–7,800 feet amsl.	Coconino, Gila, Graham, Mohave, Navajo, and Yavapai Counties; on TNF, found near Christopher Creek.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Blumer's dock (*Rumex orthoneurus*)	TNF: S, SCC	None	None	None	Near perennial springs in unshaded meadows or along stream sides in canyons. In organic, moist soils. Elevation between 6,500–11,500 feet amsl.	Apache, Coconino, Cochise, Gila, and Graham Counties.	Unlikely to occur	Unlikely to occur
Bristle-tipped aster (*Dieteria bigelovii* var. *mucronata*)	TNF: SCC[†]	None	None	None	High open meadows from 7,870–9,840 feet amsl in spruce (*Picea* spp.) and pinyon-juniper woodlands.	Coconino and Gila Counties.	Unlikely to occur	Unlikely to occur
Broadleaf lupine (*Lupinus latifolius* ssp. *leucanthus*)	TNF: SCC	None	None	None	Occurs along streams and moist soils of dry streambeds, in oak-cottonwood (*Quercus-populus*), mixed shrub, and ponderosa pine forest communities. Elevational range 4,800–7,000 feet amsl.	Yavapai, Mohave, and Coconino Counties.	Unlikely to occur	Unlikely to occur
Chihuahuan sedge (*Carex chihuahuensis*)	TNF: S, SCC	None	None	None	Stream banks, springs, and seeps. Elevation between 1,100–8,000 feet amsl.	Cochise, Gila, Graham, Pima, and Santa Cruz Counties. TNF: only found along Reynolds Creek.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Chiricahua Mountain alumroot, also known as Arizona alumroot (*Heuchera glomerulata*)	TNF: S, SCC	None	None	Surveys found this species east of Top of the World, Arizona.	Found on north-facing shaded rocky slopes, near seeps, springs, and riparian areas, often in humus soil. Elevation between 4,000–9,000 feet amsl in pine-oak (*Pinus-Quercus*), ponderosa pine, and mixed-conifer woodlands**.**	Apache, Cochise, Greenlee, Gila, Graham, and Navajo Counties. TNF: only found in Pinal Mountains.	Unlikely to occur	Possible to occur
Cochise sedge, also known as Arizona giant sedge (*Carex ultra*; also *Carex spissa* var. *ultra*)	TNF: S, SCC	None	None	None	Found in shaded, moist soil near springs and streams on southeastern aspects in riparian and oak-pinyon woodlands. Elevation between 2,000–6,000 feet amsl.	Apache, Cochise, Graham, Pima, Pinal, Santa Cruz, and Yavapai Counties. TNF: one occurrence along Tangle Creek.	Unlikely to occur	Unlikely to occur
Davidson sage (*Salvia davidsonii*)	TNF: SCC	None	None	None	In Chihuahuan Desert and acacia (*Acacia* spp.)-dominated vegetation communities in rocky soils or wooded slopes from 1,600–9,514 feet amsl.	Coconino, Maricopa, Mohave, Cochise, and Greenlee Counties.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Eastwood alumroot (*Heuchera eastwoodiae*)	TNF: S, SCC	None	None	None	Moist slopes in ponderosa pine forests and canyons. Elevation between 5,000–8,000 feet amsl.	Coconino, Gila, Maricopa, and Yavapai Counties; on TNF found in the Payson, Pleasant Valley, and Cave Creek Districts.	Unlikely to occur	Unlikely to occur
Fish Creek fleabane (*Erigeron piscaticus*)	TNF: S, SCC AZNPL: SR	None	None	None	Gravelly and sandy washes in riparian vegetation communities. Elevation between 2,250–3,500 feet amsl.	Maricopa, Graham, and Pima Counties; on TNF found only along Fish Creek.	Unlikely to occur	Unlikely to occur
Fish Creek rockdaisy (*Perityle saxicola*)	TNF: S, SCC	None	None	Yes; Oak Flat area, Superior	Cracks and crevices on very steep cliff faces, large boulders and rocky outcrops in canyons, and on buttes. Steep cliffs with generally east and northeast exposures, with slopes from 50 to 100 percent. Elevational range 2,000–3,500 feet amsl.	Gila and Maricopa Counties. On TNF occurs near Roosevelt Lake Dam and in Sierra Ancha Mountains, suspected to be in Superstition Mountains.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Flagstaff beardtongue (*Penstemon nudiflorus*)	TNF: SCC	None	None	None	Dry ponderosa pine forests at elevations between 4,500–7,000 feet amsl.	Mohave, Coconino, Yavapai, Navajo, and Gila Counties.	Unlikely to occur	Unlikely to occur
Gila rockdaisy (*Perityle gilensis* var. *gilensis*)	TNF: SCC	None	None	Along U.S. Route 60 (U.S. 60) west of Superior (1926–1976); west of Superior (1977); northeast of Oak Flat Campground (1965)	Occurs in rock crevices and small pockets of soils near vertical cliffs, associated with Arizona upland Sonoran Desert and chaparral just below pinyon pine at elevations ranging from 1,529–4,170 feet amsl.	Gila, Pinal, and Maricopa Counties.	Known to occur	Known to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Grand Canyon century plant (*Agave phillipsiana*)	TNF: SCC	None	None	None	Occurs in terraces along permanent waterways and on sandy, gravelly, or rocky soils at elevations ranging from 2,300–3,740 feet amsl in desert, grassland, and chaparral vegetation communities. The single occurrence in Gila County occurs between Walnut and Oak Creeks west of the Sierra Ancha Mountains.	Coconino, Yavapai, and Gila Counties.	Unlikely to occur	Unlikely to occur
Hodgson's fleabane (*Erigeron hodgsoniae*)	TNF: SCC	None	None	None	Occurs on cliff faces and steep canyon walls at elevations ranging from 3,800–4,000 feet amsl among oak, juniper, manzanita (*Arctostaphylos*), and pine species.	Gila County: Cold Water Canyon, Sierra Ancha Mountains.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Hohokam agave, also known as Murphey agave (*Agave murpheyi*)	TNF: S, SCC AZNPL: HS	Queen Creek: west of Superior (1941)	Yes, Queen Creek (WestLand 2017a)	None	Mountainous slopes in dry chaparral and desert areas, also near drainage systems in desertscrub. Elevation between 1,300–2,400 feet amsl.	Gila, Maricopa, Pinal, and Yavapai Counties.	Unlikely to occur	Unlikely to occur
Horseshoe deer, vetch also known as Mearns' bird-foot trefoil (*Lotus mearnsii* var. *equisolensis*)	TNF: S, SCC	None	None	None	Occurs only on lacustrine deposits composed of limestone and ash and in calciferous/limestone soils within desertscrub vegetation communities at 2,100–3,200 feet amsl.	Maricopa County.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Huachuca water-umbel (*Lilaeopsis schaffneriana* var. *recurva*)	ESA: E (Cochise, Graham, Pima, Pinal, and Santa Cruz Counties) with critical habitat. AZNPL: HS	None	None	None	Semi-aquatic to aquatic perennial found in shallow water or saturated soil of ciénegas or marshy wetlands at elevations between 4,000 and 6,500 feet amsl.	Known to occur in the Huachuca Mountains, Canelo Hills, headwaters of the Santa Cruz River downstream to Black Draw, and the San Pedro River in Cochise, Graham, Pima, Pinal, and Santa Cruz Counties.	Unlikely to occur	Unlikely to occur
James' rubberweed (*Hymenoxys jamesii*)	TNF: SCC	None	None	None	Occurs in ponderosa pine forests at elevations of 5,370–7,500 feet amsl.	Coconino, Navajo, Yavapai, and Gila Counties.	Unlikely to occur	Unlikely to occur
Mapleleaf false snapdragon (*Mabrya acerifolia*)	TNF: S, SCC	Superstition Mountains; Hewitt Wash (1977)	Yes, General Plan of Operations (GPO) Pipeline (WestLand 2008, 2017a)	Yes, Queen Creek	Occurs on rock overhangs, bare rock/talus/scree, and cliffs in Lower Sonoran Desert vegetation communities. Elevation between 1,800–3,350 feet amsl.	Maricopa and Pinal Counties; all localities in the Mesa Ranger District.	Possible to occur	Possible to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Marsh rosemary also known as Trans-Pecos sea lavender (*Limonium limbatum*)	TNF: SCC	None	None	None	Found on marshy ground, within cienegas, floodplains, saline wet grasslands, and roadside ditches at elevations between 3,000-6,000 feet amsl.	Gila and Graham Counties. Records on TNF are associated with the Salt River or Salt River Canyon.	Unlikely to occur	Unlikely to occur
Metcalfe's tick-trefoil (*Desmodium metcalfei*)	TNF: SCC	None	None	None	Rocky slopes and canyons in grasslands, oak woodlands, pinyon-juniper woodlands, and riparian areas from 2,760–8,200 feet amsl.	Yavapai, Greenlee, Gila, Santa Cruz, and Cochise Counties.	Unlikely to occur	Unlikely to occur
Mt. Dellenbaugh sandwort (*Arenaria aberrans*)	TNF: S, SCC	None	None	None	Associated with pinyon-juniper woodland and occasionally ponderosa pine forest and ponderosa pine-evergreen oak associations; elevational range of 5,500–9,000 feet amsl.	Found throughout north and north-central Arizona; on TNF, found in Tonto Basin and Upper Salt local zones.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Nichol's Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*)	ESA: E (Maricopa, Pima and Pinal Counties); no designated critical habitat AZNPL: HS	None	None	None	Found on limestone substrates along dissected alluvial fans, inclined terraces and saddles, bajadas, and debris flow. It grows in open areas and partially to shaded areas underneath the canopy of shrubs and trees or shouldered next to rocks on steep slopes and within limestone outcrops. Occurs within the Upland Division of Sonoran desertscrub on 0% to 30% slopes with north-, west-, and south-facing exposures. Elevation between 2,400–4,000 feet amsl.	Endemic to the Sonoran Desert and occurs on isolated mountain ranges within south-central Arizona in Pima and Pinal Counties.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Parish's Indian mallow (*Abutilon parishii*)	TNF: S‡ AZNPL: SR	Arnett Creek (2017), Picketpost Mountain (2012), Bear Tank Canyon (2017), Queen Creek: Robles Canyon (2017)	Yes, Tailings Facility Pipeline Tailings site (WestLand 2008, 2017a)	None	Occurs in mesic situations in full sun within higher elevation Sonoran desertscrub, desert grassland, and Sonoran deciduous riparian forest. Elevational range 3,000–4,800 feet amsl.	Found in Maricopa, Gila, Pima, Pinal, Santa Cruz, and Yavapai Counties. Found in Superstition, Mineral Hills, and Dripping Springs Mountains.	Known to occur: tailings facility Possible to occur: West Plant Site borrow sites, MARRCO Unlikely to occur: East Plant Site	Unlikely to occur
Pinaleno Mountain rubberweed (*Hymenoxys ambigens* var. *ambigens*)	TNF: SCC†	None	None	None	Occurs in stony soils at elevations from 5,000–7,000 feet amsl.	Maricopa, Graham, and Gila Counties.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Ripley wild buckwheat (*Eriogonum ripleyi*)	TNF: S, SCC AZNPL: SR	None	None	None	Calcareous soils in Sonoran desertscrub and pinyon-juniper woodlands. Elevation between 2,000–6,000 feet amsl.	Known from Maricopa, Yavapai, Coconino, and Mohave Counties. Locations on TNF include Horseshoe Reservoir and Chalk Mountain.	Unlikely to occur	Unlikely to occur
Rusby's milkwort, also known as Hualapai milkwort (*Polygala rusbyi*)	TNF: S, SCC	None	None	None	Occurs in desert grasslands and juniper woodlands at 3,000–5,000 feet amsl.	Found only in central-western Arizona; on TNF, only found near the Horseshoe Dam (northeast of Phoenix).	Unlikely to occur	Unlikely to occur
Salt River rockdaisy (*Perityle gilensis* var. *salensis*)	TNF: S, SCC	None	None	None	Crevices on cliff faces, ledges and rock outcrops in habitats that are ecotonal between oak-juniper woodland and mountain mahogany (*Cercocarpus*)-oak scrub. Elevation between 3,000–3,800 feet amsl.	Only two known sites, along the Salt River Canyon in Gila County.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Sierra Ancha fleabane, also known as Mogollon fleabane (*Erigeron anchana*)	TNF: S, SCC	None	None	None	Rock crevices and ledges on boulders or on vertical cliff faces, usually in canyons. Granite cliff faces, chaparral through pine forests. Elevation between 3,500–7,000 feet amsl.	Found in Gila County in the Sierra Ancha, Superstition, and Mescal Mountains.	Unlikely to occur	Unlikely to occur
Tonto Basin agave (*Agave delamateri*)	TNF: S, SCC AZNPL: HS	None	None	None	Gravelly substrates in desertscrub vegetation communities. Elevation between 2,295–5,250 feet amsl.	Gila, Maricopa, and Yavapai Counties. On the TNF, found along foothills of Mazatzal and Sierra Ancha Mountains and near Sunflower.	Unlikely to occur	Unlikely to occur
Toumey's groundsel (*Packera neomexicana* var. *toumeyi*)	TNF: S, SCC	None	None	None	Found in oak chaparral and occasionally pine forest; elevational range of 3,000–9,000 feet amsl.	Cochise and Gila Counties; on TNF, found in the Pinal Mountains.	Unlikely to occur	Unlikely to occur

Common Name (Scientific Name)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Verde breadroot (*Pediomelum verdiensis*)	TNF: S‡, SCC†	None	None	None	High desertscrub on Verde limestone substrate, also compacted roadsides; elevational range of 3,200–4,350 feet amsl.	Yavapai County, mostly near Camp Verde with some collections upstream along Verde River.	Unlikely to occur	Unlikely to occur

Unless otherwise noted, range or habitat information is from the following sources: Arizona Game and Fish Department (2025); Forest Service (2017a); NRCS (2025); TNF (2000); U.S. Fish and Wildlife Service (2016).

Unless otherwise noted, occurrence data is from Arizona Game and Fish Department, transmitted on August 13, 2018, or from SEINet (2025).

* Status definitions are as follows:

AZNPL = Arizona Native Plant Law

SR = Salvage restricted. Plants are subject to damage and vandalism.

HS = Highly safeguarded. Plants are threatened for survival or are in danger of extinction.

ESA = Endangered Species Act

E = Endangered. Endangered species are those in imminent jeopardy of extinction. Take as defined under the ESA generally does not apply to listed plant species. Limited protection of listed plants is provided to the extent that the ESA prohibits the removal or possession of federally listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law. These prohibitions apply equally to live or dead plants, their progeny, and parts or products derived from them except for clearly labeled seeds of cultivated origin of threatened plants, which are exempt.

TNF = Tonto National Forest

S = Sensitive. Under the Tonto National Forest Land and Resource Management Plan (Forest Service 1985), sensitive species are those identified by a regional forester for which population viability is a concern, as evidenced by 1) significant current or predicted downward trends in population number or density or 2) significant current or predicted downward trends in habitat capability that would reduce the species' existing distribution.

SCC = Species of conservation concern. The *Tonto National Forest Land Management Plan* (Forest Service 2023) defines SCC as species that are native to and known to occur in the TNF and for which there are substantial concerns about the species' ability to persist within the TNF. These species are listed on the most recently published list of Species of Conservation Concern for the Tonto National Forest (Forest Service 2021).

There is substantial overlap between SCC and S. SWCA Environmental Consultants (SWCA) evaluated S and draft SCC for the FEIS, which was published in 2021. After publication of the FEIS, the publication of *Tonto National Forest Land Management Plan* (Forest Service 2023) resulted in the need for revision of the FEIS and this table. SWCA deleted no species or statuses from the table and added only species newly designated as SCC.

† SWCA evaluated this species as a draft SCC during initial analysis and FEIS publication; however, the species was not included as an SCC in the *Tonto National Forest Land Management Plan* (Forest Service 2023).

‡ SWCA evaluated this species as an S during initial analysis and FEIS publication; however, the species was not included as an SCC in the *Tonto National Forest Land Management Plan* (Forest Service 2023).

Table A1-3. Special-Status Plant Species Analyzed for Alternative 4 – Silver King

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Acuna cactus (*Echinomastus erectocentrus* var. *acunensis*)	ESA: E (Maricopa, Pinal, and Pima Counties), designated critical habitat AZNPL: HS	None	None	None	Occurs in valleys and on small knolls and gravel ridges of up to 30% slope in the Palo Verde-Saguaro Association of the Arizona Upland subdivision of the Sonoran desertscrub. Elevational range 1,198–3,773 feet amsl.	Found in Maricopa, western Pima, and Pinal Counties.	Unlikely to occur
Alamos deer vetch (*Lotus alamosanus*)	TNF: SCC†	None	None	None	This species is a wetland obligate that occurs in wet soils or sand in springs, seeps, and streams in canyons or meadows between 3,500– 5,500 feet amsl.	Found in southern Santa Cruz County and in the Superstition Mountains.	Unlikely to occur
Aravaipa sage, also known as Galiuro sage (*Salvia amissa*)	TNF: S, SCC	None	None	None	Shady canyon bottoms in stream floodplains in oak (*Quercus* spp.) or riparian woodlands. Elevational range 1,500–5,000 feet amsl.	Known to occur in south-central Arizona in several canyons in the Galiuro, Winchester, and Santa Catalina Mountains, and along Fish Creek in the Superstition Mountains.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Aravaipa woodfern (*Thelypteris puberula* var. *sonorensis*)	TNF: S, SCC	Devil's Canyon (1959)	None	None	Moist soil in the shade of boulders in mesic canyons. Elevational range 2,200–4,500 feet amsl.	Coconino, Maricopa, Pima, Pinal, and Yavapai Counties.	Unlikely to occur
Arizona bugbane (*Actaea arizonica*)	TNF: S, SCC AZNPL: HS	None	None	None	Mixed-conifer and high elevation riparian deciduous forests in deep shade and moist soils with high humus content, near perennial or intermittent streams or seeps, especially along bottoms and lower slopes of steep, narrow canyons. Elevation between 6,000–8,300 feet amsl.	Coconino, Kaibab, and Tonto National Forests in Central Arizona. On the TNF, species is only found in Sierra Ancha Mountains.	Unlikely to occur
Arizona cliffrose (*Purshia subintegra*)	ESA: E (Graham, Maricopa, Mohave, and Yavapai Counties), no designated critical habitat AZNPL: HS	None	None	None	Occurs at four widely separated areas across central Arizona, these sights differ slightly in elevation and associated vegetation. All sites have limestone soils derived from Tertiary lacustrine (lakebed) deposits. Elevation between 2,100–2,700 feet amsl.	Found in Maricopa, Yavapai, Mohave, and Graham Counties. In Maricopa County, species is restricted to Horseshoe Reservoir.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Arizona hedgehog cactus (*Echinocereus arizonicus* ssp. *arizonicus*)	ESA: E (Maricopa, Gila, and Pinal Counties); no designated critical habitat AZNPL: HS	Queen Creek (2011, 2014, 2015), Oak Flat (2013), Whitford Canyon (2014), Rock Creek (2018), Wood Camp Canyon (2015), Rawhide Canyon (2013), West Fork Pinto Creek: Iron Mountain (2010)	None	None	Found on dacite or granite bedrock, open slopes, in narrow cracks, between boulders, and in the understory of shrubs in the ecotone between Madrean Evergreen Woodland and Interior Chaparral. Elevation between 3,400–5,300 feet amsl.	In Gila and Pinal Counties, central Arizona. Found on the following TNF allotments: Bohme/Sleeping Beauty, Devil's Canyon, Millsite, Pinto Creek, and Bellevue.	Known to occur within 1,168.9 acres of suitable habitat where soils of igneous origin, primarily Shultze Granite and Dacite, are present
Arizona phlox (*Phlox amabilis*)	TNF: S‡	None	None	None	Open, exposed, limestone-rocky slopes within pinyon-juniper (*Pinus-Juniperus*) woodlands and ponderosa pine-Gambel oak (*Pinus ponderosa-Quercus gambelii*) communities; elevational range of 3,500–7,800 feet amsl.	Coconino, Gila, Graham, Mohave, Navajo, and Yavapai Counties; on TNF, found near Christopher Creek.	Unlikely to occur
Blumer's dock (*Rumex orthoneurus*)	TNF: S, SCC	None	None	None	Near perennial springs in unshaded meadows or along stream sides in canyons. In organic, moist soils. Elevation between 6,500–11,500 feet amsl.	Apache, Coconino, Cochise, Gila, and Graham Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Bristle-tipped aster (*Dieteria bigelovii* var. *mucronata*)	TNF: SCC†	None	None	None	High open meadows from 7,870– 9,840 feet amsl in spruce (*Picea* spp.) and pinyon-juniper woodlands.	Coconino and Gila Counties.	Unlikely to occur
Broadleaf lupine (*Lupinus latifolius* ssp. *leucanthus*)	TNF: SCC	None	None	None	Occurs along streams and moist soils of dry streambeds, in oak-cottonwood (*Quercus-Populus*), mixed shrub, and ponderosa pine forest communities. Elevational range 4,800–7,000 feet amsl.	Yavapai, Mohave, and Coconino Counties.	Unlikely to occur
Chihuahuan sedge (*Carex chihuahuensis*)	TNF: S, SCC	None	None	None	Stream banks, springs, and seeps. Elevation between 1,100–8,000 feet amsl.	Cochise, Gila, Graham, Pima, and Santa Cruz Counties. TNF: only found along Reynolds Creek.	Unlikely to occur
Chiricahua Mountain alumroot, also known as Arizona alumroot (*Heuchera glomerulata*)	TNF: S, SCC	None	None	None	Found on north-facing shaded rocky slopes, near seeps, springs, and riparian areas, often in humus soil. Elevation between 4,000–9,000 feet amsl in pine-oak, ponderosa pine, and mixed-conifer woodlands.	Apache, Cochise, Greenlee, Gila, Graham, and Navajo Counties. TNF: only found in Pinal Mountains.	May occur within 1.2 acres of suitable habitat where humus soils are present

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Cochise sedge, also known as Arizona giant sedge (*Carex ultra;* also *Carex spissa* var. *ultra*)	TNF: S, SCC	None	None	None	Found in shaded, moist soil near springs and streams on southeastern aspects in riparian and oak-pinyon (*Quercus* spp.-*Pinus* spp.) woodlands. Elevation between 2,000–6,000 feet amsl.	Apache, Cochise, Graham, Pima, Pinal, Santa Cruz, and Yavapai Counties. TNF: one occurrence along Tangle Creek.	Unlikely to occur
Davidson sage (*Salvia davidsonii*)	TNF: SCC	None	None	None	In Chihuahuan Desert and acacia (*Acacia* spp.)-dominated vegetation communities in rocky soils or wooded slopes from 1,600–9,514 feet amsl.	Coconino, Maricopa, Mohave, Cochise, and Greenlee Counties.	Unlikely to occur
Eastwood alumroot (*Heuchera eastwoodiae*)	TNF: S, SCC	None	None	None	Moist slopes in ponderosa pine forests and canyons. Elevation 5,000–8,000 feet amsl.	Coconino, Gila, Maricopa, and Yavapai Counties; on TNF, found in the Payson, Pleasant Valley, and Cave Creek Districts.	Unlikely to occur
Fish Creek fleabane (*Erigeron piscaticus*)	TNF: S, SCC AZNPL: SR	None	None	None	Gravelly and sandy washes in riparian vegetation communities. Elevation 2,250–3,500 feet amsl.	Maricopa, Graham, and Pima Counties; on TNF, found only along Fish Creek.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Fish Creek rockdaisy (*Perityle Saxicola*)	TNF: S, SCC	None	None	None	Cracks and crevices on very steep cliff faces, large boulders and rocky outcrops in canyons, and on buttes. Steep cliffs with generally east and northeast exposures, with slopes from 50%–100%. Elevational range 2,000–3,500 feet amsl.	Gila and Maricopa Counties. On TNF, occurs near Roosevelt Lake Dam and in Sierra Ancha Mountains; suspected to be in Superstition Mountains.	Unlikely to occur
Flagstaff beardtongue (*Penstemon nudiflorus*)	TNF: SCC	None	None	None	Dry ponderosa pine forests at elevations between 4,500–7,000 feet amsl.	Mohave, Coconino, Yavapai, Navajo, and Gila Counties.	Unlikely to occur
Gila rockdaisy (*Perityle gilensis* var. *gilensis*)	TNF: SCC	None	None	Along U.S. 60 west of Superior (1926–1976). West of Superior (1977). Northeast of Oak Flat Campground (1965).	Occurs in rock crevices and small pockets of soils near vertical cliffs, associated with Arizona upland Sonoran Desert and chaparral just below pinyon pine at elevations ranging from 1,529–4,170 feet amsl.	Gila, Pinal, and Maricopa Counties.	Known to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Grand Canyon century plant (*Agave phillipsiana*)	TNF: SCC	None	None	None	Occurs in terraces along permanent waterways and on sandy, gravelly, or rocky soils at elevations ranging from 2,300–3,740 feet amsl in desert, grassland, and chaparral vegetation communities. The single occurrence in Gila County occurs between Walnut and Oak Creeks west of the Sierra Ancha Mountains.	Coconino, Yavapai, and Gila Counties.	Unlikely to occur
Hodgson's fleabane (*Erigeron hodgsoniae*)	TNF: SCC	None	None	None	Occurs on cliff faces and steep canyon walls at elevations ranging from 3,800–4,000 feet amsl among oak, juniper, manzanita (*Arctostaphylos* spp.), and pine species.	Gila County: Cold Water Canyon, Sierra Ancha Mountains.	Unlikely to occur
Hohokam agave, also known as Murphey agave (*Agave murpheyi*)	TNF: S, SCC AZNPL: HS	Queen Creek: west of Superior (1941)	None	None	Mountainous slopes in dry chaparral and desert areas, also near drainage systems in desertscrub. Elevation 1,300–2,400 feet amsl.	Gila, Maricopa, Pinal, and Yavapai Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Horseshoe deer, vetch also known as Mearns' bird-foot trefoil (*Lotus mearnsii* var. *equisolensis*)	TNF: S, SCC	None	None	None	Occurs only on lacustrine deposits composed of limestone and ash and in calciferous/limestone soils within desertscrub vegetation communities at 2,100–3,200 feet amsl.	Maricopa County.	Unlikely to occur
Huachuca water-umbel (*Lilaeopsis schaffneriana* var. *recurva*)	ESA: E (Cochise, Graham, Pima, Pinal, and Santa Cruz Counties) with critical habitat AZNPL: HS	None	None	None	Semi-aquatic to aquatic perennial found in shallow water or saturated soil of ciénegas or marshy wetlands at elevations between 4,000 and 6,500 feet amsl.	Known to occur in the Huachuca Mountains, Canelo Hills, headwaters of the Santa Cruz River downstream to Black Draw, and the San Pedro River in Cochise, Graham, Pima, Pinal, and Santa Cruz Counties.	Unlikely to occur
James' rubberweed (*Hymenoxys jamesii*)	TNF: SCC	None	None	None	Occurs in ponderosa pine forests at elevations of 5,370–7,500 feet amsl.	Coconino, Navajo, Yavapai, and Gila Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Mapleleaf false snapdragon (*Mabrya acerifolia*)	TNF: S, SCC	Superstition Mountains; Hewitt Wash (1977)	Yes, GPO Pipeline (WestLand 2008, 2017)	Yes, Queen Creek	Occurs on rock overhangs, bare rock/talus/scree, and cliffs in Lower Sonoran Desert vegetation communities. Elevation 1,800–3,350 feet amsl.	Maricopa and Pinal Counties; all localities occur in the Mesa Ranger District.	Possible to occur
Marsh rosemary, also known as Trans-Pecos sea lavender (*Limonium limbatum*)	TNF: SCC	None	None	None	Found on marshy ground, within cienegas, floodplains, saline wet grasslands, and roadside ditches at elevations between 3,000-6,000 feet amsl.	Gila and Graham Counties. Records on TNF are associated with the Salt River or Salt River Canyon.	Unlikely to occur
Metcalfe's tick-trefoil (*Desmodium metcalfei*)	TNF: SCC	None	None	None	Rocky slopes and canyons in grasslands, oak woodlands, pinyon-juniper woodlands, and riparian areas from 2,760–8,200 feet amsl.	Yavapai, Greenlee, Gila, Santa Cruz, and Cochise Counties.	Unlikely to occur
Mt. Dellenbaugh sandwort (*Eremogone aberrans*)	TNF: S, SCC	None	None	None	Associated with pinyon-juniper woodland and occasionally ponderosa pine forest and ponderosa pine-evergreen oak associations; elevational range 5,500–9,000 feet amsl.	Found throughout north and north-central Arizona; on TNF, found in Tonto Basin and Upper Salt local zones.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Nichol's Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*)	ESA: E (Maricopa, Pima, and Pinal Counties); no designated critical habitat AZNPL: HS	None	None	None	Found on limestone substrates along dissected alluvial fans, inclined terraces and saddles, bajadas, and debris flow. It grows in open areas and partially to shaded areas underneath the canopy of shrubs and trees or shouldered next to rocks on steep slopes and within limestone outcrops. Occurs within the Upland Division of Sonoran desertscrub on 0% to 30% slopes with north-, west-, and south-facing exposures. Elevation 2,400–4,000 feet amsl.	Endemic to the Sonoran Desert and occurs on isolated mountain ranges within south-central Arizona in Pima and Pinal Counties.	Unlikely to occur
Parish's Indian mallow (*Abutilon parishii*)	TNF: S‡ AZNPL: SR	Arnett Creek (2017), Picketpost Mountain (2012), Bear Tank Canyon (2017), Queen Creek: Robles Canyon (2017)	Yes, observed in project vicinity but not project area	None	Occurs in mesic situations in full sun within higher elevation Sonoran desertscrub, desert grassland, and Sonoran deciduous riparian forest. Elevational range 3,000–4,800 feet amsl.	Found in Maricopa, Gila, Pima, Pinal, Santa Cruz, and Yavapai Counties. Found in Superstition, Mineral Hills, and Dripping Springs Mountains.	Possible to occur at the West Plant Site, borrow sites, tailings storage facility, and in the Magma Arizona Railroad Company corridor
Pinaleno Mountain rubberweed (*Hymenoxys ambigens* var. *ambigens*)	TNF: SCC†	None	None	None	Occurs in stony soils at elevations from 5,000–7,000 feet amsl.	Maricopa, Graham, and Gila Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Pringle's fleabane (*Erigeron pringlei*)	TNF: SCC	None	None	None	Ledges of cliffs and rock crevices in canyons, near springs, and in shaded canyons. Elevation 3,500–7,000 feet amsl in chaparral, pinyon-juniper, and pine-oak forests.	Found in Coconino, Gila, Graham, and Santa Cruz Counties.	Unlikely to occur
Ripley wild buckwheat (*Eriogonum ripleyi*)	TNF: S, SCC AZNPL: SR	None	None	None	Calcareous soils in Sonoran desertscrub and pinyon-juniper woodlands. Elevation 2,000–6,000 feet amsl.	Known from Maricopa, Yavapai, Coconino, and Mohave Counties. Locations on TNF include Horseshoe Reservoir and Chalk Mountain.	Unlikely to occur
Rusby's milkwort, also known as Hualapai milkwort (*Polygala rusbyi*)	TNF: S, SCC	None	None	None	Occurs in desert grasslands and juniper woodlands at 3,000–5,000 feet amsl.	Found only in central-western Arizona; on TNF, only found near the Horseshoe Dam (northeast of Phoenix).	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Salt River rockdaisy (*Perityle gilensis* var. *salensis*)	TNF: S, SCC	None	None	None	Crevices on cliff faces, ledges and rock outcrops in habitats that are ecotonal between oak-juniper woodland and mountain mahogany-oak (*Cercocarpus-Quercus*) scrub. Elevation 3,000–3,800 feet amsl.	Only two known sites along the Salt River Canyon in Gila County.	Unlikely to occur
Sierra Ancha fleabane, also known as Mogollon fleabane (*Erigeron anchana*)	TNF: S, SCC	None	None	None	Rock crevices and ledges on boulders or on vertical cliff faces, usually in canyons. Granite cliff faces, chaparral through pine forests. Elevation 3,500–7,000 feet amsl.	Found in Gila County in the Sierra Ancha, Superstition, and Mescal Mountains.	Unlikely to occur
Tonto Basin agave (*Agave delamateri*)	TNF: S, SCC AZNPL: HS	None	None	None	Gravelly substrates in desertscrub vegetation communities. Elevation 2,295–5,250 feet amsl.	Gila, Maricopa, and Yavapai Counties. On the TNF, found along foothills of Mazatzal and Sierra Ancha Mountains and near Sunflower.	Unlikely to occur
Toumey's groundsel (*Packera neomexicana* var. *toumeyi*)	TNF: S, SCC	None	None	None	Found in oak chaparral and occasionally pine forest; elevational range of 3,000–9,000 feet amsl.	Cochise and Gila Counties; on TNF, found in the Pinal Mountains.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Silver King Alternative Area
Verde breadroot (*Pediomelum verdiensis*)	TNF: S, ‡ SCC†	None	None	None	High desertscrub on Verde limestone substrate, also compacted roadsides; elevational range of 3,200–4,350 feet amsl.	Yavapai County, mostly near Camp Verde with some collections upstream along Verde River.	Unlikely to occur

Unless otherwise noted, range or habitat information is from the following sources: Arizona Game and Fish Department (2025); Forest Service (2017a); NRCS (2025); TNF (2000); U.S. Fish and Wildlife Service (2016).

Unless otherwise noted, occurrence data is from Arizona Game and Fish Department, transmitted on August 13, 2018, or from SEINet (2025).

* Status definitions are as follows:

AZNPL = Arizona Native Plant Law

SR = Salvage restricted. Plants are subject to damage and vandalism.

HS = Highly safeguarded. Plants are threatened for survival or are in danger of extinction.

ESA = Endangered Species Act

E = Endangered. Endangered species are those in imminent jeopardy of extinction. Take as defined under the ESA generally does not apply to listed plant species. Limited protection of listed plants is provided to the extent that the ESA prohibits the removal or possession of federally listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law. These prohibitions apply equally to live or dead plants, their progeny, and parts or products derived from them except for clearly labeled seeds of cultivated origin of threatened plants, which are exempt.

TNF = Tonto National Forest

S = Sensitive. Under the Tonto National Forest Land and Resource Management Plan (Forest Service 1985), sensitive species are those identified by a regional forester for which population viability is a concern, as evidenced by 1) significant current or predicted downward trends in population number or density or 2) significant current or predicted downward trends in habitat capability that would reduce the species' existing distribution.

SCC = Species of conservation concern. The *Tonto National Forest Land Management Plan* (Forest Service 2023) defines SCC as species that are native to and known to occur in the TNF and for which there are substantial concerns about the species' ability to persist within the TNF. These species are listed on the most recently published list of Species of Conservation Concern for the Tonto National Forest (Forest Service 2021).

There is substantial overlap between SCC and S. SWCA Environmental Consultants (SWCA) evaluated S and draft SCC for the FEIS, which was published in 2021. After publication of the FEIS, the publication of *Tonto National Forest Land Management Plan* (Forest Service 2023) resulted in the need for revision of the FEIS and this table. SWCA deleted no species or statuses from the table and added only species newly designated as SCC.

† SWCA evaluated this species as a draft SCC during initial analysis and FEIS publication; however, the species was not included as an SCC in the *Tonto National Forest Land Management Plan* (Forest Service 2023).

‡ SWCA evaluated this species as an S during initial analysis and FEIS publication; however, the species was not included as an SCC in the *Tonto National Forest Land Management Plan* (Forest Service 2023).

Table A1-4. Special-Status Plant Species Analyzed for Alternative 5 – Peg Leg

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Acuna cactus (*Echinomastus erectocentrus* var. *acunensis*)	ESA: E (Maricopa, Pinal, and Pima Counties), designated critical habitat AZNPL: HS BLM: S	Florence vicinity: Ninety-six Hills (2006), south of Mineral Mountain (2011)	None	None	Occurs in valleys and on small knolls and gravel ridges of up to 30% slope in the Palo Verde-Saguaro Association of the Arizona Upland subdivision of the Sonoran desertscrub. Elevational range 1,198–3,773 feet amsl.	Found in Maricopa, western Pima, and Pinal Counties.	May occur within 23,783.5 acres of suitable habitat where small knolls and gravel ridges of up to 30% slope are present
Alamos deer vetch (*Lotus alamosanus*)	TNF: SCC†	None	None	None	This species is a wetland obligate that occurs in wet soils or sand in springs, seeps, and streams in canyons or meadows between at 3,500–5,500 feet amsl.	Found in southern Santa Cruz County and in the Superstition Mountains.	Unlikely to occur
Aravaipa sage, also known as Galiuro sage (*Salvia amissa*)	BLM: S TNF: S, SCC	None	None	None	Shady canyon bottoms in stream floodplains in oak (*Quercus* spp.) or riparian woodlands. Elevational range 1,500–5,000 feet amsl.	Known to occur in south-central Arizona in several canyons in the Galiuro, Winchester, and Santa Catalina Mountains, and along Fish Creek in the Superstition Mountains.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Aravaipa woodfern (*Thelypteris puberula* var. *sonorensis*)	BLM: S TNF: S, SCC	Devil's Canyon (1959)	None	None	Moist soil in the shade of boulders in mesic canyons. Elevational range 2,200–4,500 feet amsl.	Coconino, Maricopa, Pima, Pinal, and Yavapai Counties.	Unlikely to occur
Arizona bugbane (*Actaea arizonica*)	TNF: S, SCC AZNPL: HS	None	None	None	Mixed-conifer and high elevation riparian deciduous forests in deep shade and moist soils with high humus content, near perennial or intermittent streams or seeps, especially along bottoms and lower slopes of steep, narrow canyons. Elevation 6,000–8,300 feet amsl.	Coconino, Kaibab, and Tonto National Forests in Central Arizona. On the TNF, species is only found in Sierra Ancha Mountains.	Unlikely to occur
Arizona cliffrose (*Purshia subintegra*)	ESA: E (Graham, Maricopa, Mohave, and Yavapai Counties), no designated critical habitat AZNPL: HS	None	None	None	Occurs at four widely separated areas across central Arizona, these sights differ slightly in elevation and associated vegetation. All sites have limestone soils derived from Tertiary lacustrine (lakebed) deposits. Elevation 2,100–2,700 feet amsl.	Found in Maricopa, Yavapai, Mohave, and Graham Counties. In Maricopa County, species is restricted to Horseshoe Reservoir.	Unlikely to occur
Arizona eryngo (*Eryngium sparganophyllum*)	ESA: E (Cochise and Pima Counties); with designated critical habitat BLM: S	None	None	None	Riparian zones and marshes within Pinyon-Juniper (*Pinus-Juniperus*) Woodland and Madrean Evergreen Woodland. Elevation 3,000–8,000 plus feet amsl.	Cochise and Pima Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Arizona hedgehog cactus (*Echinocereus arizonicus* ssp. *arizonicus*)	ESA: E (Maricopa, Gila, and Pinal Counties); no designated critical habitat BLM: S AZNPL: HS	Queen Creek (2011, 2014, 2015), Oak Flat (2013), Whitford Canyon (2014), Rock Creek (2018), Wood Camp Canyon (2015), Rawhide Canyon (2013)	None	None	Found on dacite or granite bedrock, open slopes, in narrow cracks, between boulders, and in the understory of shrubs in the ecotone between Madrean Evergreen Woodland and Interior Chaparral. Elevation 3,400–5,300 feet amsl.	In Gila and Pinal Counties, central Arizona.	Known to occur within 1,936.1 acres of suitable habitat where soils of igneous origin, primarily Shultze Granite and Dacite, are present
Arizona phlox (*Phlox amabilis*)	TNF: S‡	None	None	None	Open, exposed, limestone-rocky slopes within pinyon-juniper woodlands and ponderosa pine-Gambel oak (*Pinus ponderosa-Quercus gambelii*) communities; elevational range 3,500–7,800 feet amsl.	Coconino, Gila, Graham, Mohave, Navajo, and Yavapai Counties; on TNF, found near Christopher Creek.	Unlikely to occur
Arizona Sonoran rosewood (*Vauquelinia californica* ssp. *sonorensis*)	BLM: S AZNPL: SR	None	None	None	Woodland or forest at base of cliffs, along canyon bottoms and on moderate to steep slopes of the Ajo Mountains. Elevation 2,300–4,800 feet amsl.	Maricopa and Pima, Counties.	Unlikely to occur
Bartram stonecrop (*Graptopetalum bartramii*)	ESA: T (Cochise, Pima, and Santa Cruz Counties); no designated critical habitat	None	None	None	Sky island species growing on rocky outcrops along arroyos and canyons, often in shade and litter with Madrean evergreen woodland. Elevation 3,900–6,700 feet amsl.	Cochise, Pima, and Santa Cruz Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
	BLM: S AZNPL: SR						
Blumer's dock (*Rumex orthoneurus*)	TNF: S, SCC	None	None	None	Near perennial springs in unshaded meadows or along stream sides in canyons. In organic, moist soils. Elevation 6,500–11,500 feet amsl.	Apache, Coconino, Cochise, Gila, and Graham Counties.	Unlikely to occur
Bristle-tipped aster (*Dieteria bigelovii* var. *mucronata*)	TNF: SCC†	None	None	None	High open meadows from 7,870– 9,840 feet amsl in spruce (*Picea* spp.) and pinyon-juniper woodlands.	Coconino and Gila Counties.	Unlikely to occur
Broadleaf lupine (*Lupinus latifolius* ssp. *leucanthus*)	TNF: SCC	None	None	None	Occurs along streams and moist soils of dry streambeds, in oak-cottonwood (*Quercus* spp.-*Populus* spp.), mixed shrub, and ponderosa pine forest communities. Elevational range 4,800–7,000 feet amsl.	Yavapai, Mohave, and Coconino Counties.	Unlikely to occur
Chihuahua breadroot, also known as scurfpea (*Pediomelum pentaphyllum*)	BLM: S	None	None	None	Sandy, loamy soils in desert grasslands; elevational range 3,600–4,500 feet amsl.	Cochise and Graham Counties.	Unlikely to occur
Chihuahuan sedge (*Carex chihuahuensis*)	TNF: S, SCC	None	None	None	Stream banks, springs, and seeps. Elevation 1,100–8,000 feet amsl.	Cochise, Gila, Graham, Pima, and Santa Cruz Counties. TNF: only	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
						found along Reynolds Creek.	
Chiricahua Mountain alumroot, also known as Arizona alumroot (*Heuchera glomerulata*)	TNF: S, SCC	None	None	None	Found on north-facing shaded rocky slopes, near seeps, springs, and riparian areas, often in humus soil. Elevation 4,000–9,000 feet amsl in pine-oak (*Pinus-Quercus*), ponderosa pine, and mixed-conifer woodlands**.**	Apache, Cochise, Greenlee, Gila, Graham, and Navajo Counties. TNF: only found in Pinal Mountains.	Unlikely to occur within 1.2 acres of suitable habitat where humus soils are present
Cochise sedge, also known as Arizona giant sedge (*Carex ultra;* also *Carex spissa* var. *ultra*)	TNF: S, SCC	None	None	None	Found in shaded, moist soil near springs and streams on southeastern aspects in riparian and oak-pinyon woodlands. Elevation 2,000–6,000 feet amsl.	Apache, Cochise, Graham, Pima, Pinal, Santa Cruz, and Yavapai Counties. TNF: one occurrence along Tangle Creek.	Unlikely to occur
Countess Dalhousie's spleenwort (*Asplenium dalhousiae*)	BLM: S	None	None	None	Moist, rocky ravines, terrestrial among and at bases of rocks. Elevation 4,000–6,000 feet amsl.	Cochise and Pima Counties, only found in the Mule, Huachuca, and Baboquivari mountains of southern Arizona.	Unlikely to occur
Davidson sage (*Salvia davidsonii*)	TNF: SCC	None	None	None	In Chihuahuan Desert and acacia (*Acacia* spp.)-dominated vegetation	Coconino, Maricopa, Mohave, Cochise,	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
					communities in rocky soils or wooded slopes from 1,600–9,514 feet amsl.	and Greenlee Counties.	
Eastwood alumroot (*Heuchera eastwoodiae*)	TNF: S, SCC	None	None	None	Moist slopes in ponderosa pine forests and canyons. Elevation 5,000–8,000 feet amsl.	Coconino, Gila, Maricopa, and Yavapai Counties; on TNF, found in the Payson, Pleasant Valley, and Cave Creek Districts.	Unlikely to occur
Fish Creek fleabane (*Erigeron piscaticus*)	BLM: S TNF: S, SCC AZNPL: SR	None	None	None	Gravelly and sandy washes in riparian vegetation communities. Elevation 2,250–3,500 feet amsl.	Maricopa, Graham, and Pima Counties.	Unlikely to occur
Fish Creek rockdaisy (*Perityle saxicola*)	TNF: S, SCC	None	None	None	Cracks and crevices on very steep cliff faces, large boulders, and rocky outcrops in canyons and on buttes. Steep cliffs with generally east and northeast exposures, with slopes from 50% to 100%. Elevational range 2,000–3,500 feet amsl.	Gila and Maricopa Counties. On TNF, occurs near Roosevelt Lake Dam and in Sierra Ancha Mountains, suspected to be in Superstition Mountains.	Unlikely to occur
Flagstaff beardtongue (*Penstemon nudiflorus*)	TNF: SCC	None	None	None	Dry ponderosa pine forests at elevations 4,500–7,000 feet amsl.	Mohave, Coconino, Yavapai, Navajo, and Gila Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Flannel bush (*Fremontodendron californicum*)	AZNPL: SR BLM: S	None	None	None	Occurs in well-drained rocky hillsides and ridges, in chaparral and oak/pine woodlands. Elevational range 1,312–6,562 feet amsl.	Gila, Maricopa, Mohave, Pinal, and Yavapai Counties.	Unlikely to occur
Gentry's indigobush (*Dalea tentaculoides*)	BLM: S AZNPL: HS	None	None	None	Canyon bottoms on cobble terraces subject to occasional flooding, in sandy, gravelly loam Rhyolite parent material. Elevation 3,600–4,600 feet amsl.	Pima and Santa Cruz Counties.	Unlikely to occur
Gila rockdaisy (*Perityle gilensis* var. *gilensis*)	TNF: SCC	None	None	Along U.S. 60 west of Superior (1926–1976). West of Superior (1977). Northeast of Oak Flat Campground (1965).	Occurs in rock crevices and small pockets of soils near vertical cliffs, associated with Arizona upland Sonoran Desert and chaparral just below pinyon pine at elevations ranging from 1,529–4,170 feet amsl.	Gila, Pinal, and Maricopa Counties.	Known to occur
Grand Canyon century plant (*Agave phillipsiana*)	TNF: SCC	None	None	None	Occurs in terraces along permanent waterways and on sandy, gravelly, or rocky soils at elevations ranging from 2,300–3,740 feet amsl in desert, grassland, and chaparral vegetation communities. The single occurrence in Gila County occurs	Coconino, Yavapai, and Gila Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
					between Walnut and Oak Creeks west of the Sierra Ancha Mountains.		
Hodgson's fleabane (*Erigeron hodgsoniae*)	TNF: SCC	None	None	None	Occurs on cliff faces and steep canyon walls at elevations ranging from 3,800–4,000 feet amsl among oak, juniper, manzanita (*Arctostaphylos* spp.), and pine species.	Gila County, Cold Water Canyon, Sierra Ancha Mountains.	Unlikely to occur
Hohokam agave, also known as Murphey agave (*Agave murpheyi*)	BLM: S TNF: S, SCC AZNPL: HS	Queen Creek: west of Superior (1941)	None	None	Mountainous slopes in dry chaparral and desert areas, also near drainage systems in desertscrub. Elevation 1,300–2,400 feet amsl.	Gila, Maricopa, Pinal, and Yavapai Counties.	Possible to occur
Horseshoe deer vetch, also known as Mearns' bird-foot trefoil (*Lotus mearnsii* var. *equisolensis*)	TNF: S, SCC	None	None	None	Occurs only on lacustrine deposits composed of limestone and ash and in calciferous/limestone soils within desertscrub vegetation communities at 2,100–3,200 feet amsl.	Maricopa County.	Unlikely to occur
Huachuca golden aster (*Heterotheca rutteri*)	BLM: S	None	None	None	Level, open grassland. Grows on roadcuts and disturbed sites. Elevation 4,500–6,500 feet amsl.	Cochise, Santa Cruz, and Pima Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Huachuca Mountain milkvetch (*Astragalus hypoxylus*)	BLM: S AZNPL: SR	None	None	None	Oak woodland with south to southwest exposures. Elevation 5,300–6,100 feet amsl.	Occurs only in Huachuca and Patagonia Mountains.	Unlikely to occur
Huachuca water-umbel (*Lilaeopsis schaffneriana* var. *recurva*)	ESA: E (Cochise, Pima, and Santa Cruz Counties); no designated critical habitat BLM: S AZNPL: HS	None	None	None	Semi-aquatic to aquatic perennial found in shallow water or saturated soil of ciénegas or marshy wetlands at elevations between 4,000 and 6,500 feet amsl.	Known to occur in the Huachuca Mountains, Canelo Hills, headwaters of the Santa Cruz River downstream to Black Draw, and the San Pedro River in Cochise, Graham, Pima, Pinal, and Santa Cruz Counties.	Unlikely to occur
James' rubberweed (*Hymenoxys jamesii*)	TNF: SCC	None	None	None	Occurs in ponderosa pine forests at elevations of 5,370–7,500 feet amsl.	Coconino, Navajo, Yavapai, and Gila Counties.	Unlikely to occur
Kearney's blue star (*Amsonia kearneyana*)	BLM: S AZNPL: HS	None	None	None	Dry, open, slopes in Madrean evergreen woodlands/interior chaparral transition zone; elevational range of 4,000–6,000 feet amsl.	Found only on western slopes of Baboquivari Mountains in Pima county.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Lace-leaf rockdaisy (*Perityle ambrosiifolia*)	BLM: S	None	None	None	In fissures and crevices of north- or east-facing cliffs and canyon walls; conglomerate, sandstone, or rhyolite rock, often near seeps and waterfalls. Found within pinyon-juniper grassland communities. Elevation 1,640–4,900 feet amsl.	On cliffs above Eagle Creek and San Francisco River in Greenlee County.	Unlikely to occur
Mapleleaf false snapdragon (*Mabrya acerifolia*)	TNF: S, SCC	Superstition Mountains; Hewitt Wash (1977)	Yes, GPO Pipeline (WestLand 2008, 2017)	Yes, Queen Creek	Occurs on rock overhangs, bare rock/talus/scree, and cliffs in Lower Sonoran Desert vegetation communities. Elevation 1,800–3,350 feet amsl.	Maricopa and Pinal Counties; all localities occur in the Mesa Ranger District.	Possible to occur
Marsh rosemary also known as Trans-Pecos sea lavender (*Limonium limbatum*)	TNF: SCC	None	None	None	Found on marshy ground, within cienegas, floodplains, saline wet grasslands, and roadside ditches at elevations between 3,000-6,000 feet amsl.	Gila and Graham Counties. Records on TNF are associated with the Salt River or Salt River Canyon.	Unlikely to occur
Metcalfe's tick-trefoil (*Desmodium metcalfei*)	TNF: SCC	None	None	None	Rocky slopes and canyons in grasslands, oak woodlands, pinyon-juniper woodlands, and riparian areas from 2,760–8,200 feet amsl.	Yavapai, Greenlee, Gila, Santa Cruz, and Cochise Counties.	Unlikely to occur
Mt. Dellenbaugh sandwort (*Eremogone aberrans*)	TNF: S, SCC	None	None	None	Associated with pinyon-juniper woodland and occasionally ponderosa pine forest and ponderosa pine-evergreen oak associations;	Found throughout north and north-central Arizona; on TNF, found in Tonto	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
					elevational range of 5,500–9,000 feet amsl.	Basin and Upper Salt local zones.	
Nichol's Turk's head cactus (*Echinocactus horizonthaloniu s* var. *nicholii*)	ESA: E (Maricopa, Pima, and Pinal Counties); no designated critical habitat BLM: S AZNPL: HS	None	None	None	Found on limestone substrates along dissected alluvial fans, inclined terraces and saddles, bajadas, and debris flow. It grows in open areas and partially to shaded areas underneath the canopy of shrubs and trees or shouldered next to rocks on steep slopes and within limestone outcrops. Occurs within the Upland Division of Sonoran desertscrub on 0% to 30% slopes with north-, west-, and south-facing exposures. Elevation 2,400–4,000 feet amsl.	Endemic to the Sonoran Desert and occurs on isolated mountain ranges within south-central Arizona in Pima and Pinal Counties.	Unlikely to occur
Parish's Indian mallow (*Abutilon parishii*)	BLM: S TNF: S‡AZNPL: SR	Arnett Creek (2017), Picketpost Mountain (2012), Bear Tank Canyon (2017), Queen Creek: Robles Canyon (2017)	None	None	Occurs in mesic situations in full sun within higher elevation Sonoran desertscrub, desert grassland, and Sonoran deciduous riparian forest. Elevational range 3,000–4,800 feet amsl.	Found in Maricopa, Gila, Pima, Pinal, Santa Cruz, and Yavapai Counties. Found in Superstition, Mineral Hills, and Dripping Springs Mountains.	Possible to occur at the West Plant Site, borrow sites, and in the Magma Arizona Railroad Company corridor
Peebles Navajo cactus (*Pediocactus peeblesianus*	ESA: E (Navajo County) BLM: S AZNPL: HS	None	None	None	Weakly alkaline, gravelly soils where the host gravel can occur on a variety of substrates. Elevation 5,100–5,600 feet amsl.	Central Navajo County, near Holbrook.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
var. *peeblesianus*)							
Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*)	BLM: S AZNPL: HS	None	None	None	Alluvial valleys, mesas, and hillsides in desert, desert grassland, or southwestern oak woodlands. Soils range from shallow to deep, and silty to rocky, with a preference for silty to gravelly deep alluvial soils. Elevation 2,300–5,000 feet amsl.	Pima and Santa Cruz Counties.	Unlikely to occur
Pinaleno Mountain rubberweed (*Hymenoxys ambigens* var. *ambigens*)	TNF: SCC†	None	None	None	Occurs in stony soils at elevations from 5,000–7,000 feet amsl.	Maricopa, Graham, and Gila Counties.	Unlikely to occur
Pringle's fleabane (*Erigeron pringlei*)	TNF: SCC	None	None	None	Ledges of cliffs and rock crevices in canyons, near springs and in shaded canyons. Elevation 3,500–7,000 feet amsl in chaparral, pinyon-juniper, and pine-oak forests.	Found in Coconino, Gila, Graham, and Santa Cruz Counties.	Unlikely to occur
Ripley wild buckwheat (*Eriogonum ripleyi*)	TNF: S, SCC AZNPL: SR	None	None	None	Calcareous soils in Sonoran desertscrub and pinyon-juniper woodlands. Elevation 2,000–6,000 feet amsl.	Known from Maricopa, Yavapai, Coconino, and Mohave Counties. Locations on TNF include Horseshoe	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
						Reservoir and Chalk Mountain.	
Round dunebroom (*Errazurizia rotundata*)	BLM: S AZNPL: SR	None	None	None	Sandy areas or in crevices of rock on rocky hilltops and ledges; elevational range of 4,620–5,200 feet amsl.	Coconino and Navajo Counties.	Unlikely to occur
Rusby's milkwort, also known as Hualapai milkwort (*Polygala rusbyi*)	TNF: S, SCC	None	None	None	Occurs in desert grasslands and juniper woodlands at 3,000–5,000 feet amsl.	Found only in central-western Arizona; on TNF, only found near the Horseshoe Dam (northeast of Phoenix).	Unlikely to occur
Salt River rockdaisy (*Perityle gilensis* var. *salensis*)	TNF: S, SCC	None	None	None	Crevices on cliff faces, ledges and rock outcrops in habitats that are ecotonal between oak-juniper woodland and mountain mahogany-oak (*Cercocarpus-Quercus*) scrub. Elevation 3,000–3,800 feet amsl.	Only two known sites along the Salt River Canyon in Gila County.	Unlikely to occur
San Pedro River wild buckwheat (*Eriogonum terrenatum*)	BLM: S	None	None	None	Gravelly soil in creosote bush (*Larrea tridentata*) communities; elevational range of 3,520–3,914 feet amsl.	Pima and Cochise Counties.	Unlikely to occur
Sierra Ancha fleabane, also known as	TNF: S, SCC	None	None	None	Rock crevices and ledges on boulders or on vertical cliff faces, usually in canyons. Granite cliff	Found in Gila County in the Sierra Ancha,	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Mogollon fleabane (*Erigeron anchana*)					faces, chaparral through pine forests. Elevation 3,500–7,000 feet amsl.	Superstition, and Mescal Mountains.	
Texas purple-spike (*Hexalectris warnockii*)	BLM: S AZNPL: HS	None	None	None	In humus beneath rocks and fallen oaks along streambeds; elevational range of 5,000–7,000 feet amsl.	Found only in Cochise County.	Unlikely to occur
Tonto Basin agave (*Agave delamateri*)	TNF: S, SCC AZNPL: HS	None	None	None	Gravelly substrates in desertscrub vegetation communities. Elevation 2,295–5,250 feet amsl.	Gila, Maricopa, and Yavapai Counties. On the TNF, found along foothills of Mazatzal and Sierra Ancha Mountains and near Sunflower.	Unlikely to occur
Toumey's groundsel (*Packera neomexicana* var. *toumeyi*)	TNF: S, SCC	None	None	None	Found in oak chaparral and occasionally pine forest; elevational range of 3,000–9,000 feet amsl.	Cochise and Gila Counties; on TNF, found in the Pinal Mountains.	Unlikely to occur
Tumamoc globeberry (*Tumamoca macdougalii*)	BLM: S AZNPL: SR	None	None	None	Xeric situations, in the shade of nurse plants along gullies and sandy washes of hills and valleys in Sonoran desertscrub; elevational range of below 3,000 feet amsl.	Found in extreme southern portions of Pinal and Maricopa Counties, widespread in Pima County.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Verde breadroot (*Pediomelum verdiensis*)	TNF: S,‡ SCC†	None	None	None	High desertscrub on Verde limestone substrate, also compacted roadsides; elevational range of 3,200–4,350 feet amsl.	Yavapai County, mostly near Camp Verde with some collections upstream along Verde River.	Unlikely to occur

Unless otherwise noted, range or habitat information is from the following sources: Arizona Game and Fish Department (2025); Forest Service (2017a); NRCS (2025); TNF (2000); U.S. Fish and Wildlife Service (2016).

Unless otherwise noted, occurrence data is from Arizona Game and Fish Department, transmitted on August 13, 2018, or from SEINet (2025).

* Status definitions are as follows:

AZNPL = Arizona Native Plant Law

SR = Salvage restricted. Plants are subject to damage and vandalism.

HS = Highly safeguarded. Plants are threatened for survival or are in danger of extinction.

BLM = Bureau of Land Management

S = Sensitive. Species could easily become endangered or extinct in the state (BLM 2017).

ESA = Endangered Species Act

E = Endangered. Endangered species are those in imminent jeopardy of extinction. Take as defined under the ESA generally does not apply to listed plant species. Limited protection of listed plants is provided to the extent that the ESA prohibits the removal or possession of federally listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law. These prohibitions apply equally to live or dead plants, their progeny, and parts or products derived from them except for clearly labeled seeds of cultivated origin of threatened plants, which are exempt.

TNF = Tonto National Forest

S = Sensitive. Under the Tonto National Forest Land and Resource Management Plan (Forest Service 1985), sensitive species are those identified by a regional forester for which population viability is a concern, as evidenced by 1) significant current or predicted downward trends in population number or density or 2) significant current or predicted downward trends in habitat capability that would reduce the species' existing distribution.

SCC = Species of conservation concern. The *Tonto National Forest Land Management Plan* (Forest Service 2023) defines SCC as species that are native to and known to occur in the TNF and for which there are substantial concerns about the species' ability to persist within the TNF. These species are listed on the most recently published list of Species of Conservation Concern for the Tonto National Forest (Forest Service 2021).

There is substantial overlap between SCC and S. SWCA Environmental Consultants (SWCA) evaluated S and draft SCC for the FEIS, which was published in 2021. After publication of the FEIS, the publication of *Tonto National Forest Land Management Plan* (Forest Service 2023) resulted in the need for revision of the FEIS and this table. SWCA deleted no species or statuses from the table and added only species newly designated as SCC.

† SWCA evaluated this species as a draft SCC during initial analysis and FEIS publication; however, the species was not included as an SCC in the *Tonto National Forest Land Management Plan* (Forest Service 2023).

‡ SWCA evaluated this species as an S during initial analysis and FEIS publication; however, the species was not included as an SCC in the *Tonto National Forest Land Management Plan* (Forest Service 2023).

Table A1-5. Special-Status Plant Species Analyzed for Alternative 6 – Skunk Camp

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Acuna cactus (*Echinomastus erectocentrus* var. *acunensis*)	ESA: E (Maricopa, Pinal, and Pima Counties), designated critical habitat AZNPL: HS	None	None	None	Occurs in valleys and on small knolls and gravel ridges of up to 30% slope in the Palo Verde-Saguaro Association of the Arizona Upland subdivision of the Sonoran desertscrub. Elevational range 1,198–3,773 feet amsl.	Found in Maricopa, western Pima, and Pinal Counties.	Unlikely to occur
Alamos deer vetch (*Lotus alamosanus*)	TNF: SCC†	None	None	None	This species is a wetland obligate that occurs in wet soils or sand in springs, seeps, and streams in canyons or meadows between 3,500– 5,500 feet amsl.	Found in southern Santa Cruz County and in the Superstition Mountains.	Unlikely to occur
Aravaipa sage, also known as Galiuro sage (*Salvia amissa*)	TNF: S, SCC	None	None	None	Shady canyon bottoms in stream floodplains in oak or riparian woodlands. Elevational range 1,500–5,000 feet amsl.	Known to occur in south-central Arizona in several canyons in the Galiuro, Winchester, and Santa Catalina Mountains, and along Fish Creek in the Superstition Mountains.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Aravaipa woodfern (*Thelypteris puberula* var. *sonorensis*)	TNF: S, SCC	Devil's Canyon (1959)	None	None	Moist soil in the shade of boulders in mesic canyons. Elevational range 2,200–4,500 feet amsl.	Coconino, Maricopa, Pima, Pinal, and Yavapai Counties.	Unlikely to occur
Arizona bugbane (*Actaea arizonica*)	TNF: S, SCC AZNPL: HS	None	None	None	Mixed-conifer and high elevation riparian deciduous forests in deep shade and moist soils with high humus content, near perennial or intermittent streams or seeps, especially along bottoms and lower slopes of steep, narrow canyons. Elevation 6,000–8,300 feet amsl.	Coconino, Kaibab, and Tonto National Forests in Central Arizona. On the TNF, species is only found in Sierra Ancha Mountains.	Unlikely to occur
Arizona cliffrose (*Purshia subintegra*)	ESA: E (Graham, Maricopa, Mohave, and Yavapai Counties), no designated critical habitat AZNPL: HS	None	None	None	Occurs at four widely separated areas across central Arizona, these sights differ slightly in elevation and associated vegetation. All sites have limestone soils derived from Tertiary lacustrine (lakebed) deposits. Elevation 2,100–2,700 feet amsl.	Found in Maricopa, Yavapai, Mohave, and Graham Counties. In Maricopa County, species is restricted to Horseshoe Reservoir.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Arizona hedgehog cactus (*Echinocereus arizonicus* ssp. *arizonicus*)	ESA: E (Maricopa, Gila, and Pinal Counties); no designated critical habitat AZNPL: HS	Queen Creek (2011, 2014, 2015), Oak Flat (2013), Whitford Canyon (2014), Rock Creek (2018), Wood Camp Canyon (2015), Rawhide Canyon (2013)	None	None	Found on dacite or granite bedrock, open slopes, in narrow cracks, between boulders, and in the understory of shrubs in the ecotone between Madrean Evergreen Woodland and Interior Chaparral. Elevation 3,400–5,300 feet amsl.	In Gila and Pinal Counties, central Arizona. Found on the following TNF allotments: Bohme/Sleeping Beauty, Devil's Canyon, Millsite, Pinto Creek, and Bellevue.	Known to occur within 4,252.4 acres of suitable habitat where soils of igneous origin, primarily Shultze Granite and Dacite, are present
Arizona phlox (*Phlox amabilis*)	TNF: S‡	None	None	None	Open, exposed, limestone-rocky slopes within pinyon-juniper (*Pinus* spp.-*Juniperus* spp.) woodlands and ponderosa pine-Gambel oak (*Pinus ponderosa-Quercus gambelii*) communities; elevational range of 3,500–7,800 feet amsl.	Coconino, Gila, Graham, Mohave, Navajo, and Yavapai Counties; on TNF, found near Christopher Creek.	Unlikely to occur
Blumer's dock (*Rumex orthoneurus*)	TNF: S, SCC	None	None	None	Near perennial springs in unshaded meadows or along stream sides in canyons. In organic, moist soils. Elevation 6,500–11,500 feet amsl.	Apache, Coconino, Cochise, Gila, and Graham Counties.	Unlikely to occur

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Bristle-tipped aster (*Dieteria bigelovii* var. *mucronata*)	TNF: SCC†	None	None	None	High open meadows from 7,870–9,840 feet amsl in spruce (*Picea* spp.) and pinyon-juniper woodlands.	Coconino and Gila Counties.	Unlikely to occur
Broadleaf lupine (*Lupinus latifolius* ssp. *leucanthus*)	TNF: SCC	None	None	None	Occurs along streams and moist soils of dry streambeds, in oak-cottonwood (*Quercus* spp.-*Populus* spp.), mixed shrub, and ponderosa pine forest communities. Elevational range 4,800–7,000 feet amsl.	Yavapai, Mohave, and Coconino Counties.	Unlikely to occur
Chihuahuan sedge (*Carex chihuahuensis*)	TNF: S, SCC	None	None	None	Stream banks, springs, and seeps. Elevation 1,100–8,000 feet amsl.	Cochise, Gila, Graham, Pima, and Santa Cruz Counties. TNF: only found along Reynolds Creek.	Unlikely to occur
Chiricahua Mountain alumroot, also known as Arizona alumroot (*Heuchera glomerulata*)	TNF: S, SCC	None	None	None	Found on north-facing shaded rocky slopes, near seeps, springs, and riparian areas, often in humus soil. Elevation 4,000–9,000 feet amsl in pine-oak (*Pinus* spp.-*Quercus* spp.), ponderosa pine, and mixed-conifer woodlands**.**	Apache, Cochise, Greenlee, Gila, Graham, and Navajo Counties. TNF: only found in Pinal Mountains.	Possible to occur within 6.7 acres of suitable habitat where humus soils are present

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Cochise sedge, also known as Arizona giant sedge (*Carex ultra;* also *Carex spissa* var. *ultra*)	TNF: S; SCC	None	None	None	Found in shaded, moist soil near springs and streams on southeastern aspects in riparian and oak-pinyon (*Quercus* spp.-*Pinus* spp.) woodlands. Elevation 2,000–6,000 feet amsl.	Apache, Cochise, Graham, Pima, Pinal, Santa Cruz, and Yavapai Counties. TNF: one occurrence along Tangle Creek.	Unlikely to occur
Davidson sage (*Salvia davidsonii*)	TNF: SCC	None	None	None	In Chihuahuan Desert and acacia (*Acacia* spp.)-dominated vegetation communities in rocky soils or wooded slopes from 1,600–9,514 feet amsl.	Coconino, Maricopa, Mohave, Cochise, and Greenlee Counties.	Unlikely to occur
Eastwood alumroot (*Heuchera eastwoodiae*)	TNF: S, SCC	None	None	None	Moist slopes in ponderosa pine forests and canyons. Elevation 5,000–8,000 feet amsl.	Coconino, Gila, Maricopa, and Yavapai Counties; on TNF, found in the Payson, Pleasant Valley, and Cave Creek Districts.	Unlikely to occur
Fish Creek fleabane (*Erigeron piscaticus*)	TNF: S, SCC AZNPL: SR	None	None	None	Gravelly and sandy washes in riparian vegetation communities. Elevation 2,250–3,500 feet amsl.	Maricopa, Graham, and Pima Counties; on TNF, found only along Fish Creek.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Fish Creek rockdaisy (*Perityle saxicola*)	TNF: S, SCC	None	None	None	Cracks and crevices on very steep cliff faces, large boulders and rocky outcrops in canyons, and on buttes. Steep cliffs with generally east and northeast exposures, with slopes from 50%–100%. Elevational range 2,000–3,500 feet amsl.	Gila and Maricopa Counties. On TNF, occurs near Roosevelt Lake Dam and in Sierra Ancha Mountains, suspected to be in Superstition Mountains.	Unlikely to occur
Flagstaff beardtongue (*Penstemon nudiflorus*)	TNF: SCC	None	None	None	Dry ponderosa pine forests at elevations between 4,500–7,000 feet amsl.	Mohave, Coconino, Yavapai, Navajo, and Gila Counties.	Unlikely to occur
Gila rockdaisy (*Perityle gilensis* var. *gilensis*)	TNF: SCC	None	None	Along U.S. 60 west of Superior (1926–1976). West of Superior (1977). Northeast of Oak Flat Campground (1965).	Occurs in rock crevices and small pockets of soils near vertical cliffs, associated with Arizona upland Sonoran Desert and chaparral just below pinyon pine at elevations ranging from 1,529–4,170 feet amsl.	Gila, Pinal, and Maricopa Counties.	Known to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Grand Canyon century plant (*Agave phillipsiana*)	TNF: SCC	None	None	None	Occurs in terraces along permanent waterways and on sandy, gravelly, or rocky soils at elevations ranging from 2,300–3,740 feet amsl in desert, grassland, and chaparral vegetation communities. The single occurrence in Gila County occurs between Walnut and Oak Creeks west of the Sierra Ancha Mountains.	Coconino, Yavapai, and Gila Counties.	Unlikely to occur
Huachuca water-umbel (*Lilaeopsis schaffneriana* var. *recurva*)	ESA: E (Cochise, Graham, Pima, Pinal, and Santa Cruz Counties) with critical habitat. AZNPL: HS	None	None	None	Semi-aquatic to aquatic perennial found in shallow water or saturated soil of ciénegas or marshy wetlands at elevations between 4,000 and 6,500 feet amsl.	Known to occur in the Huachuca Mountains, Canelo Hills, headwaters of the Santa Cruz River downstream to Black Draw, and the San Pedro River in Cochise, Graham, Pima, Pinal, and Santa Cruz Counties.	Unlikely to occur
Hodgson's fleabane (*Erigeron hodgsoniae*)	TNF: SCC	None	None	None	Occurs on cliff faces and steep canyon walls at elevations ranging from 3,800–4,000 feet amsl among oak, juniper, manzanita (*Arctostaphylos* spp.), and pine species.	Gila County: Cold Water Canyon, Sierra Ancha Mountains.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Hohokam agave, also known as Murphey agave (*Agave murpheyi*)	TNF: S, SCC AZNPL: HS	Queen Creek: west of Superior (1941)	None	None	Mountainous slopes in dry chaparral and desert areas, also near drainage systems in desertscrub. Elevation 1,300–2,400 feet amsl.	Gila, Maricopa, Pinal, and Yavapai Counties.	Unlikely to occur
Horseshoe deer vetch, also known as Mearns' bird-foot trefoil (*Lotus mearnsii* var. *equisolensis*)	TNF: S, SCC	None	None	None	Occurs only on lacustrine deposits composed of limestone and ash and in calciferous/limestone soils within desertscrub vegetation communities at 2,100–3,200 feet amsl.	Maricopa County.	Unlikely to occur
James' rubberweed (*Hymenoxys jamesii*)	TNF: SCC	None	None	None	Occurs in ponderosa pine forests at elevations of 5,370–7,500 feet amsl.	Coconino, Navajo, Yavapai, and Gila Counties.	Unlikely to occur
Mapleleaf false snapdragon (*Mabrya acerifolia*)	TNF: S, SCC	Superstition Mountains; Hewitt Wash (1977)	Yes, GPO Pipeline (WestLand 2008, 2017)	Yes, Queen Creek	Occurs on rock overhangs, bare rock/talus/scree, and cliffs in Lower Sonoran Desert vegetation communities. Elevation 1,800–3,350 feet amsl.	Maricopa and Pinal Counties; all localities occur in the Mesa Ranger District.	Possible to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Marsh rosemary also known as Trans-Pecos sea lavender (*Limonium limbatum*)	TNF: SCC	None	None	None	Found on marshy ground, within cienegas, floodplains, saline wet grasslands, and roadside ditches at elevations between 3,000-6,000 feet amsl.	Gila and Graham Counties. Records on TNF are associated with the Salt River or Salt River Canyon.	Unlikely to occur
Metcalfe's tick-trefoil (*Desmodium metcalfei*)	TNF: SCC	None	None	None	Rocky slopes and canyons in grasslands, oak woodlands, pinyon-juniper woodlands, and riparian areas from 2,760–8,200 feet amsl.	Yavapai, Greenlee, Gila, Santa Cruz, and Cochise Counties.	Unlikely to occur
Mt. Dellenbaugh sandwort (*Eremogone aberrans*)	TNF: S, SCC	None	None	None	Associated with pinyon-juniper woodland and occasionally ponderosa pine forest and ponderosa pine-evergreen oak associations; elevational range of 5,500–9,000 feet amsl.	Found throughout north and north-central Arizona; on TNF, found in Tonto Basin and Upper Salt local zones.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Nichol's Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*)	ESA: E (Maricopa, Pima, and Pinal Counties); no designated critical habitat AZNPL: HS	None	None	None	Found on limestone substrates along dissected alluvial fans, inclined terraces and saddles, bajadas, and debris flow. It grows in open areas and partially to shaded areas underneath the canopy of shrubs and trees or shouldered next to rocks on steep slopes and within limestone outcrops. Occurs within the Upland Division of Sonoran desertscrub on 0% to 30% slopes with north-, west-, and south-facing exposures Elevation 2,400–4,000 feet amsl.	Endemic to the Sonoran Desert and occurs on isolated mountain ranges within south-central Arizona in Pima and Pinal Counties.	Unlikely to occur
Parish's Indian mallow (*Abutilon parishii*)	TNF: S‡ AZNPL: SR	Arnett Creek (2017), Picketpost Mountain (2012), Bear Tank Canyon (2017), Queen Creek: Robles Canyon (2017)	None	None	Occurs in mesic situations in full sun within higher elevation Sonoran desertscrub, desert grassland, and Sonoran deciduous riparian forest. Elevational range 3,000–4,800 feet amsl.	Found in Maricopa, Gila, Pima, Pinal, Santa Cruz, and Yavapai Counties. Found in Superstition, Mineral Hills, and Dripping Springs Mountains.	Possible to occur at the West Plant Site, borrow sites, and in the Magma Arizona Railroad Company corridor

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Pinaleno Mountain rubberweed (*Hymenoxys ambigens* var. *ambigens*)	TNF: SCC†	None	None	None	Occurs in stony soils at elevations from 5,000–7,000 feet amsl.	Maricopa, Graham, and Gila Counties.	Unlikely to occur
Pringle's fleabane (*Erigeron pringlei*)	TNF: SCC	None	None	None	Ledges of cliffs and rock crevices in canyons, near springs, and in shaded canyons. Elevation 3,500–7,000 feet amsl in chaparral, pinyon-juniper, and pine-oak forests.	Found in Coconino, Gila, Graham, and Santa Cruz Counties.	Unlikely to occur
Ripley wild buckwheat (*Eriogonum ripleyi*)	TNF: S, SCC AZNPL: SR	None	None	None	Calcareous soils in Sonoran desertscrub and pinyon-juniper woodlands. Elevation 2,000–6,000 feet amsl.	Known from Maricopa, Yavapai, Coconino, and Mohave Counties. Locations on TNF include Horseshoe Reservoir and Chalk Mountain.	Unlikely to occur
Rusby's milkwort, also known as Hualapai milkwort (*Polygala rusbyi*)	TNF: S, SCC	None	None	None	Occurs in desert grasslands and juniper woodlands at 3,000–5,000 feet amsl.	Found only in central-western Arizona; on TNF, only found near the Horseshoe Dam (northeast of Phoenix).	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Salt River rockdaisy (*Perityle gilensis* var. *salensis*)	TNF: S, SCC	None	None	None	Crevices on cliff faces, ledges and rock outcrops in habitats that are ecotonal between oak-juniper woodland and mountain mahogany-oak (*Cercocarpus* spp.-*Quercus* spp.) scrub. Elevation 3,000–3,800 feet amsl.	Only two known sites along the Salt River Canyon in Gila County.	Unlikely to occur
Sierra Ancha fleabane, also known as Mogollon fleabane (*Erigeron anchana*)	TNF: S, SCC	None	None	None	Rock crevices and ledges on boulders or on vertical cliff faces, usually in canyons. Granite cliff faces, chaparral through pine forests. Elevation 3,500–7,000 feet amsl.	Found in Gila County in the Sierra Ancha, Superstition, and Mescal Mountains.	Unlikely to occur
Tonto Basin agave (*Agave delamateri*)	TNF: S, SCC AZNPL: HS	None	None	None	Gravelly substrates in desertscrub vegetation communities. Elevation 2,295–5,250 feet amsl.	Gila, Maricopa, and Yavapai Counties. On the TNF, found along foothills of Mazatzal and Sierra Ancha Mountains and near Sunflower.	Unlikely to occur
Toumey's groundsel (*Packera neomexicana* var. *toumeyi*)	TNF: S, SCC	None	None	None	Found in oak chaparral and occasionally pine forest; elevational range of 3,000–9,000 feet amsl.	Cochise and Gila Counties; on TNF, found in the Pinal Mountains.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Arizona Game and Fish Department Records of Occurrence within 5 miles	Baseline Data Records of Occurrence	Other Records of Occurrence (e.g., SEINet)	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area
Verde breadroot (*Pediomelum verdiensis*)	TNF: S, ‡ SCC†	None	None	None	High desertscrub on Verde limestone substrate, also compacted roadsides; elevational range of 3,200–4,350 feet amsl.	Yavapai County, mostly near Camp Verde with some collections upstream along Verde River.	Unlikely to occur

Unless otherwise noted, range or habitat information is from the following sources: Arizona Game and Fish Department (2025); Forest Service (2017a); NRCS (2025); (TNF 2000); U.S. Fish and Wildlife Service (2016).

Unless otherwise noted, occurrence data is from Arizona Game and Fish Department, transmitted on August 13, 2018, or from SEINet (2025).

* Status definitions are as follows:

AZNPL = Arizona Native Plant Law

SR = Salvage restricted. Plants are subject to damage and vandalism.

HS = Highly safeguarded. Plants are threatened for survival or are in danger of extinction.

ESA = Endangered Species Act

E = Endangered. Endangered species are those in imminent jeopardy of extinction. Take as defined under the ESA generally does not apply to listed plant species. Limited protection of listed plants is provided to the extent that the ESA prohibits the removal or possession of federally listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law. These prohibitions apply equally to live or dead plants, their progeny, and parts or products derived from them except for clearly labeled seeds of cultivated origin of threatened plants, which are exempt.

TNF = Tonto National Forest

S = Sensitive. Under the Tonto National Forest Land and Resource Management Plan (Forest Service 1985), sensitive species are those identified by a regional forester for which population viability is a concern, as evidenced by 1) significant current or predicted downward trends in population number or density or 2) significant current or predicted downward trends in habitat capability that would reduce the species' existing distribution.

SCC = Species of conservation concern. The *Tonto National Forest Land Management Plan* (Forest Service 2023) defines SCC as species that are native to and known to occur in the TNF and for which there are substantial concerns about the species' ability to persist within the TNF. These species are listed on the most recently published list of Species of Conservation Concern for the Tonto National Forest (Forest Service 2021).

There is substantial overlap between SCC and S. SWCA Environmental Consultants (SWCA) evaluated S and draft SCC for the FEIS, which was published in 2021. After publication of the FEIS, the publication of *Tonto National Forest Land Management Plan* (Forest Service 2023) resulted in the need for revision of the FEIS and this table. SWCA deleted no species or statuses from the table and added only species newly designated as SCC.

† SWCA evaluated this species as a draft SCC during initial analysis and FEIS publication; however, the species was not included as an SCC in the *Tonto National Forest Land Management Plan* (Forest Service 2023).

‡ SWCA evaluated this species as an S during initial analysis and FEIS publication; however, the species was not included as an SCC in the *Tonto National Forest Land Management Plan* (Forest Service 2023).

Table A1-6. Noxious and Invasive Weed Species Analyzed for the Alternative 2 – Near West Proposed Action and Alternative 3 – Near West – Ultrathickened

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
African rue (*Peganum harmala*)	TNF ADA		Favors disturbed and barren areas with moist soil such as roadsides, riparian corridors, and irrigation ditches; will grow in alkaline soils and high saline soils (Forest Service 2014a). Typically occurs at elevations below 4,500 feet amsl, and seeds can germinate under fairly saline conditions.	Maricopa County. Also has been observed in Pima County along Interstate 10 near Vail, but not on TNF.	Possible to occur: • West Plant Site • Magma Arizona Railroad Company (MARRCO) Corridor • Filter plant These areas are disturbed, and portions may contain enough moisture.	Possible to occur: • East Plant Site This area contains disturbance and portions may contain enough moisture.
African sumac (*Rhus lancea*)	TNF		Occurs in well-drained sites in woodlands, grassland margins, and riparian communities; occurs in disturbed, degraded, or cultivated sites, typically below 2,000 feet amsl.	The USDA database indicates that there are no records in Arizona. No records on TNF; however, a recent record occurs in Cave Creek approximately 3 miles downstream of the Cave Creek parcel.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant The nearest occurrence records for this species are within the Phoenix metropolitan area.	Unlikely to occur: • East Plant Site The nearest occurrence records for this species are within the Phoenix metropolitan area.
Anchored water hyacinth (*Eichhornia azurea*)	Federal		Freshwater, perennial, aquatic plant found in permanent water bodies; prefers open, slow-moving water environments.	No record in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Arabian schismus (*Schismus arabicus*)	TNF	Occurs within the footprint of the MARRCO corridor.	Occurs in disturbed, degraded, or cultivated sites in desert and semidesert grassland communities and along roadsides, typically at elevations below 4,500 feet amsl.	Has occurrence records in Cochise, Maricopa, Mojave, Pima, and Pinal Counties.	Known to occur: • MARRCO corridor Possible to occur: • West Plant Site • Filter plant These areas are disturbed and contain suitable desert and semidesert grassland communities. There is one record occurring within the MARRCO corridor, and two more occurrence records within 2 miles of the MARRCO corridor.	Possible to occur: • East Plant Site This area contains disturbance and portions contain suitable desertscrub habitat. There are occurrence records approximately 6 miles west of the East Plant Site.
Asian mustard (Sahara mustard) (*Brassica tournefortii*)	TNF ADA	Asian mustard occurs on the West Plant Site, established in low numbers within disturbed areas (WestLand 2013, 2014, 2017). Occurs in and near MARRCO corridor.	Occurs in areas with windblown sediments and disturbed areas within desert grasslands, desertscrub, and roadsides at elevations typically below 2,600 feet amsl.	Has occurrence records in Maricopa, Pima, Pinal, and Yuma Counties. Widespread throughout TNF.	Known to occur: • West Plant Site • MARRCO corridor Possible to occur: • Filter plant Suitable habitat occurs and occurrences recorded less than 5 miles northeast of the Filter plant.	Unlikely to occur: • East Plant Site Although portions of the project area may contain suitable disturbed desert habitat, the project area is well above the typical elevational range of this species and all of the occurrence records in the vicinity are from lower elevations.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Black mustard (*Brassica nigra*)	TNF ADA		Occurs in dry disturbed sites such as along roadsides, railroad rights-of-way (ROWs), pastures, and waste places at elevations below 7,000 feet amsl.	Has occurrence records in Cochise, Coconino, Maricopa, Pima, and Pinal Counties. Occurs along State Route (SR) 188 through Tonto Basin, and along SR 87 within TNF.	Possible to occur: • West Plant Site • MARRCO corridor • Filter plant Although there are no occurrence records in the immediate vicinity (TNF 2018), dry disturbed areas, railroad ROWs, and waste places occur, and the project area is within the typical elevational range.	Possible to occur: • East Plant Site This area contains disturbance and waste areas and is within the typical elevational range of this species.
Blue mustard (*Chorispora tenella*)	TNF		Occurs in disturbed sites, including waste places, pastures, roadsides, and railroad ROWs, typically at elevations below 7,500 feet amsl.	Has occurrence records in Apache, Coconino, Maricopa, Navajo, and Yavapai Counties. Has been found outside of the TNF along SR 69 between Cordes Junction and Prescott; in Prescott; and north of Holbrook.	Possible to occur: • West Plant Site • MARRCO corridor • Filter plant Although there are no occurrence records in the immediate vicinity, dry disturbed areas, railroad ROWs, and waste places occur, and the project area is within the typical elevational range.	Possible to occur: • East Plant Site This area contains disturbance and waste areas and is within the typical elevational range of this species. There is an occurrence record approximately 8 miles northeast of the East Plant Site.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Branched broomrape (Hemp broomrape) (*Orobanche ramosa*)	Federal ADA		Requires relatively high temperatures for optimum germination and growth and occurs mainly in irrigated crops grown under summer conditions in tropical and subtropical climates. Adapted to soils of generally high pH and are associated with the crops they attack.	No record in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.
Buffelgrass (*Pennisetum ciliare,* also known as *Cenchrus ciliaris*)	TNF ADA	Observed along MARRCO corridor during field visit (SWCA Environmental Consultants site visit, March 19, 2018); Near West Analysis Area (WestLand 2013); observed in baseline activities area (WestLand 2014)	Alkaline soils and within arid areas with high nutrients and moisture (Invasive Species Specialist Group 2006). Extremely drought tolerant and reestablishes quickly and expands infestation following fire (Northam and Meyer 2009).	Has occurrence records in Maricopa, Pima, Pinal, and Yuma Counties. Common in Phoenix and spreading onto TNF along U.S. 60 and SR 87, Pima Road in Scottsdale, Cave Creek Road, and others.	Known to occur: • MARRCO corridor • West Plant Site Possible to occur: • Filter plant There are many occurrence records in the project vicinity.	May occur: • East Plant Site Suitable habitat occurs, and there are occurrence records in the vicinity.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Bull thistle (*Cirsium vulgare*)	TNF ADA		Occurs most often in areas that have been recently or repeatedly disturbed (e.g., overgrazed rangelands, recently burned forests, clear-cuts, and along roads and ditches); prefers soil of intermediate moisture (Forest Service 2018b). Typically occurs at elevations between 4,500–9,100 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, and Navajo Counties. Common from Flagstaff to south of Mogollon Rim.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant No occurrence records in immediate vicinity and below the typical elevation range for this species.	Unlikely to occur: • East Plant Site Most of project area is below typical elevational range, and no occurrence records in immediate vicinity.
Camelthorn (*Alhagi maurorum*)	TNF ADA		Occurs in moist sites that are cultivated, disturbed, or degraded; typically found at 4,500–5,000 feet amsl within meadows, grasslands, and riparian communities.	Has occurrence records in Apache, Coconino, Gila, Maricopa, and Navajo Counties. Heavy infestations in northeastern part of state; near Painted Rock Dam; southwest of Phoenix; west of Phoenix near Loop 101; Chandler; U.S. 60 just north of Globe; U.S. 60 north of the Salt River; but not yet on TNF.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant No occurrence records in immediate vicinity and below the typical elevation range for this species.	Unlikely to occur: • East Plant Site Most of project area is below typical elevational range, and no occurrence records in immediate vicinity.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Canada thistle (*Cirsium arvense*)	TNF ADA		Occurs most commonly in disturbed upland areas (e.g., barrens, meadows, fields, pastures), but can also invade wet areas with fluctuating water levels (Forest Service 2018b). Typically occurs at elevations between 4,200–8,300 feet amsl.	Has occurrence records in Apache, Coconino, and Yavapai Counties. Occurs in northeastern part of state, and near the OW Ranch, west of Canyon Creek on the TNF.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant No occurrence records in immediate vicinity, and below the typical elevation range for this species.	Unlikely to occur: • East Plant Site Much of project area is below typical elevational range, and no occurrence records in immediate vicinity.
Common teasel (Fuller's teasel) (*Dipsacus fullonum*)	TNF		Prefers open, sunny habitats and commonly occurs in disturbed areas, including roadsides and pastures; grows in both moist and arid soils, but more commonly found in mesic soils (Forest Service 2014b). Typically occurs at elevations ranging from 4,700–8,700 feet amsl.	Has occurrence records in Coconino County. Occurs at Watson Woods on Granite Creek near Prescott; at Shumway Millsite, south of Payson and at Sharp Creek Campground on TNF.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant No occurrence records in immediate vicinity, and below the typical elevation range for this species.	Unlikely to occur: • East Plant Site Most of project area is below typical elevational range, and no occurrence records in immediate vicinity.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Dalmatian toadflax (*Linaria dalmatica*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadows, grassland, woodland, and riparian communities at elevations ranging from 4,400–10,000 feet amsl.	Has occurrence records in Coconino and Yavapai Counties. Common around Flagstaff; widespread in ponderosa pine (*Pinus ponderosa*) forests on Kaibab, Coconino, and Prescott National Forests; on TNF, grows at Hot Shot Base, along SR 87 between Payson and Rye, and near the Verde River 1 mile downstream from Childs.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant No occurrence records in vicinity and well below the typical elevation range for this species.	Unlikely to occur: • East Plant Site Most of project area is below typical elevational range, and no occurrence records in vicinity.
Diffuse knapweed (*Centaurea diffusa*)	TNF ADA		Prefers well-drained soils within cultivated, disturbed, or degraded sites along roadsides or within meadows, grassland, woodland, and forest communities at elevations typically below 7,200 feet amsl (Forest Service 2017b).	Has occurrence records in Apache County. Common on private lands in Young; on TNF, occurs at Pleasant Valley airport; Pleasant Valley Ranger Station, along Cherry Creek, and along SR 288 at Board Tree Saddle (south of Young).	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Dodder (*Cuscuta* spp.) (except for natives)	Federal		Parasitic annual plant species that can invest a variety of host species, including crops, weed species, shrubs, and trees (University of California Statewide Integrated Pest Management Program 2017).	Has occurrence records in all counties except Apache, Graham, and Greenlee.	May occur: • West Plant Site • MARRCO corridor • Filter plant Occurrence records less than 0.5 mile from MARRCO corridor along U.S. 60.	May occur: • East Plant Site Occurrence records in vicinity.
Downy brome (cheatgrass) (*Bromus tectorum*)	TNF ADA		Occurs from valley bottoms to high mountainous areas; quickly invades disturbed sites (Northam and Meyer 2009). Prefers well-drained soils of any texture but is not well adapted to saline or sodic soil conditions or wet soil (NRCS 2018).	Has occurrence records in all counties except Cochise, Greenlee, La Paz, Pinal, Santa Cruz, and Yuma.	May occur: • West Plant Site • MARRCO corridor • Filter plant Occurrence records less than 0.5 mile from MARRCO corridor along U.S. 60.	May occur: • East Plant Site Occurrence records in project footprint.
Dyer's woad (*Isatis tinctoria*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland or woodland communities; prefers dry rocky or sandy soils at elevations from 4,300–7,000 feet amsl.	No records in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Dudaim melon (cantaloupe) (*Cucumis melo*)	ADA		Occurs in disturbed areas with abundant moisture, including fields, roadsides, and ditches (Winston et al. 2014).	No records in Arizona (Winston et al. 2014).	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.
Field bindweed (*Convolvulus arvensis*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland, chaparral, woodland, forest, and riparian communities at elevations ranging from 3,500–10,000 feet amsl.	Has occurrence records in all Arizona counties.	May occur: • West Plant Site • MARRCO corridor • Filter plant Disturbance occurs in the project areas, and this species is widespread.	May occur: • East Plant Site Disturbance occurs in the project area, and this species is widespread.
Field sandbur (*Cenchrus spinifex incertus*)	TNF ADA		Prefers sandy or gravelly sites that have been disturbed, or degraded sites at elevations between 3,500–5,000 feet amsl.	Has occurrence records in all counties except La Paz, Pinal, and Yuma. Occurs east of TNF on the Fort Apache Reservation along the right-of-way (ROW) for U.S. 60 east. Occurs on TNF on ROW of SR 188, a few miles north of Globe.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant No occurrence records in vicinity and well below the typical elevation range for this species.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Five-stamen tamarisk (*Tamarix chinensis*)	TNF ADA	Known occurrences throughout the TNF.	Desert riparian habitats, including seeps, springs, and roadsides; may tolerate saline soil.	Has occurrence records in all Arizona counties except Greenlee, La Paz, Pinal, and Yuma. On TNF, saltcedar occurs along the Verde River and its tributaries, along much of the Salt River, and along Salt and Verde River reservoirs.	Known to occur (*Tamarix* spp.): • West Plant Site Possible to occur: • MARRCO corridor, where suitable habitat occurs. Unlikely to occur: • Filter plant No suitable riparian habitat occurs.	Possible to occur: • East Plant Site The project area contains suitable riparian habitat.
Fountain grass (*Pennisetum setaceum*)	TNF ADA	Fountain grass occurs on West Plant Site, established in low numbers within disturbed areas (WestLand 2017b), (WestLand 2014), Near West Analysis Area (WestLand 2013)	Usually found along roadways or in rangelands (Northam and Meyer 2009). Prefers arid to semiarid conditions but can occur in mesic environments; usually occurs in areas with mild winters and summer moisture; prefers open, sunny areas with well-drained soils.	Has occurrence records in Cochise, Maricopa, Pima, and Santa Cruz Counties. Documented in all desert districts within the TNF; very abundant along U.S. 60 between Superior and mountain tunnel; also occurs along SR 87, along the road to Bartlett and Horseshoe Reservoirs, and in the Salt River Recreation Area.	Known to occur: • West Plant Site Possible to occur: • MARRCO corridor, where suitable habitat occurs. • Filter plant	Possible to occur: • East Plant Site

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Floating water hyacinth (*Eichhornia crassipes*)	ADA		Aquatic, floating plant that occurs in tropical and subtropical freshwater lakes and rivers.	Has occurrence records in Maricopa County.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Suitable habitat does not occur.	Unlikely to occur: • East Plant Site Suitable habitat does not occur.
Giant reed (*Arundo donax*)	TNF ADA		Occurs in moist areas, including ditches, stream and river banks, and floodplains; prefers well-drained soils with abundant moisture; will tolerate a wide variety of conditions, including high salinity; will tolerate a wide range of soil types from clay to sand; typically occurs below 4,000 feet amsl.	Has occurrence records in Cochise, Maricopa, and Navajo Counties. Occurs upstream of TNF on the Upper Verde, with potential to invade in a large river scouring event.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Suitable habitat does not occur.	Unlikely to occur: • East Plant Site Suitable habitat does not occur.
Giant salvinia (*Salvinia molesta*)	Federal ADA		Prefers warm freshwater in temperate and subtropical climates (Chambers and Hawkins 2002). Occurrence records from the southwestern portion of Arizona, in and near the Colorado River.	Found in slow-moving water or still water canals, ponds, rivers, lakes, and reservoirs (Chambers and Hawkins 2002).	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Habitat does not occur and distant from known locations.	Unlikely to occur: • East Plant Site Habitat does not occur, and distant from known locations.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Globe chamomile (stinknet) (*Oncosiphon piluliferum*)	TNF ADA		Occurs in disturbed areas, including waste places, pastures, and along roadsides; typically found at elevations below 3,500 feet amsl; this annual is a pioneer species within disturbed sites.	Has occurrence records in Maricopa, Pinal, and Yavapai Counties. Documented along Interstate 17 north of Phoenix, near Skunk Tank Ridge south of Cave Creek on the Cave Creek Ranger District, at the Cave Creek Ranger Station, at the Sonoran Desert National Monument, Pinal City near Superior, along SR 84 west of Casa Grande, Extension Service Demonstration Garden (east Broadway in Phoenix), on Carefree Highway, 4 miles east of Interstate 17, and growing in cultivation at the Desert Botanical Garden and Boyce Thompson Arboretum.	May occur: • West Plant Site • MARRCO corridor • Filter plant Areas are disturbed and within the elevational range, though no occurrence records in immediate vicinity.	May occur: • East Plant Site. Area is disturbed, and much of project is within elevational range of the species, though no occurrence records in immediate vicinity.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Globe-podded hoary cress (whitetop) (*Cardaria draba*)	TNF ADA		Occurs in cultivated, disturbed, or degraded moist sites along roadsides or within meadows, grassland, chaparral, woodland, forest, and riparian communities; prefers alkaline to saline soils, but will tolerate a wide variety of soil and moisture conditions; typically found between 3,000–8,000 feet amsl.	Has occurrence records in Navajo, Santa Cruz, and Yavapai Counties. *Cardaria* spp. have been recorded in Prescott, Camp Verde, Flagstaff, and Cottonwood, and on the upper Verde River near Perkinsville; on the TNF, occurs on the Pleasant Valley Ranger District.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Suitable habitat does not occur, and distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.
Hairy white-top (*Cardaria pubescens*)	TNF		Occurs in cultivated, disturbed, or degraded moist sites along roadsides or within meadows, grassland, chaparral, woodland, forest, and riparian communities; prefers alkaline to saline soils, but can tolerate a wide range of soils and moisture conditions; typical elevation is 3,000–8,000 feet amsl.	*Cardaria* spp. have been recorded in Prescott, Camp Verde, Flagstaff, and Cottonwood, and on the upper Verde River near Perkinsville; on the TNF, occurs on the Pleasant Valley Ranger District.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Suitable habitat does not occur, and distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Halogeton (saltlover) (*Halogeton glomeratus*)	ADA		Occurs in cultivated, disturbed, or degraded sites along roadsides or within grassland or woodland communities; prefers open areas and alkaline and saline soils, generally at elevations ranging from 4,000–6,500 feet amsl.	Has occurrence records in Apache, Navajo, and Mohave Counties.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Well below typical elevational range and distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.
Hydrilla (waterthyme) (*Hydrilla verticillata*)	Federal ADA		Found mainly in freshwater aquatic systems but can tolerate low salinity. Sometimes found in upper reaches of estuaries. Found in shallow water, but in clear water can survive depths to 49 feet (Chambers and Hawkins 2002).	Has occurrence records in Maricopa County.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences, and no aquatic habitat occurs at West Plant Site or Filter plant.	Unlikely to occur: • East Plant Site Distant from known occurrences.
Japanese brome (*Bromus japonicus*)	TNF		Occurs in cultivated, disturbed, or degraded sites along roadsides and within semidesert grassland and wooded communities at elevations ranging from 4,500–7,200 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, Gila, Greenlee, Maricopa, Pima, and Navajo Counties.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Well below typical elevational range, do not contain grassland, and distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences and below typical elevational range.

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Japanese knotweed (*Polygonum cuspidatum*)	TNF		Riparian areas, including along streams and rivers, low-lying areas, utility ROWs; it rapidly colonizes scoured areas and can survive severe floods; can tolerate full shade, high temperatures, high salinity, and drought (Forest Service 2017b).	No occurrence records in Arizona and is not known from TNF.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.
Johnsongrass (*Sorghum halepense*)	ADA		Occurs in disturbed areas such as roadsides, ditches, and fields.	Has occurrence records in every county in Arizona and has been documented in the TNF.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from recent occurrences.	Unlikely to occur: • East Plant Site Distant from recent occurrences.
Jointed goatgrass (*Aegilops cylindrica*)	TNF ADA		Occurs above 4,000 feet amsl, occurs in disturbed areas. Occurs in dry sites in grassland or wooded communities and roadsides at elevations ranging from 5,300–7,000 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, Navajo, and Yavapai Counties. Occurs along SR 87 from Payson to Strawberry, and in the Young area.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Well below typical elevational range, do not contain grassland, and distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Karoo bush (African sheepbush) (*Pentzia incana*)	TNF		Occurs in dry, disturbed sites, including waste places, pastures, and along roadsides within desert, semidesert, grassland, chaparral oak scrub and pinyon-juniper (*Pinus* spp.-*Juniperus* spp.) woodland communities typically below 5,300 feet amsl elevation.	Occurrence records in Graham County. Has been documented at one site on TNF, north of the Oak Flat Campground on the Globe Ranger District.	May occur: • West Plant Site • MARRCO corridor • Filter plant Occurrence record near Oak Flat and contain suitable disturbed desert habitat.	May occur: • East Plant Site Occurrence records just north of East Plant Site, contains suitable disturbed habitat.
Kochia (*Kochia scoparia*) *(Bassia scoparia)*	TNF ADA		Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities in well-drained, uncompacted soil below 8,500 feet amsl; thrives in warm, low-rainfall environments; burns easily owing to plant structure.	Has occurrence records in Apache, Cochise, Coconino, Navajo, and Pima Counties.	Possible to occur: • West Plant Site • MARRCO corridor • Filter plant Areas are disturbed and within the elevational range, though no occurrence records in immediate vicinity.	Possible to occur: • East Plant Site Area is disturbed, and much of project is within elevational range of the species, though no occurrence records in immediate vicinity.
Leafy spurge (*Euphorbia esula*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites along roadsides and within fields, pastures, rangeland, and riparian communities, typically between 4,600–9,500 feet amsl.	Has occurrence records in Coconino County. Has been documented in the Coconino National Forest but not on the TNF.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Well below typical elevational range and distant from known occurrences.	Unlikely to occur: • East Plant Site Below typical elevational range and distant from known occurrences.

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Lehmann's lovegrass (*Eragrostis lehmanniana*)	TNF ADA	Baseline Activities Area (WestLand 2014)	Occurs in cultivated, disturbed, and degraded sites on sandy flats and on calcareous slopes within desert grassland, semidesert grassland, and woodland communities and roadsides, generally between 3,500–4,000 feet amsl elevation.	Has occurrence records in Cochise, Coconino, Graham, Maricopa, and Pima Counties. Within TNF, seeded extensively along highways, power line corridors, and after fires.	Unlikely to occur: • Filter plant Is well below typical elevational range, does not contain desert grassland, and distant from known occurrences. May occur: • MARRCO corridor • West Plant Site Even though below typical elevational range, are occurrences within 1 mile at similar elevation; suitable habitat may occur in portions of the project area.	Possible to occur: • East Plant Site Portions of project area may contain suitable habitat, occurrence records within 1 mile.
Lightning weed (*Drymaria arenarioides*)	Federal		Prefers dry areas, acidic soils, hills and plains, and stressed rangelands (Scher et al. 2015). It is well adapted to soils and climates within the *Bouteloua-Aristida* type.	Invades rangeland, displacing desired vegetation and is highly toxic to livestock. This species has not been documented in the United States but is spreading northward, reportedly to within 1 mile of New Mexico (Scher et al. 2015).	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in the United States.	Unlikely to occur: • East Plant Site This species is not known to occur in the United States.

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Malta star-thistle (*Centaurea melitensis*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites along roadways and within grassland and woodland communities at elevations below 7,200 feet amsl; is a competitive and aggressive plant.	Has occurrence records in Apache, Cochise, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai Counties. Widespread on TNF at low elevations below 3,000 feet amsl.	May occur: • West Plant Site • MARRCO corridor • Filter plant Suitable habitat occurs and occurrence records nearby along U.S. 60.	May occur: • East Plant Site Suitable habitat occurs and occurrence records nearby along U.S. 60.
Mediterranean grass (*Schismus barbatus*)	TNF	Mediterranean grass occurs on West Plant Site, established in low numbers within disturbed areas (WestLand 2017b), Baseline Activities Area (WestLand 2014)	Occurs in roadways and cultivated, disturbed, or degraded sites along roadways and in desert and semidesert grassland communities, generally at elevations below 5,000 feet amsl.	All Arizona counties except Apache, Cochise, Graham, Greenlee, and Navajo.	May occur: • West Plant Site • MARRCO corridor • Filter plant Suitable habitat occurs and occurrence records within 0.5 mile of the MARRCO corridor and West Plant Site.	May occur: • East Plant Site Suitable habitat occurs and occurrence records with 3 miles.
Mediterranean sage (*Salvia aethiopis*)	TNF		Occurs in roadways and cultivated, disturbed, or degraded sites along roadways and within meadows, grassland, woodland, and riparian communities; prefers well-drained soil; occurs at elevations typically below 8,500 feet amsl.	Has occurrence records in Coconino and Yavapai Counties.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

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Mexican paloverde (Jerusalem thorn) (*Parkinsonia aculeata*)	TNF	On TNF, a 2-acre infestation occurs from areas burned in the Cave Creek Complex fire near Camp Creek.	On the TNF, infestation occurred from a single ornamental planting in Camp Creek area; typically invades waste areas at low elevations. Invasive on degraded rangelands; tolerant of drought, waterlogging, and saline conditions.	Has occurrence records in Gila, Graham, Maricopa, Pima, Pinal, Santa Cruz, and Yuma Counties where it is a native species.	May occur: • West Plant Site • MARRCO corridor • Filter plant Suitable habitat occurs and an occurrence record within 0.5 mile of the West Plant Site.	May occur: • East Plant Site Suitable habitat occurs and an occurrence record with 1 mile.
Morning-glory (*Ipomoea purpurea, I. hederacea, I. triloba, Ipomoea x leucantha*)	ADA	*Ipomoea cristulata* is known to occur within the Oak Flat campground	Suitable habitat depends on species. For example, *I. hederacea* and *I. purpurea* occur in disturbed areas, *I. tenuiloba* occurs in pinyon-juniper woodlands.	There are 69 species of *Ipomoea*, consisting of native and introduced species, occurring in the NRCS Plants Database, 15 of which have occurrence records in Arizona.	May occur: • West Plant Site • MARRCO corridor • Filter plant This genus is widespread in Arizona, and these areas may contain drainages, roadsides, or other suitable habitat for species within this genus.	Known to occur: • East Plant Site

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Musk thistle (*Carduus nutans*)	TNF ADA		Grows from sea level up to 8,000 feet amsl in neutral to acidic soils; invades open areas (e.g., meadows or prairies) and spreads rapidly in areas of natural disturbance, including landslides and flooding; does not grow well in conditions that are excessively wet, dry, or shady (Forest Service 2018b). Typically occurs between 4,200–8,100 feet amsl.	Has occurrence records in Apache and Navajo Counties. Grows on Coconino National Forest; found on the TNF north and east of Payson in the area of the 1990 Dude Fire.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences and suitable meadow or prairie habitat does not occur.	Unlikely to occur: • East Plant Site Distant from known occurrences and suitable meadow or prairie habitat does not occur.
Natal grass (*Melinis repens*)	ADA		Occurs on rocky slopes and moist canyon bottoms from 2,500–4,500 feet amsl.	Has occurrence records in Maricopa, Pima, Pinal, Graham, Santa Cruz, and Cochise Counties.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.
Oleander (*Nerium oleander*)	TNF		On the TNF, has naturalized in Camp Creek and near Boyce Thompson Arboretum; in California has been found in floodplain and riparian zones.	Has occurrence records in Pinal and Maricopa Counties. On TNF, near Camp Creek and Boyce Thompson Arboretum.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Suitable habitat does not occur.	Unlikely to occur: • East Plant Site Nearest known occurrence is within Telegraph Canyon found in 2012.

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Onionweed (*Asphodelus fistulosus*)	Federal TNF ADA		In the Sonoran Desert region, it seems to do best at altitudes above the desert floor that receive moderate rainfall during winter. Tends to invade disturbed land leaving its potential threat to natural areas unclear. Elevation is 2,000–4,500 plus (USDA 2019).	Known in the five southeastern counties (Pima, Pinal, Santa Cruz, Cochise, and Greenlee) and in an area near Sedona in Yavapai County (USDA 2019) Not known to occur on TNF.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.
Oxeye daisy (*Leucanthemum vulgare*)	TNF		Occurs in cultivated, disturbed, or degraded sites on well-drained but moist soils along roadsides and within meadows, grassland, woodland, and forest communities at elevations from 5,000–9,500 feet amsl.	Has occurrence records in Apache, Coconino, Gila, and Navajo Counties. Identified growing near Canyon Creek, Pleasant Valley Ranger District, TNF; occurs in Flagstaff and Kachina Village, south of Flagstaff.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Well below typical elevational range and distant from known occurrences.	Unlikely to occur: • East Plant Site Below typical elevational range and distant from known occurrences.
Periwinkle (*Vinca major*)	TNF		Occurs in highly disturbed areas, including old homesteads, roadsides, and waste places; also occurs in riparian areas, forests, and grasslands; occurs at elevations below 7,500 feet amsl typically.	Has occurrence records in Cochise, Coconino, Maricopa, Pima, Santa Cruz, and Yavapai Counties. Occurs on TNF adjacent to private lands (e.g., Grantham Homestead off SR 288).	May occur: • West Plant Site • MARRCO corridor • Filter plant Suitable disturbed habitat occurs and an occurrence record in vicinity.	May occur: • East Plant Site Suitable disturbed habitat occurs and an occurrence record within 0.5 mile.

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Plumeless thistle (*Carduus acanthoides*)	TNF ADA		Occurs in sites that are dry and well-drained; occurs in cultivated, disturbed, or degraded sites within meadows, grassland, chaparral, woodland, forest, and riparian communities or roadsides at elevations generally ranging from 4,200–8,800 feet amsl.	Although the NRCS Plants Database shows no occurrence records in Arizona, other sources indicate occurrence records in Petrified Forest National Park. SEINet shows no occurrences in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.
Puncturevine (*Tribulus terrestris*)	ADA		Occurs in cultivated, disturbed, or degraded moist sites along roadsides and within grassland, woodland, and riparian communities; prefers dry, sandy soils but tolerates most soil types; found at elevations below 7,000 feet amsl.	Has occurrence records in all Arizona counties.	May occur: • West Plant Site • MARRCO corridor • Filter plant These areas may contain drainages, roadsides, or other suitable habitat for this species.	May occur: • East Plant Site This area contains disturbances and some riparian areas.
Purple loosestrife (*Lythrum salicaria*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites in perennial and seasonal wetlands; occurs along marsh and pond edges, stream banks, canals, and ditches at elevations generally from 4,500–6,800 feet amsl.	Although the NRCS Plants Database and SEINet show no occurrence records in Arizona, other sources indicate occurrence records on the Apache-Sitgreaves National Forests.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

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Purple star-thistle (*Centaurea calcitrapa*)	ADA		Occurs in cultivated, disturbed, or degraded sites with fertile soil; occurs in meadows, grassland, woodland, and forest communities and along roadsides at elevations typically ranging from 3,300–8,000 feet amsl; germination occurs under a broad range of conditions with fewer viable seeds produced in dry years; plants seldom persist under shady conditions.	Has occurrence records in Yuma County.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Well below typical elevational range and distant from known occurrences.	Unlikely to occur: • East Plant Site Below typical elevational range and distant from known occurrences.
Pyracantha (*Pyracantha* spp.)	TNF		Not a common invasive in the desert Southwest; on the TNF, occurred along Cave Creek. Drought resistant, common landscape plant; prefers dry soil and full sun (Dierking 1998).	Has occurrence records in Maricopa County. On TNF, occurred along Cave Creek.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not a common invasive, and occurrences are typically in metropolitan areas or rarely in canyons/riparian drainages.	Unlikely to occur: • East Plant Site This species is not a common invasive, and occurrences are typically in metropolitan areas or rarely in canyons/riparian drainages.

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Quackgrass (*Elymus repens*)	TNF ADA		Occurs in disturbed or degraded sites within grasslands, woodlands, forest communities, or along roadsides at elevations between 6,700–8,500 feet amsl; is extremely drought tolerant (White 2013).	Has occurrence records in Coconino, Gila, and Navajo Counties. Documented near Flagstaff, in Grand Canyon National Park, and on one site in TNF on Pleasant Valley Ranger District.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Well below typical elevational range and distant from known occurrences.	Unlikely to occur: • East Plant Site Below typical elevational range and distant from known occurrences.
Red brome (*Bromus rubens*)	TNF ADA	Red brome occurs on West Plant Site, established in low numbers within disturbed areas (WestLand 2017b); occurrence records in MARRCO corridor and East Plant Site	Occurs in cultivated, disturbed, or degraded sites along roadsides and in meadows, grassland, chaparral, woodland, and riparian communities, generally below 7,200 feet amsl. Red brome cannot withstand temperatures below freezing.	Has occurrence records in all Arizona counties except Cochise, Greenlee, La Paz, Navajo, Santa Cruz, and Yuma. Widespread on TNF.	Known to occur: • West Plant Site • MARRCO corridor Possible to occur: • Filter plant	Known to occur: • East Plant Site

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Rescuegrass (*Bromus catharticus*)	TNF	Occurrence record in East Plant Site	Occurs in cultivated, disturbed, or degraded soils along roadsides or within desert or semidesert communities generally below 4,500 feet amsl; can tolerate both cold temperatures and drought conditions.	Has occurrence records in all Arizona counties except Pinal and Greenlee. Likely grows on TNF; occurs at Montezuma Castle National Monument and in the Tucson Mountains.	May occur: • West Plant Site • MARRCO corridor • Filter plant Contains suitable disturbed habitat, occurrence records in vicinity.	Known to occur: • East Plant Site
Ripgut brome (*Bromus diandrus*)	TNF ADA	Occurrence record in East Plant Site	Occurs in cultivated, disturbed, or degraded sites along roadsides and within desert and semidesert communities, at elevations typically ranging from 3,200–4,600 feet amsl (White 2013).	Has occurrence records in Cochise, Coconino, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai Counties. Occurs on National Monuments near TNF (Tuzigoot, Montezuma Castle, and Tonto National Monuments), and at the Hassayampa River Preserve; also occurs on the Verde River where SR 260 crosses, near the town of Strawberry, in the area of the Willow Fire of 2004 west of Rye, and at Sycamore Creek along the Beeline Highway.	May occur: • West Plant Site • MARRCO corridor • Filter plant Even though below typical elevational range, contains suitable disturbed habitat and occurrence records in vicinity.	Known to occur: • East Plant Site

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Rush skeletonweed (*Chondrilla juncea*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities; prefers well-drained, sandy, or gravely soils below 5,500 feet amsl.	No occurrence records in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.
Russian knapweed (*Acroptilon repens*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadows, grassland, and riparian communities at elevations ranging from 3,000–8,000 feet amsl; found in variety of soil types; is a very competitive and aggressive species (White 2013).	Has occurrence records in Apache, Cochise, Greenlee, Maricopa, Navajo, Pima, and Yavapai Counties. Documented in vicinity of Gordon Canyon on SR 260 and at Shumway Millsite on Payson Ranger District, south of Payson.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant MARRCO corridor and Filter plant are below typical elevational range and all are distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

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Russian olive (*Elaeagnus angustifolia*)	TNF ADA		Seedlings tolerant of shade, thrives in a variety of soil and moisture conditions, including bare mineral substrates; found in open areas, grasslands, stream banks, lakeshores, roadsides, and urban areas (Forest Service 2018b). Typically occurs at elevations ranging from 4,000–7,500 feet amsl; can dominate riparian vegetation where overstory cottonwood (*Populus* spp.) have died.	Has occurrence records in Apache, Coconino, and Navajo Counties.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Below typical elevational range and distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences, and most of site is below typical elevational range.
Russian thistle (*Salsola kali* and *S. tragus*)	TNF		*Salsola* spp. occur on cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities; can occur on any type of well-drained uncompacted soil but is most frequently found in alkaline or saline soil below 8,500 feet amsl; burns easily owing to plant structure.	*Salsola* spp. have occurrence records in all Arizona counties.	May occur: • West Plant Site • MARRCO corridor • Filter plant This species is widespread and may occur if suitable disturbed soil is present.	May occur: • East Plant Site This species is widespread and may occur if suitable disturbed soil is present.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Saltcedar (*Tamarix ramosissima*)	TNF ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (Arizona Department of Environmental Quality 2017; Arizona Game and Fish Department 2017; WestLand 2017b)	*Tamarix* spp. occur in moist meadow and riparian communities, in drainage washes of both natural and artificial water bodies, and in other areas where seedlings can be exposed to extended periods of saturated soil conditions; can grow on saline soils with up to 15,000 parts per million soluble salt; occurs at elevations below 7,500 feet amsl.	On TNF, saltcedar occurs along the Verde River and its tributaries, along much of the Salt River, and along Salt and Verde River reservoirs.	Known to occur: (*Tamarix* spp.) • West Plant Site Possible to occur: • MARRCO corridor, where suitable habitat occurs. Unlikely to occur: • Filter plant No suitable riparian habitat occurs.	May occur: • East Plant Site The project area contains suitable riparian habitat.
Scotch thistle (*Onopordum acanthium*)	TNF ADA		Occurs in cultivated, disturbed, or degraded moist sites within meadows, grassland, woodland, and riparian communities, typically below 7,500 feet amsl; can germinate year-round.	Has occurrence records in Apache, Navajo, and Yavapai Counties. Common in the Four Corners area, the Arizona Strip, and along interstate system near Flagstaff; observed on TNF growing in Strawberry at the SR 87 bridge.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Proposed Action Analysis Area**	**Likelihood of Occurrence in Selected Lands Analysis Area**
Serrated tussock (*Nassella trichotoma*)	Federal		Grows in a wide range of climatic conditions and soil types, being able to tolerate floods, drought, exposure to salt, and repeated frost.	No occurrence records in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.
Siberian elm (*Ulmus pumila*)	TNF ADA		In Arizona, this species is found in forested areas and high elevations (Forest Service 2018b). Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadow, grassland, woodland, and riparian communities in well-drained soils, typically at elevations below 8,100 feet amsl.	Has occurrence records in Apache, Maricopa, and Navajo Counties. Plus, isolated records from Coconino National Forest east of Flagstaff and in Verde River/Lynx Lake/Thumb Butte areas of Prescott National Forest.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Smallflower tamarisk (*Tamarix parviflora*)	TNF ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (WestLand 2017b)	Riparian habitats, along permanent or intermittent streams, lakes, and reservoirs; can grow in a wide variety of soils and can tolerate salinity.	Has occurrence records in Arizona but not county-specific records. On TNF, *Tamarix* spp. occur along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	Known to occur: (*Tamarix* spp.) • West Plant Site Possible to occur: • MARRCO corridor, where suitable habitat occurs. Unlikely to occur: • Filter plant No suitable riparian habitat occurs.	May occur: • East Plant Site The project area contains suitable riparian habitat.
Southern sandbur (*Cenchrus echinatus*)	TNF ADA		Occurs in cultivated, disturbed, or degraded sites that contain sandy or gravelly conditions; is an aggressive colonizer with rapid growth under moist conditions; usually occurs at elevations between 3,500–4,500 feet amsl.	Has occurrence records in Cochise, Maricopa, Pima, and Yuma Counties. Plus, occurs east of TNF on the Fort Apache Reservation along the ROW for U.S. 60 east; occurs on TNF on ROW of SR 188, a few miles north of Globe.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences and below typical elevational range.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Spotted knapweed (*Centaurea biebersteinii*, *C. stoebe* ssp. *micranthos*)	TNF ADA		Found at elevations from sea level to 10,000 feet amsl in areas receiving 8–80 inches of rain per year; prefers well-drained, light-textured soils that receive summer rain in a wide variety of open forest, prairie, and rangelands; disturbance promotes rapid establishment and spread (Forest Service 2018b).	Although the NRCS Plants Database shows occurrence records only in Santa Cruz County, other sources indicate occurrence records along SRs 89A and 179 in Sedona, on Northern Arizona University campus, along Lake Mary Road, and in the vicinity of Prescott; north of Grand Canyon in the Arizona Strip and north of TNF above the Mogollon Rim; and there is an unconfirmed report on the Pleasant Valley Ranger District.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.
Sulfur cinquefoil (*Potentilla recta*)	TNF		Associated with roadsides, disturbed areas, abandoned agricultural fields, and waste areas within grasslands, shrublands, and open-canopy forests; intolerant of complete shade (Zouhar 2003).	Although the NRCS Plants Database shows no occurrence records in Arizona, other sources indicate occurrence records along the Rio de Flag and on the Lake Mary Road on Coconino National Forest.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Swamp morning-glory (*Ipomoea aquatica*)	Federal		Occurs in moist, marshy, or inundated localities, in shallow pools, ditches, or wet rice fields. Elevation between sea level and 3,200 feet amsl.	No occurrence records in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.
Sweet resinbush (*Euryops subcarnosus*)	TNF ADA		In Arizona, occurs in semiarid grassland, desert grassland, desert shrub, and desertscrub communities below the Mogollon Rim.	Has occurrence records in Graham, Pima, and Yavapai Counties. Occurs on Fry Mesa south of Safford, on the Santa Rita Experimental Range, and several small patches south of the Globe Ranger Station; west of SR 188 in Tonto Basin, north of U.S. 60, north of the Miami cemetery; and east of Miami cemetery and 2 miles down Bloody Tanks Wash toward Miami.	Possible to occur: • West Plant Site • MARRCO corridor • Filter plant Contains suitable habitat and has occurrences in the vicinity.	Possible to occur: • East Plant Site Contains suitable habitat and has occurrences in the vicinity.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Tamarisk (*Tamarix* spp.)[†]	ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (Arizona Department of Environmental Quality 2017; Arizona Game and Fish Department 2017; WestLand 2017b), Mineral Creek (WestLand 2012), and Near West Analysis Area (WestLand 2013)	*Tamarix* spp. occur in moist meadow and riparian communities, in drainage washes of both natural and artificial water bodies, and in other areas where seedlings can be exposed to extended periods of saturated soil conditions; can grow on saline soils with up to 15,000 parts per million soluble salt; occurs at elevations below 7,500 feet amsl.	*Tamarix* spp. has occurrence records in all Arizona Counties except Greenlee, La Paz, Pinal, and Yuma. On TNF, saltcedar occurs along the Verde River and its tributaries, along much of the Salt River, and along Salt and Verde River reservoirs.	Known to occur (*Tamarix* spp.): • West Plant Site Possible to occur: • MARRCO corridor, where suitable habitat occurs. Unlikely to occur: • Filter plant No suitable riparian habitat occurs.	May occur: • East Plant Site The project area contains suitable riparian habitat
Three-lobed morning-glory (*Ipomoea triloba*)	ADA	Only two records of occurrence in TNF, in 1930.	Occurs in cultivated fields, sandy ground, and grassy swamp margins on hedges and in thickets; low to middle elevations.	The NRCS Plants Database shows no occurrence records in Arizona. SEINet has five records in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species has no recent occurrences in or near TNF.	Unlikely to occur: • East Plant Site The project area is distant to known locations.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Tree of heaven (*Ailanthus altissima*)	TNF ADA		Widely distributed in fields, roadsides, fencerows, woodland edges, and forest openings (Forest Service 2018b). Generally occurs below 6,200 feet amsl.	Has occurrence records in Cochise, Coconino Gila, Greenlee, Maricopa, Pima, Pinal, Santa Cruz, and Yavapai Counties. Occurrences around Cottonwood, Camp Verde, and Jerome; on Coronado National Forest land; in TNF on Verde River near Childs; in Superior and Globe and on National Forest land nearby; near confluence of Pinal Creek and Salt River; and in Payson.	May occur: • West Plant Site • MARRCO corridor Although there are no occurrence records in the immediate vicinity, habitat may occur. Unlikely to occur: • Filter plant Field, roadside, fencerow, or woodland edge habitat does not occur.	May occur: • East Plant Site Although there are no occurrence records in the immediate vicinity, habitat may occur.
Tropical soda apple (*Solanum viarum*)	Federal		Occurs in areas that have been frequented by animals or that have received natural materials contaminated by seed, including pasturelands, roadsides, or cattle yards (Forest Service 2018b).	No occurrence records in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Ward's weed (*Carrichtera annua*)	ADA		Occurs in grasslands, scrub, and chaparral vegetation communities (California Invasive Plant Council 2025).	No occurrence records in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.
Weeping lovegrass (*Eragrostis curvula*)	TNF	Baseline Activities Area (WestLand 2014)	Occurs in cultivated, disturbed, or degraded areas along roadsides or within meadows, grasslands, and at the margins of chaparral, woodland, and forest communities, generally at elevations between 6,000–8,000 feet amsl; this species has high potential for establishment on burned sites.	Has occurrence records in Cochise, Coconino, Gila, Graham, Maricopa, Pima, and Yavapai Counties. Within TNF, seeded extensively along highways, power line corridors, and after fires; seeded in Pinal Mountains after a fire.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known and below typical elevational range.	Unlikely to occur: • East Plant Site Distant from known occurrences and below typical elevational range.
Witchweed (*Striga* spp.)	Federal		Parasitic plant that attacks agricultural crops (National Invasive Species Information Center 2017).	No occurrence records in Arizona.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant This species is not known to occur in Arizona.	Unlikely to occur: • East Plant Site This species is not known to occur in Arizona.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
White bietou (*Dimorphotheca cuneata*)	TNF		On the TNF, occurs in yards and canyons between Six Shooter Canyon and National Forest land to the west; no other records of this species being invasive in the United States.	Occurs in an approximately 40-acre patch on the TNF between Six Shooter Canyon and National Forest land to the west.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.
Wild mustard (*Sinapis arvensis*)	TNF ADA		Occurs in dry, disturbed sites, including waste places, pastures, roadsides, and railroad ROWs, generally below elevations of 6,000 feet amsl.	Has occurrence records in Gila, Maricopa, Pima, and Pinal Counties. Occurs along SR 188 from Punkin Center to Roosevelt, on private lands; is common on Agua Fria National Monument, west of Perry Mesa tobosa grassland in Cave Creek Ranger District.	May occur: • West Plant Site • MARRCO corridor • Filter plant Although no occurrence records in immediate vicinity, disturbed sites, roadsides, and railroad ROWs occur, and sites are within typical elevational range.	May occur: • East Plant Site Although no occurrence records in immediate vicinity, disturbed sites and roadsides occur, and site is within typical elevational range.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Wild oats (*Avena fatua*)	TNF	Has occurrence records in East Plant Site; Baseline Activities Area (WestLand 2014)	Occurs in cultivated, disturbed, or degraded areas along roadsides and within desert, semidesert grasslands, and woodland communities, typically at elevations between 2,500–7,200 feet amsl.	Has occurrence records in all Arizona counties except Graham, Greenlee, La Paz, Navajo, Santa Cruz, and Yuma. Found along most highways in TNF.	May occur: • West Plant Site • MARRCO corridor Even though sites are below typical elevational range, they contain suitable disturbed habitat and there are occurrence records in vicinity. Unlikely to occur: • Filter plant Below typical elevational range, and distant from nearest known occurrence.	Known to occur: • East Plant Site
Witchweed (*Striga* spp.)	Federal		Parasitic plant that attaches agricultural crops.	No occurrence records in Arizona.	Unlikely to occur.	Unlikely to occur.
Yellow bluestem (*Bothriochloa ischaemum*)	ADA		Occurs in disturbed roadsides, waste places, and pastures up to 4,000 feet amsl.	Has occurrence records in Maricopa, Pima, and Cochise Counties.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Yellow star-thistle (*Centaurea solstitialis*)	TNF ADA		Prefers full sunlight and deep, well-drained soils where rainfall is 10–60 inches per year; most commonly occurs in disturbed areas (Forest Service 2018b). Generally occurs below 8,200 feet amsl elevation.	Although the NRCS Plants Database only shows occurrence records in Yuma County, other sources indicate that this species has become established in central Arizona, within the communities of Flagstaff, Camp Verde, Payson, Star Valley, and Young; on TNF, this species occurs mainly on the higher elevation districts (Payson and Pleasant Valley) but has been documented in the Tonto Basin below 3,000 feet amsl elevation.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Proposed Action Analysis Area	Likelihood of Occurrence in Selected Lands Analysis Area
Yellow sweetclover (*Melilotus officinalis*)	TNF		Occurs in cultivated, disturbed, or degraded areas along roadsides and within meadows, grassland, woodland, and forest.	Has occurrence records in all Arizona counties except Greenlee, La Paz, Mohave, and Yuma. This species is widespread in Arizona, and very common in riparian zones of the TNF along the Verde River and on the Cave Creek Ranger District.	May occur: • West Plant Site • MARRCO corridor • Filter plant	May occur: • East Plant Site
Yellow toadflax (*Linaria vulgaris*)	TNF		Occurs in cultivated, disturbed, or degraded areas along roadsides and within meadows, grassland, woodland, and riparian communities at elevations typically ranging from 6,400–9,200 feet amsl; germination highest on open sites with compacted soils and little vegetation.	Has occurrence records in Coconino County.	Unlikely to occur: • West Plant Site • MARRCO corridor • Filter plant Distant from known occurrences.	Unlikely to occur: • East Plant Site Distant from known occurrences.

Unless otherwise noted, range, habitat, or occurrence information is from the following sources: CABI (2018); NRCS (2025); SEINet (2025); TNF (2018); White (2013).

Unless otherwise noted, occurrence data is from Arizona Game and Fish Department, transmitted on August 13, 2018, or from SEINet (2025).

* Status definitions are as follows:

ADA = Arizona Department of Agriculture; species is listed as a noxious weed by the ADA (2025).

Federal = species is listed as a noxious weed by the USDA (2010).

TNF = Tonto National Forest; species is listed as an invasive species by the TNF (2018).

† Tamarix spp. is the listed entity on the ADA list (ADA 2025); this includes T. chinensis, T. parviflora, and T. ramosissima, which are also TNF species (TNF 2018). Other species, including T. africana, T. aphylla, and T. canariensis, are shown in the Plants Database (NRCS 2025) as occurring in Arizona. SEINet (2025) shows T. africana to occur associated with the Phoenix and Tucson metro areas, T. aphylla to occur within the analysis area near Boyce Thompson and the MARRCO corridor, and T. canariensis to occur in the Phoenix metro area.

Table A1-7. Noxious and Invasive Weed Species Analyzed for Alternative 4 – Silver King

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
African rue (*Peganum harmala*)	TNF ADA	No known records, but suitable habitat occurs (WestLand 2018a).	Favors disturbed and barren areas with moist soil such as roadsides, riparian corridors, and irrigation ditches; will grow in alkaline soils and high saline soils (Forest Service 2014a). Typically occurs below 4,500 feet amsl; seeds can germinate under fairly saline conditions.	Maricopa County. Also has been observed in Pima County along Interstate 10 near Vail, but not on TNF.	May occur
African sumac (*Rhus lancea*)	TNF	African sumac does not occur near or within the project area.	Occurs in well-drained sites in woodlands, grassland margins, and riparian communities; occurs in disturbed, degraded, or cultivated sites, typically below 2,000 feet amsl.	The NRCS Plants Database indicates that there are no records in Arizona. No records on TNF; however, a recent record occurs in Cave Creek approximately 3 miles downstream of the Cave Creek parcel.	Unlikely to occur
Anchored water hyacinth (*Eichhornia azurea*)	Federal	Anchored water hyacinth does not occur near or within the project area.	Freshwater, perennial, aquatic plant found in permanent water bodies, prefers open, slow-moving water environments.	No record in Arizona.	Unlikely to occur
Arabian schismus (*Schismus arabicus*)	TNF	Arabian schismus occurs within the TNF and observed 20 miles south of Globe.	Occurs in disturbed, degraded, or cultivated sites in desert and semidesert grassland communities and along roadsides, typically at elevations below 4,500 feet amsl.	Has occurrence records in Cochise, Maricopa, Mojave, Pima, and Pinal Counties.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Asian mustard (Sahara mustard) (*Brassica tournefortii*)	TNF ADA	Asian mustard occurs widespread within the TNF and very close to the area to the north and west.	Occurs in areas with windblown sediments and disturbed areas within desert grasslands, desertscrub, and roadsides at elevations typically below 2,600 feet amsl.	Has occurrence records in Maricopa, Pima, Pinal, and Yuma Counties. Widespread throughout TNF.	Known to occur
Black mustard (*Brassica nigra*)	TNF ADA	Occurrences along SR 87 within TNF; occurrences within the TNF.	Occurs in dry disturbed sites such as along roadsides, railroad rights-of-ways (ROWs), pastures, and waste places at elevations below 7,000 feet amsl.	Has occurrence records in Cochise, Coconino, Maricopa, Pima, and Pinal Counties. Occurs along SR 188 through Tonto Basin, and along SR 87 within TNF.	Known to occur
Blue mustard (*Chorispora tenella*)	TNF	Occurrence near or possibly within the TNF on the east side of the area.	Occurs in disturbed sites, including waste places, pastures, roadsides, and railroad ROWs, typically below 7,500 feet amsl elevation.	Has occurrence records in Apache, Coconino, Maricopa, Navajo, and Yavapai Counties. Has been found outside of the TNF along SR 69 between Cordes Junction and Prescott; in Prescott; and north of Holbrook.	Known to occur
Branched broomrape (Hemp broomrape) (*Orobanche ramosa*)	Federal ADA	Branched broomrape does not occur near or within the project area.	Requires relatively high temperatures for optimum germination and growth and occurs mainly in irrigated crops grown under summer conditions in tropical and subtropical climates. Adapted to soils of generally high pH and are associated with the crops they attack.	No records in Arizona.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Buffelgrass (*Pennisetum ciliare,* also known as *Cenchrus ciliaris*)	TNF ADA	Observed in the vicinity of U.S. 60 and SR 188 throughout the TNF.	Alkaline soils and within arid areas with high nutrients and moisture (Invasive Species Specialist Group 2006). Extremely drought tolerant and reestablishes quickly and expands infestation following fire (Northam and Meyer 2009).	Has occurrence records in Maricopa, Pima, Pinal, and Yuma Counties. Common in Phoenix and spreading onto TNF along U.S. 60 and SR 87, Pima Road in Scottsdale, Cave Creek Road, and others.	Known to occur
Bull thistle (*Cirsium vulgare*)	TNF ADA	Abundance of occurrences to the north of the TNF, west of the Apache-Sitgreaves National Forests. An occurrence near SR 288 within the TNF has been observed.	Occurs most often in areas that have been recently or repeatedly disturbed (e.g., overgrazed rangelands, recently burned forests, clear-cuts, and along roads and ditches); prefers soil of intermediate moisture (Forest Service 2018b). Typically occurs at elevations between 4,500 and 9,100 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, and Navajo Counties. Common from Flagstaff to south of Mogollon Rim.	Known to occur
Camelthorn (*Alhagi maurorum*)	TNF ADA	Due to the need for moist sites, occurrences should be limited or non-existent within the TNF; however, a few occurrences have been observed near Globe.	Occurs in moist sites that are cultivated, disturbed, or degraded; typically found at 4,500 to 5,000 feet amsl within meadows, grasslands, and riparian communities.	Has occurrence records in Apache, Coconino, Gila, Maricopa, and Navajo Counties. Heavy infestations in northeastern part of state; near Painted Rock Dam; southwest of Phoenix; west of Phoenix near Loop 101; Chandler; U.S. 60 just north of Globe; U.S. 60 north of the Salt River; but not yet on TNF.	May occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Canada thistle (*Cirsium arvense*)	TNF ADA	Canada thistle does not occur near or within the project area.	Occurs most commonly in disturbed upland areas (e.g., barrens, meadows, fields, pastures), but can also invade wet areas with fluctuating water levels (Forest Service 2018b). Typically occurs at elevations between 4,200 to 8,300 feet amsl.	Has occurrence records in Apache, Coconino, and Yavapai Counties. Occurs in northeast part of state, and near the OW Ranch, west of Canyon Creek on the TNF.	Unlikely to occur
Common teasel (Fuller's teasel) (*Dipsacus fullonum*)	TNF	Not abundant; however, there are occurrences within the TNF at Sharp Creek Campground.	Prefers open, sunny habitats and commonly occurs in disturbed areas, including roadsides and pastures; grows in both moist and arid soils, but more commonly found in mesic soils (Forest Service 2014b). Typically occurs at elevations ranging from 4,700 to 8,700 feet amsl.	Has occurrence records in Coconino County. Occurs at Watson Woods on Granite Creek near Prescott; at Shumway Millsite, south of Payson and at Sharp Creek Campground on TNF.	Known to occur
Dalmatian toadflax (*Linaria dalmatica*)	TNF ADA	One occurrence in TNF south of Pine near SR 260.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadows, grassland, woodland, and riparian communities at elevations ranging from 4,400 to 10,000 feet amsl.	Has occurrence records in Coconino and Yavapai Counties. Common around Flagstaff; widespread in ponderosa pine forests on Kaibab, Coconino, and Prescott National Forests; on TNF, grows at Hot Shot Base, along SR 87 between Payson and Rye, and near the Verde River 1 mile downstream from Childs.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Diffuse knapweed (*Centaurea diffusa*)	TNF ADA	Two occurrences in TNF near Young near SR 288.	Prefers well-drained soils within cultivated, disturbed, or degraded sites along roadsides or within meadows, grassland, woodland, and forest communities at elevations typically below 7,200 feet amsl (Forest Service 2017b).	Has occurrence records in Apache County. Common on private lands in Young; on TNF occurs at Pleasant Valley airport; Pleasant Valley Ranger Station, along Cherry Creek, and along SR 288 at Board Tree Saddle (south of Young).	Unlikely to occur
Dodder (*Cuscuta* spp.) (except for natives)	Federal	Nonnative dodder did not occur near or within the project area.	Parasitic annual plant species that can invest a variety of host species, including crops, weed species, shrubs, and trees (University of California Statewide Integrated Pest Management Program 2017).	Has occurrence records in all counties except Apache, Graham, and Greenlee.	Unlikely to occur
Downy brome (cheatgrass) (*Bromus tectorum*)	TNF ADA	Disturbed areas and generally dry soils may create occurrences for this species. Known occurrences are near U.S. 60 near Superior and Globe and northward near Willow, near SR 288.	Occurs from valley bottoms to high mountainous areas; quickly invades disturbed sites (Northam and Meyer 2009). Prefers well-drained soils of any texture but is not well adapted to saline or sodic soil conditions or wet soil (NRCS 2018).	Has occurrence records in all counties except, Cochise, Greenlee, La Paz, Pinal, Santa Cruz, and Yuma.	May occur
Dyer's woad (*Isatis tinctoria*)	TNF ADA	Dryer's woad does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland or woodland communities; prefers dry rocky or sandy soils at elevations from 4,300 to 7,000 feet amsl.	No records in Arizona.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Dudaim melon (cantaloupe) (*Cucumis melo*)	ADA	Dudaim melon does not occur near or within the project area.	Occurs in disturbed areas with abundant moisture, including fields, roadsides, and ditches (Winston et al. 2014).	No records in Arizona (Winston et al. 2014).	Unlikely to occur
Field bindweed (*Convolvulus arvensis*)	TNF ADA	Disturbed areas with known species occurrences north of Winslow along SR 288.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland, chaparral, woodland, forest, and riparian communities at elevations ranging from 3,500 to 10,000 feet amsl.	Has occurrence records in all Arizona counties.	May occur
Field sandbur (*Cenchrus spinifex incertus*)	TNF ADA	Occurs east of TNF on the Fort Apache Reservation along the ROW for U.S. 60 east; occurs on TNF on ROW of SR 188, a few miles north of Globe. Occurrences near the Superstition Mountains.	Prefers sandy or gravelly sites that have been disturbed, or degraded sites at elevations between 3,500 and 5,000 feet amsl.	Has occurrence records in all counties except La Paz, Pinal, and Yuma. Occurs east of TNF on the Fort Apache Reservation along the ROW for U.S. 60 east; occurs on TNF on ROW of SR 188, a few miles north of Globe.	Known to occur
Five-stamen tamarisk (*Tamarix chinensis*)	TNF ADA	Known occurrences throughout the TNF.	Desert riparian habitats, including seeps, springs, and roadsides; may tolerate saline soil.	Has occurrence records in all Arizona counties except Greenlee, La Paz, Pinal, and Yuma. On TNF, saltcedar occurs along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	Known to occur

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Fountain grass (*Pennisetum setaceum*)	TNF ADA	Documented in all desert districts within the TNF; very abundant along U.S. 60 between Superior and mountain tunnel; also occurs along SR 87, along the road to Bartlett and Horseshoe Reservoirs, and in the Salt River Recreation Area. Occurrence near Superior, and locations to the northwest of TNF.	Usually found along roadways or in rangelands (Northam and Meyer 2009). Prefers arid to semiarid conditions but can occur in mesic environments; usually occurs in areas with mild winters and summer moisture; prefers open, sunny areas with well-drained soils.	Has occurrence records in Cochise, Maricopa, Pima, and Santa Cruz Counties. Documented in all desert districts within the TNF; very abundant along U.S. 60 between Superior and mountain tunnel; also occurs along SR 87, along the road to Bartlett and Horseshoe Reservoirs, and in the Salt River Recreation Area.	Known to occur
Floating water hyacinth (*Eichhornia crassipes*)	ADA	Floating water hyacinth does not occur near or within the project area.	Aquatic, floating plant that occurs in tropical and subtropical freshwater lakes and rivers.	Has occurrence records in Maricopa County.	Unlikely to occur
Giant reed (*Arundo donax*)	TNF ADA	One occurrence in the yard of Sallie Valkenburgh, San Carlos near SR 170.	Occurs in moist areas, including ditches, streams, river banks, and floodplains; prefers well-drained soils with abundant moisture; will tolerate a wide variety of conditions, including high salinity; will tolerate a wide range of soil types from clay to sand; typically occurs below 4,000 feet amsl.	Has occurrence records in Cochise, Maricopa, and Navajo Counties. Occurs upstream of TNF on the Upper Verde, with potential to invade in a large river scouring event.	Unlikely to occur
Giant salvinia (*Salvinia molesta*)	Federal ADA	Giant salvinia does not occur near or within the project area.	Prefers warm freshwater in temperate and subtropical climates (Chambers and Hawkins 2002). Occurrence records from the southwest portion of Arizona, in and near the Colorado River.	Found in slow-moving water or still water canals, ponds, rivers, lakes, and reservoirs (Chambers and Hawkins 2002).	Unlikely to occur

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Globe chamomile (stinknet) (*Oncosiphon piluliferum*)	TNF ADA	Disturbed areas along existing roadways within the elevational range of the species may provide habitat for this species. Occurrences are present west of the TNF.	Occurs in disturbed areas, including waste places, pastures, and along roadsides; typically found at elevations below 3,500 feet amsl; this annual is a pioneer species within disturbed sites.	Has occurrence records in Maricopa, Pinal, and Yavapai Counties. Documented along Interstate 17 north of Phoenix, near Skunk Tank Ridge south of Cave Creek on the Cave Creek Ranger District, at the Cave Creek Ranger Station, at the Sonoran Desert National Monument, Pinal City near Superior, along SR 84 west of Casa Grande, Extension Service Demonstration Garden (east Broadway in Phoenix), on Carefree Highway, 4 miles east of Interstate 17, and growing in cultivation at the Desert Botanical Garden and Boyce Thompson Arboretum.	May occur
Globe-podded hoary cress (whitetop) (*Cardaria draba*)	TNF ADA	A few occurrences to the north of the TNF. On the TNF, occurs on the Pleasant Valley Ranger District.	Occurs in cultivated, disturbed, or degraded moist sites along roadsides or within meadows, grassland, chaparral, woodland, forest, and riparian communities; prefers alkaline to saline soils, but will tolerate a wide variety of soil and moisture conditions; typically found between 3,000 and 8,000 feet amsl.	Has occurrence records in Navajo, Santa Cruz, and Yavapai Counties. *Cardaria* spp. have been recorded in Prescott, Camp Verde, Flagstaff, and Cottonwood, and on the upper Verde River near Perkinsville; on the TNF, occurs on the Pleasant Valley Ranger District.	Known to occur

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Hairy white-top (*Cardaria pubescens*)	TNF	On the TNF, occurs on the Pleasant Valley Ranger District.	Occurs in cultivated, disturbed, or degraded moist sites along roadsides or within meadows, grassland, chaparral, woodland, forest, and riparian communities; prefers alkaline to saline soils, but can tolerate a wide range of soils and moisture conditions; typical elevation is 3,000 to 8,000 feet amsl.	*Cardaria* spp. have been recorded in Prescott, Camp Verde, Flagstaff, and Cottonwood, and on the upper Verde River near Perkinsville; on the TNF, occurs on the Pleasant Valley Ranger District.	Known to occur
Halogeton (saltlover) (*Halogeton glomeratus*)	ADA	Halogeton does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides or within grassland or woodland communities; prefers open areas and alkaline and saline soils, generally at elevations ranging from 4,000 to 6,500 feet amsl.	Has occurrence records in Apache, Navajo, and Mohave Counties.	Unlikely to occur
Hydrilla (waterthyme) (*Hydrilla verticillata*)	Federal ADA	Waterthyme does not occur near or within the project area.	Found mainly in freshwater aquatic systems but can tolerate low salinity. Sometimes found in upper reaches of estuaries. Found in shallow water, but in clear water can survive depths to 49 feet (Chambers and Hawkins 2002).	Has occurrence records in Maricopa County.	Unlikely to occur

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Japanese brome (*Bromus japonicus*)	TNF	Disturbed areas along existing roadways give the possibility for occurrence; however, elevation may be too low to occur. Known occurrences north of Willow near SR 288 and west of Tonto Basin near SR 87.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within semidesert grassland and wooded communities at elevations ranging from 4,500 to 7,200 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, Gila, Greenlee, Maricopa, Pima, and Navajo Counties.	May occur
Japanese knotweed (*Polygonum cuspidatum*)	TNF	Japanese knotweed does not occur near or within the project area.	Riparian areas, including along streams and rivers, low-lying areas, utility ROWs; it rapidly colonizes scoured areas and can survive severe floods; can tolerate full shade, high temperatures, high salinity, and drought (Forest Service 2018b).	No occurrence records in Arizona and is not known from TNF.	Unlikely to occur
Johnsongrass (*Sorghum halepense*)	ADA		Occurs in disturbed areas such as roadsides, ditches, and fields.	Has occurrence records in every county in Arizona and has been documented in the TNF.	Unlikely to occur
Jointed goatgrass (*Aegilops cylindrica*)	TNF ADA	Occurs along SR 87 from Payson to Strawberry, and in the Young area. Lower elevations in the TNF may prevent growth; disturbed areas and dry sites may promote possible growth.	Occurs above 4,000 feet amsl, occurs in disturbed areas. Occurs in dry sites in grassland or wooded communities and roadsides at elevations ranging from 5,300 to 7,000 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, Navajo, and Yavapai Counties. Occurs along SR 87 from Payson to Strawberry, and in the Young area.	May occur

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Karoo bush (African sheepbush) (*Pentzia incana*)	TNF	Has been documented at one site on TNF, north of the Oak Flat Campground on the Globe Ranger District. An occurrence near U.S. 60 east of Superior.	Occurs in dry, disturbed sites, including waste places, pastures, and along roadsides within desert, semidesert, grassland, chaparral oak (*Quercus* spp.) scrub and pinyon-juniper (*Pinus* spp.-*Juniperus* spp.) woodland communities typically at elevations below 5,300 feet amsl.	Occurrence records in Graham County. Has been documented at one site on TNF, north of the Oak Flat Campground on the Globe Ranger District.	Known to occur
Kochia *Kochia scoparia (Bassia scoparia)*	TNF ADA	Disturbed areas along existing roadways and dry sites with low rainfall may promote growth. There are two occurrences north of Tonto Basin in the TNF.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities in well-drained, uncompacted soil, below 8,500 feet amsl; thrives in warm, low-rainfall environments; burns easily owing to plant structure.	Has occurrence records in Apache, Cochise, Coconino, Navajo, and Pima Counties.	Known to occur
Leafy spurge (*Euphorbia esula*)	TNF ADA	Leafy spurge does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within fields, pastures, rangeland, and riparian communities, typically between 4,600 and 9,500 feet amsl.	Has occurrence records in Coconino County. Has been documented in the Coconino National Forest but not on the TNF.	Unlikely to occur

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Lehmann's lovegrass (*Eragrostis lehmanniana*)	TNF ADA	Within TNF, seeded extensively along highways, power line corridors, and after fires. Known occurrences observed throughout the TNF.	Occurs in cultivated, disturbed, and degraded sites on sandy flats and on calcareous slopes within desert grassland, semidesert grassland, and woodland communities and roadsides, generally at elevations of 3,500 and 4,000 feet amsl.	Has occurrence records in Cochise, Coconino, Graham, Maricopa, and Pima Counties. Within TNF, seeded extensively along highways, power line corridors, and after fires.	Known to occur
Lightning weed (*Drymaria arenarioides*)	Federal	Lightning weed does not occur near or within the project area.	Prefers dry areas, acidic soils, hills and plains, and stressed rangelands (Scher et al. 2015). It is well adapted to soils and climates within the *Bouteloua-Aristida* type.	Invades rangeland, displacing desired vegetation and is highly toxic to livestock. This species has not been documented in the United States but is spreading northward, reportedly to within 1 mile of New Mexico (Scher et al. 2015).	Unlikely to occur
Malta star-thistle (*Centaurea melitensis*)	TNF ADA	Widespread on TNF at low elevations below 3,000 feet amsl.	Occurs in cultivated, disturbed, or degraded sites along roadways and within grassland and woodland communities at elevations below 7,200 feet amsl; is a competitive and aggressive plant.	Has occurrence records in Apache, Cochise, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai Counties. Widespread on TNF at low elevations below 3,000 feet.	Known to occur
Mediterranean grass (*Schismus barbatus*)	TNF	Mediterranean grass occurs throughout the TNF.	Occurs in roadways and cultivated, disturbed, or degraded sites along roadways and in desert and semidesert grassland communities, generally at elevations below 5,000 feet amsl.	All Arizona counties except Apache, Cochise, Graham, Greenlee, and Navajo.	Known to occur

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Mediterranean sage (*Salvia aethiopis*)	TNF	Mediterranean sage does not occur near or within the project area.	Occurs in roadways and cultivated, disturbed, or degraded sites along roadways and within meadows, grassland, woodland, and riparian communities; prefers well-drained soil; typically occurs at elevations below 8,500 feet amsl.	Has occurrence records in Coconino and Yavapai Counties.	Unlikely to occur
Mexican paloverde (Jerusalem thorn) (*Parkinsonia aculeata*)	TNF	On TNF, a 2-acre infestation occurs from areas burned in the Cave Creek Complex fire near Camp Creek.	On the TNF, infestation occurred from a single ornamental planting in Camp Creek area; typically invades waste areas at low elevations. Invasive on degraded rangelands; tolerant of drought, waterlogging, and saline conditions.	Has occurrence records in Gila, Graham Maricopa, Pima, Pinal, Santa Cruz, and Yuma Counties where it is a native species. On TNF, a 2-acre infestation occurs from areas burned in the Cave Creek Complex fire near Camp Creek.	Known to occur
Morning-glory (*Ipomoea purpurea, I. hederacea, I. triloba, Ipomoea x leucantha*)	ADA	This species is widespread throughout Arizona and can take hold in disturbed areas.	Suitable habitat depends on species. For example, *I. hederacea* and *I. purpurea* occur in disturbed areas; *I. tenuiloba* occurs in pinyon-juniper woodlands.	There are 69 species of *Ipomoea*, consisting of native and introduced species, occurring in the NRCS Plants Database, 15 of which have occurrence records in Arizona.	May occur

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Musk thistle (*Carduus nutans*)	TNF ADA	Musk thistle does not occur near or within the project area.	Grows from sea level up to 8,000 feet amsl in neutral to acidic soils; invades open areas (e.g., meadows or prairies) and spreads rapidly in areas of natural disturbance, including landslides and flooding; does not grow well in conditions that are excessively wet, dry, or shady (Forest Service 2018b). Typically occurs between 4,200 and 8,100 feet amsl.	Has occurrence records in Apache and Navajo Counties.	Unlikely to occur
Natal grass (*Melinis repens*)	ADA		Occurs on rocky slopes and moist canyon bottoms from 2,500 to 4,500 feet amsl.	Has occurrence records in Maricopa, Pima, Pinal, Graham, Santa Cruz, and Cochise Counties.	Unlikely to occur
Oleander (*Nerium oleander*)	TNF	On TNF, near Camp Creek and Boyce Thompson Arboretum.	On the TNF, has naturalized in Camp Creek and near Boyce Thompson Arboretum; in California has been found in floodplain and riparian zones.	Has occurrence records in Maricopa County. On TNF, near Camp Creek and Boyce Thompson Arboretum.	Known to occur
Onionweed (*Asphodelus fistulosus*)	Federal TNF ADA	Onionweed does not occur near or within the project area.	In the Sonoran Desert region, it seems to do best at altitudes above the desert floor that receive moderate rainfall during winter. Tends to invade disturbed land leaving its potential threat to natural areas unclear. Elevation is 2,000–>4,500 feet amsl (USDA 2019).	Known in the five southeastern counties (Pima, Pinal, Santa Cruz, Cochise, and Greenlee) and in an area near Sedona in Yavapai County (USDA 2019). Not known to occur on TNF.	Unlikely to occur

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Oxeye daisy (*Leucanthemum vulgare*)	TNF	Occurs in a few locations on TNF east of Bear Flat.	Occurs in cultivated, disturbed, or degraded sites on well-drained but moist soils along roadsides and within meadows, grassland, woodland, and forest communities at elevations from 5,000 to 9,500 feet amsl.	Has occurrence records in Apache, Coconino, Gila, and Navajo Counties. Identified growing near Canyon Creek, Pleasant Valley Ranger District, TNF; occurs in Flagstaff and Kachina Village, south of Flagstaff.	Unlikely to occur
Periwinkle (*Vinca major*)	TNF	Occurs on TNF adjacent to private lands (e.g., Grantham Homestead off SR 288). A few occurrences spread throughout the TNF.	Occurs in highly disturbed areas, including old homesteads, roadsides, and waste places; also occurs in riparian areas, forests, and grasslands; typically occurs at elevations below 7,500 feet amsl.	Has occurrence records in Cochise, Coconino, Maricopa, Pima, Santa Cruz, and Yavapai Counties. Occurs on TNF adjacent to private lands (e.g., Grantham Homestead off SR 288).	Known to occur
Plumeless thistle (*Carduus acanthoides*)	TNF ADA	SEINet shows no occurrences in Arizona; however, TNF (2018) indicates occurrences in the Petrified Forest National Park.	Occurs in sites that are dry and well-drained; occurs in cultivated, disturbed, or degraded sites within meadows, grassland, chaparral, woodland, forest, and riparian communities or roadsides at elevations generally ranging from 4,200 to 8,800 feet amsl.	Although the NRCS Plants Database shows no occurrence records in Arizona, other sources indicate occurrence records in Petrified Forest National Park. SEINet shows no occurrences in Arizona.	May occur
Puncturevine (*Tribulus terrestris*)	ADA	SEINet shows occurrences through the TNF, most common across the north of the TNF.	Occurs in cultivated, disturbed, or degraded moist sites along roadsides and within grassland, woodland, and riparian communities; prefers dry, sandy soils but tolerates most soil types; found at elevations below 7,000 feet amsl.	Has occurrence records in all Arizona counties.	Known to occur

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Purple loosestrife (*Lythrum salicaria*)	TNF ADA	Purple loosestrife does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites in perennial and seasonal wetlands; occurs along marsh and pond edges, stream banks, canals, and ditches at elevations generally from 4,500 to 6,800 feet amsl.	Although the NRCS Plants Database and SEINet show no occurrence records in Arizona, other sources indicate occurrence records in the Apache-Sitgreaves National Forests.	Unlikely to occur
Purple star-thistle (*Centaurea calcitrapa*)	ADA	Purple star-thistle does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites with fertile soil; occurs in meadows, grassland, woodland, and forest communities and along roadsides at elevations typically ranging from 3,300 to 8,000 feet amsl; germination occurs under a broad range of conditions with fewer viable seeds produced in dry years; plants seldom persist under shady conditions.	Has occurrence records in Yuma County.	Unlikely to occur
Pyracantha (*Pyracantha* spp.)	TNF	Pyracantha does not occur near or within the project area.	Not a common invasive in the desert Southwest; on the TNF, occurred along Cave Creek. Drought resistant, common landscape plant; prefers dry soil and full sun (Dierking 1998).	Has occurrence records in Maricopa County. On TNF, occurred along Cave Creek.	Unlikely to occur

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Quackgrass (*Elymus repens*)	TNF ADA	Two occurrences in TNF near Airplane Flats Campground and Upper Canyon Creek Campground.	Occurs in disturbed or degraded sites within grasslands, woodlands, forest communities, or along roadsides at elevations between 6,700 and 8,500 feet amsl; is extremely drought tolerant.	Has occurrence records in Coconino, Gila, and Navajo Counties. Documented near Flagstaff, in Grand Canyon National Park, and on one site in TNF, on Pleasant Valley Ranger District.	Unlikely to occur
Red brome (*Bromus rubens*)	TNF ADA	Areas of occurrences are present in the southern and northwestern sections. Present in Silver King (WestLand 2018a).	Occurs in cultivated, disturbed, or degraded sites along roadsides and in meadows, grassland, chaparral, woodland, and riparian communities, generally below 7,200 feet amsl elevation. Red brome cannot withstand temperatures below freezing.	Has occurrence records in all Arizona counties, except Cochise, Greenlee, La Paz, Navajo, Santa Cruz, and Yuma. Widespread on TNF.	Known to occur
Rescuegrass (*Bromus catharticus*)	TNF	SEINet shows that a few occurrences have been observed. Disturbed areas along roadways and dry sites below 4,500 feet amsl may promote growth.	Occurs in cultivated, disturbed, or degraded soils along roadsides or within desert or semidesert communities at elevations generally below 4,500 feet amsl; can tolerate both cold temperatures and drought conditions.	Has occurrence records in all Arizona counties except Pinal and Greenlee. Likely grows on TNF; occurs at Montezuma Castle National Monument and in the Tucson Mountains.	May occur

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Ripgut brome (*Bromus diandrus*)	TNF ADA	Conditions of disturbed areas, dry sites, and elevations between 2,800–3,800 feet amsl may promote growth.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within desert and semidesert communities, at elevations typically ranging from 3,200 to 4,600 feet amsl (White 2013).	Has occurrence records in Cochise, Coconino, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai Counties. Occurs on National Monuments near TNF (Tuzigoot, Montezuma Castle, and Tonto National Monuments), and at the Hassayampa River Preserve; also occurs on the Verde where SR 260 crosses, near the town of Strawberry, in the area of the Willow Fire of 2004 west of Rye, and at Sycamore Creek along the Beeline Highway.	May occur
Rush skeletonweed (*Chondrilla juncea*)	TNF ADA	Rush skeleton weed does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities; prefers well-drained, sandy, or gravely soils below 5,500 feet amsl.	No occurrence records in Arizona.	Unlikely to occur
Russian knapweed (*Acroptilon repens*)	TNF ADA	Russian knapweed does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadows, grassland, and riparian communities at elevations ranging from 3,000 to 8,000 feet amsl; found in variety of soil types; is a very competitive and aggressive species (White 2013).	Has occurrence records in Apache, Cochise, Greenlee, Maricopa, Navajo, Pima, and Yavapai Counties. Documented in vicinity of Gordon Canyon on SR 260 and at Shumway Millsite on Payson Ranger District, south of Payson.	Unlikely to occur

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Russian olive (*Elaeagnus angustifolia*)	TNF ADA	Russian olive does not occur near or within the project area.	Seedlings tolerant of shade, thrives in a variety of soil and moisture conditions, including bare mineral substrates; found in open areas, grasslands, stream banks, lakeshores, roadsides, and urban areas (Forest Service 2018b). Typically occurs at elevations ranging from 4,000 to 7,500 feet amsl; can dominate riparian vegetation where overstory cottonwood (*Populus* spp.) have died.	Has occurrence records in Apache, Coconino, and Navajo Counties.	Unlikely to occur
Russian thistle (*Salsola kali* and *S. tragus*)	TNF	*S. tragus* has two occurrences in TNF: south of the Salt River near SR 188 and at Reynolds Creek Ranger Station. *S. kali* does not occur near or within the project area.	*Salsola* spp. occur on cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities; can occur on any type of well-drained uncompacted soil, but is most frequently found in alkaline or saline soil below 8,500 feet amsl; burns easily owing to plant structure.	*Salsola* spp. have occurrence records in all Arizona counties.	May occur

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Saltcedar (*Tamarix ramosissima*)	TNF ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (Arizona Department of Environmental Quality 2017; Arizona Game and Fish Department 2017; WestLand 2017b)	*Tamarix* spp. occur in moist meadow and riparian communities, in drainage washes of both natural and artificial water bodies, and in other areas where seedlings can be exposed to extended periods of saturated soil conditions; can grow on saline soils with up to 15,000 parts per million soluble salt; occurs at elevations below 7,500 feet amsl.	On TNF, saltcedar occurs along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	May occur
Scotch thistle (*Onopordum acanthium*)	TNF ADA	Scotch thistle does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded moist sites within meadows, grassland, woodland, and riparian communities, typically below 7,500 feet amsl; can germinate year-round.	Has occurrence records in Apache, Navajo, and Yavapai Counties. Common in Four Corners area, the Arizona Strip, and along the interstate system near Flagstaff; observed on TNF growing in Strawberry at SR 87 bridge.	Unlikely to occur
Serrated tussock (*Nassella trichotoma*)	Federal	Serrated tussock does not occur near or within the project area.	Grows in a wide range of climatic conditions and soil types, being able to tolerate floods, drought, exposure to salt and repeated frost.	No occurrence records in Arizona.	Unlikely to occur

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Siberian elm (*Ulmus pumila*)	TNF ADA	One occurrence in TNF, 11.2 miles southwest of Salt River Canyon Bridge.	In Arizona, this species is found in forested areas and high elevations (Forest Service 2018b). Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadow, grassland, woodland, and riparian communities in well-drained soils, typically below 8,100 feet amsl.	Has occurrence records in Apache, Maricopa, and Navajo Counties. Plus, isolated records from Coconino National Forest east of Flagstaff and in Verde River/Lynx Lake/Thumb Butte areas of Prescott National Forest.	Unlikely to occur
Smallflower tamarisk (*Tamarix parviflora*)	TNF ADA	Smallflower tamarisk does not occur near or within the project area.	Riparian habitats, along permanent or intermittent streams, lakes, and reservoirs; can grow in a wide variety of soils and can tolerate salinity.	Has occurrence records in Arizona but not county-specific records. On TNF, *Tamarix* spp. occur along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	Unlikely to occur
Southern sandbur (*Cenchrus echinatus*)	TNF ADA	Southern sandbur does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites that contain sandy or gravelly conditions; is an aggressive colonizer with rapid growth under moist conditions; usually occurs at elevations between 3,500 to 4,500 feet amsl.	Has occurrence records in Cochise, Maricopa, Pima, and Yuma Counties. Plus, occurs east of TNF on the Fort Apache Reservation along the ROW for U.S. 60 east; occurs on TNF on ROW of SR 188, a few miles north of Globe.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Spotted knapweed (*Centaurea biebersteinii*, *C. stoebe* ssp. *micranthos*)	TNF ADA	Spotted knapweed does not occur near or within the project area.	Found at elevations from sea level to 10,000 feet amsl in areas receiving 8 to 80 inches of rain per year; prefers well-drained light-textured soils that receive summer rain in a wide variety of open forest, prairie, and rangelands; disturbance promotes rapid establishment and spread (Forest Service 2017b).	Although the NRCS Plants Database shows occurrence records only in Santa Cruz County, other sources indicate occurrence records along SRs 89A and 179 in Sedona, on Northern Arizona University campus, along Lake Mary Road and in the vicinity of Prescott; also north of Grand Canyon in the Arizona Strip, and north of TNF above the Mogollon Rim; with an unconfirmed report on the Pleasant Valley Ranger District.	Unlikely to occur
Sulfur cinquefoil (*Potentilla recta*)	TNF	Sulfur cinquefoil does not occur near or within the project area.	Associated with roadsides, disturbed areas, abandoned agricultural fields, and waste areas within grasslands, shrublands, and open-canopy forests; intolerant of complete shade (Zouhar 2003).	Although the NRCS Plants Database shows no occurrence records in Arizona, other sources indicate occurrence records along the Rio de Flag and on the Lake Mary Road on Coconino National Forest.	Unlikely to occur
Swamp morning-glory (*Ipomoea aquatica*)	Federal	Swamp morning-glory does not occur near or within the project area.	Occurs in moist, marshy, or inundated localities, in shallow pools, ditches, or wet rice fields. Elevation between sea level–3,200 feet amsl.	No occurrence records in Arizona.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Sweet resinbush (*Euryops subcarnosus*)	TNF ADA	Sweet resinbush does not occur near or within the project area.	In Arizona, occurs in semiarid grassland, desert grassland, desert shrub, and desertscrub communities below the Mogollon Rim.	Has occurrence records in Graham, Pima, and Yavapai Counties. Occurs on Fry Mesa south of Safford, on the Santa Rita Experimental Range, and several small patches south of the Globe Ranger Station; west of SR 188 in Tonto Basin, north of U.S. 60, north of the Miami cemetery; and east of cemetery and 2 miles down Bloody Tanks Wash toward Miami.	Unlikely to occur
Tamarisk (*Tamarix* spp.)†	ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (Arizona Department of Environmental Quality 2017; Arizona Game and Fish Department 2017; WestLand 2017b)	*Tamarix* spp. occur in moist meadow and riparian communities, in drainage washes of both natural and artificial water bodies, and in other areas where seedlings can be exposed to extended periods of saturated soil conditions; can grow on saline soils with up to 15,000 parts per million soluble salt; occurs at elevations below 7,500 feet amsl.	*Tamarix* spp. has occurrence records in all Arizona Counties except Greenlee, La Paz, Pinal, and Yuma. On TNF, tamarisk occurs along the Verde River and its tributaries, along much of the Salt River, and along Salt and Verde River reservoirs.	May occur.
Three-lobed morning-glory (*Ipomoea triloba*)	ADA	Only two records of occurrence in TNF, in 1930.	Occurs in cultivated fields, sandy ground, and grassy swamp margins on hedges, in thickets; low to middle elevations.	The NRCS Plants Database shows no occurrence records in Arizona. SEINet has five records in Arizona.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Tree of heaven (*Ailanthus altissima*)	TNF ADA	Occurrences in Globe and TNF.	Widely distributed in fields, roadsides, fencerows, woodland edges, and forest openings (Forest Service 2018b). Generally occurs below 6,200 feet amsl.	Has occurrence records in Cochise, Coconino, Gila, Greenlee, Maricopa, Pima, Pinal, Santa Cruz, and Yavapai Counties. Occurrences around Cottonwood, Camp Verde, and Jerome; on Coronado National Forest land; in TNF on Verde River near Childs; in Superior and Globe and on National Forest land nearby; near confluence of Pinal Creek and Salt River; and Payson.	May occur
Tropical soda apple (*Solanum viarum*)	Federal	Tropical soda apple does not occur near or within the project area.	Occurs in areas that have been frequented by animals or that have received natural materials contaminated by seed, including pasturelands, roadsides, or cattle yards (Forest Service 2018b).	No occurrence records in Arizona.	Unlikely to occur
Ward's weed (*Carrichtera annua*)	ADA		Occurs in grasslands, scrub, and chaparral vegetation communities (California Invasive Plant Council 2025).	No occurrence records in Arizona.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Weeping lovegrass (*Eragrostis curvula*)	TNF	Many occurrences within TNF and a few southwest of Globe toward Pinal Peak.	Occurs in cultivated, disturbed, or degraded areas along roadsides or within meadows, grasslands, and at the margins of chaparral, woodland, and forest communities, generally at elevations between 6,000 to 8,000 feet amsl; this species has high potential for establishment on burned sites.	Has occurrence records in Cochise, Coconino, Gila, Graham, Maricopa, Pima, and Yavapai Counties. Within TNF, seeded extensively along highways, power line corridors, and after fires; seeded in Pinal Mountains after a fire.	Unlikely to occur
Witchweed (*Striga* spp.)	Federal	Witchweed does not occur near or within the project area.	Parasitic plant that attacks agricultural crops (National Invasive Species Information Center 2017).	No occurrence records in Arizona.	Unlikely to occur
White bietou (*Dimorphotheca cuneata*)	TNF	A few occurrences south of Globe.	On the TNF, occurs in yards and canyons between Six Shooter Canyon and National Forest land to the west; no other records of this species being invasive in the U.S.	Occurs in an approximately 40-acre patch on the TNF between Six Shooter Canyon and National Forest land to the west.	Unlikely to occur
Wild mustard (*Sinapis arvensis*)	TNF ADA	Three occurrences off SR 188 north of Roosevelt Lake.	Occurs in dry, disturbed sites, including waste places, pastures, roadsides, and railroad ROWs, generally at elevations below 6,000 feet amsl.	Has occurrence records in Gila, Maricopa, Pima, and Pinal Counties. Occurs along SR 188 from Punkin Center to Roosevelt, on private lands; is common on Agua Fria National Monument, west of Perry Mesa tobosa grassland in Cave Creek Ranger District.	May occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Wild oats (*Avena fatua*)	TNF	Has occurrence records in East Plant Site.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within desert, semidesert grasslands, and woodland communities, typically at elevations between 2,500 and 7,200 feet amsl.	Has occurrence records in all Arizona counties except Graham, Greenlee, La Paz, Navajo, Santa Cruz, and Yuma. Found along most highways in TNF.	May occur
Witchweed (*Striga* spp.)	Federal		Parasitic plant that attaches agricultural crops.	No occurrence records in Arizona.	Unlikely to occur.
Yellow bluestem (*Bothriochloa ischaemum*)	ADA		Occurs in disturbed roadsides, waste places, and pastures up to 4,000 feet amsl.	Has occurrence records in Maricopa, Pima, and Cochise Counties.	Unlikely to occur
Yellow star-thistle (*Centaurea solstitialis*)	TNF ADA	One occurrence recorded in TNF, Pleasant Valley across from Pleasant Inn along SR 288.	Prefers full sunlight and deep, well-drained soils where rainfall is 10 to 60 inches per year; most commonly occurs in disturbed areas (Forest Service 2018b). Generally occurs below 8,200 feet amsl.	Although the NRCS Plants Database only shows occurrence records in Yuma County, other sources indicate that this species has become established in central Arizona within the communities of Flagstaff, Camp Verde, Payson, Star Valley, and Young; on TNF, this species occurs mainly on the higher elevation Districts (Payson and Pleasant Valley) but has been documented in the Tonto Basin at elevations below 3,000 feet amsl.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Silver King Analysis Area**
Yellow sweetclover (*Melilotus officinalis*)	TNF	Many occurrences within TNF, and a few south of Globe near Pinal Peak.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within meadows, grassland, woodland, and forest communities at elevations typically ranging from 5,000 to 10,500 feet amsl.	Has occurrence records in all Arizona counties except Greenlee, La Paz, Mohave, and Yuma. This species is widespread in Arizona, and very common in riparian zones of the TNF along the Verde River and on the Cave Creek Ranger District.	May occur
Yellow toadflax (*Linaria vulgaris*)	TNF	Yellow toadflax does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within meadows, grassland, woodland, and riparian communities at elevations typically ranging from 6,400 to 9,200 feet amsl; germination highest on open sites with compacted soils and little vegetation.	Has occurrence records in Coconino County.	Unlikely to occur

Unless otherwise noted, range or habitat information is from the following sources: CABI (2018); NRCS (2025); SEINet (2025); TNF (2018); (White 2013).
Unless otherwise noted, occurrence data is from Arizona Game and Fish Department, transmitted on August 13, 2018, or from SEINet (2025).

* Status definitions are as follows:

ADA = Arizona Department of Agriculture; species is listed as a noxious weed by the ADA (2025).

Federal = species is listed as a noxious weed by the USDA (2010).

TNF = Tonto National Forest; species is listed as an invasive species by the TNF (2018).

† Tamarix spp. is the listed entity on the ADA list (ADA 2025); this includes T. chinensis, T. parviflora, and T. ramosissima, which are also TNF species (TNF 2018). Other species, including T. africana, T. aphylla, and T. canariensis, are shown in the Plants Database (NRCS 2025) as occurring in Arizona. SEINet (2025) shows T. africana to occur associated with the Phoenix and Tucson metro areas, T. aphylla to occur within the analysis area near Boyce Thompson and the MARRCO corridor, and. T. canariensis has occurrence records in the Phoenix metro area.

Table A1-8. Noxious and Invasive Weed Species Analyzed for Alternative 5 – Peg Leg

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
African rue (*Peganum harmala*)	TNF ADA	No known records. Suitable habitat occurs (WestLand 2018b).	Favors disturbed and barren areas with moist soil such as roadsides, riparian corridors, and irrigation ditches; will grow in alkaline soils and high saline soils (Forest Service 2014a). Typically occurs at elevations below 4,500 feet amsl; seeds can germinate under fairly saline conditions.	Maricopa County. Also has been observed in Pima County along Interstate 10 near Vail.	May occur
African sumac (*Rhus lancea*)	TNF	African sumac does not occur near or within the project area.	Occurs in well-drained sites in woodlands, grassland margins, and riparian communities; occurs in disturbed, degraded, or cultivated sites, typically below 2,000 feet amsl.	The NRCS Plants Database indicates that there are no records in Arizona. No records on TNF; however, a recent record occurs in Cave Creek approximately 3 miles downstream of the Cave Creek parcel.	Unlikely to occur
Anchored water hyacinth (*Eichhornia azurea*)	Federal	Species is not known to occur in Arizona.	Freshwater, perennial, aquatic plant found in permanent water bodies, prefers open, slow-moving water environments.	No records in Arizona.	Unlikely to occur
Arabian schismus (*Schismus arabicus*)	TNF	Arabian schismus occurs within the TNF and has been observed 20 miles south of Globe.	Occurs in disturbed, degraded, or cultivated sites in desert and semidesert grassland communities and along roadsides, typically below 4,500 feet amsl.	Has occurrence records in Cochise, Maricopa, Mojave, Pima, and Pinal Counties.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Asian mustard (Sahara mustard) (*Brassica tournefortii*)	TNF ADA	Asian mustard occurs widespread within the TNF and very close to the area to the north and west.	Occurs in areas with windblown sediments and disturbed areas within desert grasslands, desertscrub, and roadsides at elevations typically below 2,600 feet amsl.	Has occurrence records in Maricopa, Pima, Pinal, and Yuma Counties. Widespread throughout TNF.	Known to occur
Black mustard (*Brassica nigra*)	TNF ADA	Occurrences along SR 87 within TNF. Occurrences within the TNF.	Occurs in dry disturbed sites such as along roadsides, railroad rights-of-ways (ROWs), pastures, and waste places at elevations below 7,000 feet amsl.	Has occurrence records in Cochise, Coconino, Maricopa, Pima, and Pinal Counties. Occurs along SR 188 through Tonto Basin, and along SR 87 within TNF.	Unlikely to occur
Blue mustard (*Chorispora tenella*)	TNF	Occurrence near or possibly within the TNF on the east side of the area.	Occurs in disturbed sites, including waste places, pastures, roadsides, and railroad ROWs, typically below 7,500 feet amsl.	Has occurrence records in Apache, Coconino, Maricopa, Navajo, and Yavapai Counties. Has been found outside of the TNF along SR 69 between Cordes Junction and Prescott; in Prescott; and north of Holbrook.	May occur
Branched broomrape (hemp broomrape) (*Orobanche ramosa*)	Federal ADA	Species is not known to occur in Arizona.	Requires relatively high temperatures for optimum germination and growth and occurs mainly in irrigated crops grown under summer conditions in tropical and subtropical climates. Adapted to soils of generally high pH and are associated with the crops they attack.	No records in Arizona.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Buffelgrass (*Pennisetum ciliare,* also known as *Cenchrus ciliaris*)	TNF ADA	May occur near washes where water collects.	Alkaline soils and within arid areas with high nutrients and moisture (Invasive Species Specialist Group 2006). Extremely drought tolerant and reestablishes quickly and expands infestation following fire (Northam and Meyer 2009).	Has occurrence records in Maricopa, Pima, Pinal, and Yuma Counties. Common in Phoenix and spreading onto TNF along U.S. 60 and U.S. 87, Pima Road in Scottsdale, Cave Creek Road, and others.	May occur
Bull thistle (*Cirsium vulgare*)	TNF ADA	Abundance of occurrences to the north of the TNF, west of the Apache-Sitgreaves National Forests. An occurrence near SR 288 within the TNF has been observed.	Occurs most often in areas that have been recently or repeatedly disturbed (e.g., overgrazed rangelands, recently burned forests, clear-cuts, and along roads and ditches); prefers soil of intermediate moisture (Forest Service 2018b). Typically occurs at elevations between 4,500 and 9,100 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, and Navajo Counties. Common from Flagstaff to south of Mogollon Rim.	Unlikely to occur
Camelthorn (*Alhagi maurorum*)	TNF ADA	No occurrence records in immediate vicinity.	Occurs in moist sites that are cultivated, disturbed, or degraded; typically found at 4,500 to 5,000 feet amsl within meadows, grasslands, and riparian communities.	Has occurrence records in Apache, Coconino, Gila, Maricopa, and Navajo Counties. Heavy infestations in northeastern part of state; near Painted Rock Dam; southwest of Phoenix; west of Phoenix near Loop 101; Chandler; U.S. 60 just north of Globe; U.S. 60 north of the Salt River; but not yet on TNF.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Canada thistle (*Cirsium arvense*)	TNF ADA	No occurrence records in immediate vicinity.	Occurs most commonly in disturbed upland areas (e.g., barrens, meadows, fields, pastures), but can also invade wet areas with fluctuating water levels (Forest Service 2018b). Typically occurs at elevations between 4,200 to 8,300 feet amsl.	Has occurrence records in Apache, Coconino, and Yavapai Counties. Occurs in northeast part of state, and near the OW Ranch, west of Canyon Creek on the TNF.	Unlikely to occur
Common teasel (Fuller's teasel) (*Dipsacus fullonum*)	TNF	Not abundant; however, there are occurrences within the TNF at Sharp Creek Campground.	Prefers open, sunny habitats and commonly occurs in disturbed areas, including roadsides and pastures; grows in both moist and arid soils, but more commonly found in mesic soils (Forest Service 2014b). Typically occurs at elevations ranging from 4,700 to 8,700 feet amsl.	Has occurrence records in Coconino County. Occurs at Watson Woods on Granite Creek near Prescott; at Shumway Millsite, south of Payson and at Sharp Creek Campground on TNF.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Dalmatian toadflax (*Linaria dalmatica*)	TNF ADA	Habitat on site is not suitable (WestLand 2018b).	Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadows, grassland, woodland, and riparian communities at elevations ranging from 4,400 to 10,000 feet amsl.	Has occurrence records in Coconino and Yavapai Counties. Common around Flagstaff; widespread in ponderosa pine (*Pinus ponderosa*) forests on Kaibab, Coconino, and Prescott National Forests; on TNF, grows at Hot Shot Base, along SR 87 between Payson and Rye, and near the Verde River 1 mile downstream from Childs.	Unlikely to occur
Diffuse knapweed (*Centaurea diffusa*)	TNF ADA	Distant from known occurrences.	Prefers well-drained soils within cultivated, disturbed, or degraded sites along roadsides or within meadows, grassland, woodland, and forest communities at elevations typically below 7,200 feet amsl (Forest Service 2017b).	Has occurrence records in Apache County. Common on private lands in Young; on TNF occurs at Pleasant Valley airport; Pleasant Valley Ranger Station, along Cherry Creek, and along SR 288 at Board Tree Saddle (south of Young).	Unlikely to occur
Dodder (*Cuscuta* spp.) (except for natives)	Federal		Parasitic annual plant species that can invest a variety of host species, including crops, weed species, shrubs, and trees (University of California Statewide Integrated Pest Management Program 2017).	Has occurrence records in all counties except Apache, Graham, and Greenlee.	May occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Downy brome (cheatgrass) (*Bromus tectorum*)	TNF ADA	Disturbed areas and generally dry soils may create occurrences for this species. Known occurrences are near U.S. 60 near Superior and Globe, and northward near Willow, near SR 288.	Occurs from valley bottoms to high mountainous areas; quickly invades disturbed sites (Northam and Meyer 2009). Prefers well-drained soils of any texture but is not well adapted to saline or sodic soil conditions or wet soil (NRCS 2018).	Has occurrence records in all counties except, Cochise, Greenlee, La Paz, Pinal, Santa Cruz, and Yuma.	May occur
Dyer's woad (*Isatis tinctoria*)	TNF ADA	Species is not known to occur Arizona.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland or woodland communities; prefers dry rocky or sandy soils at elevations from 4,300 to 7,000 feet amsl.	No records in Arizona.	Unlikely to occur
Dudaim melon (cantaloupe) (*Cucumis melo*)	ADA	Species is not known to occur Arizona (Winston et al. 2014).	Occurs in disturbed areas with abundant moisture, including fields, roadsides, and ditches (Winston et al. 2014).	No records in Arizona (Winston et al. 2014).	Unlikely to occur
Field bindweed (*Convolvulus arvensis*)	TNF ADA	Species is widespread and habitat on site is suitable (WestLand 2018b).	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland, chaparral, woodland, forest, and riparian communities at elevations ranging from 3,500 to 10,000 feet amsl.	Has occurrence records in all Arizona counties.	May occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Field sandbur (*Cenchrus spinifex incertus*)	TNF ADA	No occurrence records in vicinity and Peg Leg site does not appear to be disturbed area.	Prefers sandy or gravelly sites that have been disturbed, or degraded sites at elevations between 3,500 and 5,000 feet amsl.	Has occurrence records in all counties except La Paz, Pinal, and Yuma. Occurs east of TNF on the Fort Apache Reservation along the ROW for U.S. 60 east; occurs on TNF on ROW of SR 188, a few miles north of Globe.	Unlikely to occur
Five-stamen tamarisk (*Tamarix chinensis*)	TNF ADA	Known occurrences throughout the TNF.	Desert riparian habitats, including seeps, springs, and roadsides; may tolerate saline soil.	Has occurrence records in all Arizona counties except Greenlee, La Paz, Pinal, and Yuma. On TNF, saltcedar occurs along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	May occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Fountain grass (*Pennisetum setaceum*)	TNF ADA	Documented in all desert districts within the TNF; very abundant along U.S. 60 between Superior and mountain tunnel; also occurs along SR 87, along the road to Bartlett and Horseshoe Reservoirs, and in the Salt River Recreation Area. Occurrence near Superior and locations to the northwest of TNF.	Usually found along roadways or in rangelands (Northam and Meyer 2009). Prefers arid to semiarid conditions, but can occur in mesic environments; usually occurs in areas with mild winters and summer moisture; prefers open, sunny areas with well-drained soils.	Has occurrence records in Cochise, Maricopa, Pima, and Santa Cruz Counties. Documented in all desert districts within the TNF; very abundant along U.S. 60 between Superior and mountain tunnel; also occurs along SR 87, along the road to Bartlett and Horseshoe Reservoirs, and in the Salt River Recreation Area.	May occur
Floating water hyacinth (*Eichhornia crassipes*)	ADA	Not suitable habitat for species (WestLand 2018b), and no occurrence records in vicinity.	Aquatic, floating plant that occurs in tropical and subtropical freshwater lakes and rivers.	Has occurrence records in Maricopa County.	Unlikely to occur
Giant reed (*Arundo donax*)	TNF ADA	One occurrence in the yard of Sallie Valkenburgh, San Carlos near SR 170.	Occurs in moist areas, including ditches, stream and river banks, and floodplains; prefers well-drained soils with abundant moisture; will tolerate a wide variety of conditions, including high salinity; will tolerate a wide range of soil types from clay to sand; typically occurs below 4,000 feet amsl.	Has occurrence records in Cochise, Maricopa, and Navajo Counties. Occurs upstream of TNF on the Upper Verde, with potential to invade in a large river scouring event.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Giant salvinia (*Salvinia molesta*)	Federal ADA	Not suitable habitat for species (Chambers and Hawkins 2002); WestLand 2018b), and no occurrence records in vicinity.	Prefers warm freshwater in temperate and subtropical climates (Chambers and Hawkins 2002). Occurrence records from the southwest portion of Arizona, in and near the Colorado River.	Found in slow-moving water or still water canals, ponds, rivers, lakes, and reservoirs (Chambers and Hawkins 2002).	Unlikely to occur
Globe chamomile (stinknet) (*Oncosiphon piluliferum*)	TNF ADA	Disturbed areas along existing roadways within the elevational range of the species may provide habitat for this species. Occurrences are present west of the TNF.	Occurs in disturbed areas, including waste places, pastures, and along roadsides; typically found below 3,500 feet amsl elevation; this annual is a pioneer species within disturbed sites.	Has occurrence records in Maricopa, Pinal, and Yavapai Counties. Documented along Interstate 17 north of Phoenix, near Skunk Tank Ridge south of Cave Creek on the Cave Creek Ranger District, at the Cave Creek Ranger Station, at the Sonoran Desert National Monument, Pinal City near Superior, along SR 84 west of Casa Grande, Extension Service Demonstration Garden (east Broadway in Phoenix), on Carefree Highway, 4 miles east of Interstate 17, and growing in cultivation at the Desert Botanical Garden and Boyce Thompson Arboretum.	May occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Globe-podded hoary cress (whitetop) (*Cardaria draba*)	TNF ADA	Not suitable habitat for species (WestLand 2018b), and site is distant from known occurrences.	Occurs in cultivated, disturbed, or degraded moist sites along roadsides or within meadows, grassland, chaparral, woodland, forest, and riparian communities; prefers alkaline to saline soils, but will tolerate a wide variety of soil and moisture conditions; typically found between 3,000 and 8,000 feet amsl.	Has occurrence records in Navajo, Santa Cruz, and Yavapai Counties. *Cardaria* spp. have been recorded in Prescott, Camp Verde, Flagstaff, and Cottonwood, and on the upper Verde River near Perkinsville; on the TNF, occurs on the Pleasant Valley Ranger District.	Unlikely to occur
Hairy white-top (*Cardaria pubescens*)	TNF	Not suitable habitat for species (WestLand 2018b), and site is distant from known occurrences.	Occurs in cultivated, disturbed, or degraded moist sites along roadsides or within meadows, grassland, chaparral, woodland, forest, and riparian communities; prefers alkaline to saline soils, but can tolerate a wide range of soils and moisture conditions; typical elevation is 3,000 to 8,000 feet amsl.	*Cardaria* spp. have been recorded in Prescott, Camp Verde, Flagstaff, and Cottonwood, and on the upper Verde River near Perkinsville; on the TNF, occurs on the Pleasant Valley Ranger District.	Unlikely to occur
Halogeton (saltlover) (*Halogeton glomeratus*)	ADA	Not suitable habitat for species (WestLand 2018b), and site is distant from known occurrences.	Occurs in cultivated, disturbed, or degraded sites along roadsides or within grassland or woodland communities; prefers open areas and alkaline and saline soils, generally at elevations ranging from 4,000 to 6,500 feet amsl.	Has occurrence records in Apache, Navajo, and Mohave Counties.	Unlikely to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Hydrilla (waterthyme) (*Hydrilla verticillata*)	Federal ADA	Not suitable habitat for species (Chambers and Hawkins 2002; WestLand 2018b), and site is distant from known occurrences.	Found mainly in freshwater aquatic systems but can tolerate low salinity. Sometimes found in upper reaches of estuaries. Found in shallow water, but in clear water can survive depths to 49 feet (Chambers and Hawkins 2002).	Has occurrence records in Maricopa County.	Unlikely to occur
Japanese brome (*Bromus japonicus*)	TNF	Disturbed areas along existing roadways give the possibility for occurrence; however, elevation may be too low to occur. Known occurrences north of Willow near SR 288 and west of Tonto Basin near SR 87.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within semidesert grassland and wooded communities at elevations ranging from 4,500 to 7,200 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, Gila, Greenlee, Maricopa, Pima, and Navajo Counties.	Unlikely to occur
Japanese knotweed (*Polygonum cuspidatum*)	TNF	Japanese knotweed does not occur near or within the project area.	Riparian areas, including along streams and rivers, low-lying areas, utility ROWs; it rapidly colonizes scoured areas and can survive severe floods; can tolerate full shade, high temperatures, high salinity, and drought (Forest Service 2018b).	No occurrence records in Arizona and is not known from TNF.	Unlikely to occur
Johnsongrass (*Sorghum halepense*)	ADA		Occurs in disturbed areas such as roadsides, ditches, and fields.	Has occurrence records in every county in Arizona and has been documented in the TNF.	Unlikely to occur
Jointed goatgrass (*Aegilops cylindrica*)	TNF ADA	Not suitable habitat and below elevation range for species (WestLand 2018b), and distant from known occurrences.	Occurs above 4,000 feet amsl, occurs in disturbed areas. Occurs in dry sites in grassland or wooded communities and roadsides at elevations ranging from 5,300 to 7,000 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, Navajo, and Yavapai Counties. Occurs along SR 87 from Payson to Strawberry, and in the Young area.	Unlikely to occur

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Karoo bush (African sheepbush) (*Pentzia incana*)	TNF	Has been documented at one site on TNF, north of the Oak Flat Campground on the Globe Ranger District. An occurrence near U.S. 60 east of Superior.	Occurs in dry, disturbed sites, including waste places, pastures, and along roadsides within desert, semidesert, grassland, chaparral oak (*Quercus* spp.) scrub and pinyon-juniper (*Pinus spp.-Juniperus* spp.) woodland communities typically at elevations below 5,300 feet amsl.	Occurrence records in Graham County. Has been documented at one site on TNF, north of the Oak Flat Campground on the Globe Ranger District.	May occur
Kochia *Kochia scoparia* (*Bassia scoparia*)	TNF ADA	Disturbed areas along existing roadways and dry sites with low rainfall may promote growth. There are two occurrences north of Tonto Basin in the TNF.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities in well-drained, uncompacted soil, below 8,500 feet amsl; thrives in warm, low-rainfall environments; burns easily owing to plant structure.	Has occurrence records in Apache, Cochise, Coconino, Navajo, and Pima Counties.	Unlikely to occur
Leafy spurge (*Euphorbia esula*)	TNF ADA	Not suitable habitat and below elevation range for species (WestLand 2018b), and distant from known occurrences.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within fields, pastures, rangeland, and riparian communities, typically between 4,600 and 9,500 feet amsl.	Has occurrence records in Coconino County. Has been documented in the Coconino National Forest but not on the TNF.	Unlikely to occur
Lehmann's lovegrass (*Eragrostis lehmanniana*)	TNF ADA	Within TNF, seeded extensively along highways, power line corridors, and after fires. Known occurrences observed throughout the TNF.	Occurs in cultivated, disturbed, and degraded sites on sandy flats and on calcareous slopes within desert grassland, semidesert grassland, and woodland communities and roadsides, generally between 3,500 and 4,000 feet amsl.	Has occurrence records in Cochise, Coconino, Graham, Maricopa, and Pima Counties. Within TNF, seeded extensively along highways, power line corridors, and after fires.	May occur

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Lightning weed (*Drymaria arenarioides*)	Federal	Site is distant from known occurrences.	Prefers dry areas, acidic soils, hills and plains, and stressed rangelands (Scher et al. 2015). It is well adapted to soils and climates within the *Bouteloua-Aristida* type.	Invades rangeland, displacing desired vegetation and is highly toxic to livestock. This species has not been documented in the United States but is spreading northward, reportedly to within 1 mile of New Mexico (Scher et al. 2015).	Unlikely to occur
Malta star-thistle (*Centaurea melitensis*)	TNF ADA	Widespread on TNF at low elevations below 3,000 feet amsl.	Occurs in cultivated, disturbed, or degraded sites along roadways and within grassland and woodland communities at elevations below 7,200 feet amsl; is a competitive and aggressive plant.	Has occurrence records in Apache, Cochise, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai Counties. Widespread on TNF at low elevations below 3,000 feet.	May occur
Mediterranean grass (*Schismus barbatus*)	TNF	Mediterranean grass occurs throughout the TNF.	Occurs in roadways and cultivated, disturbed, or degraded sites along roadways and in desert and semidesert grassland communities, generally at elevations below 5,000 feet amsl.	All Arizona Counties except Apache, Cochise, Graham, Greenlee, and Navajo.	May occur
Mediterranean sage (*Salvia aethiopis*)	TNF	Mediterranean sage does not occur near or within the project area.	Occurs in roadways and cultivated, disturbed, or degraded sites along roadways and within meadows, grassland, woodland, and riparian communities; prefers well-drained soil; occurs at elevations typically below 8,500 feet amsl.	Has occurrence records in Coconino and Yavapai Counties.	Unlikely to occur

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Mexican paloverde (Jerusalem thorn) (*Parkinsonia aculeata*)	TNF	On TNF, a 2-acre infestation occurs from areas burned in the Cave Creek Complex fire near Camp Creek.	On the TNF, infestation occurred from a single ornamental planting in Camp Creek area; typically invades waste areas at low elevations. Invasive on degraded rangelands; tolerant of drought, waterlogging, and saline conditions.	Has occurrence records in Gila, Graham, Maricopa, Pima, Pinal, Santa Cruz, and Yuma Counties where it is a native species. On TNF, a 2-acre infestation occurs from areas burned in the Cave Creek Complex fire near Camp Creek.	Unlikely to occur
Morning-glory (*Ipomoea purpurea, I. hederacea, I. triloba, Ipomoea x leucantha*)	ADA	Distant from known occurrences.	Suitable habitat depends on species. For example, *I. hederacea* and *I. purpurea* occur in disturbed areas, *I. tenuiloba* occurs in pinyon-juniper woodlands.	There are 69 species of *Ipomoea*, consisting of native and introduced species, occurring in the NRCS Plants Database, 15 of which have occurrence records in Arizona.	Unlikely to occur
Musk thistle (*Carduus nutans*)	TNF ADA	Musk thistle does not occur near or within the project area.	Grows from sea level up to 8,000 feet amsl in neutral to acidic soils; invades open areas (e.g., meadows or prairies) and spreads rapidly in areas of natural disturbance, including landslides and flooding; does not grow well in conditions that are excessively wet, dry, or shady (Forest Service 2018b). Typically occurs between 4,200 and 8,100 feet amsl.	Has occurrence records in Apache and Navajo Counties.	Unlikely to occur
Natal grass (*Melinis repens*)	ADA		Occurs on rocky slopes and moist canyon bottoms from 2,500 to 4,500 feet amsl.	Has occurrence records in Maricopa, Pima, Pinal, Graham, Santa Cruz, and Cochise Counties.	Unlikely to occur

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Oleander (*Nerium oleander*)	TNF	On TNF, near Camp Creek and Boyce Thompson Arboretum.	On the TNF, has naturalized in Camp Creek and near Boyce Thompson Arboretum; in California has been found in floodplain and riparian zones.	Has occurrence records in Maricopa County. On TNF, near Camp Creek and Boyce Thompson Arboretum.	Unlikely to occur
Onionweed (*Asphodelus fistulosus*)	Federal TNF ADA	Distant from known occurrences.	In the Sonoran Desert region, it seems to do best at altitudes above the desert floor that receive moderate rainfall during winter. Tends to invade disturbed land leaving its potential threat to natural areas unclear. Elevation is 2,000–>4,500 feet amsl (USDA 2019).	Known in the five southeastern counties (Pima, Pinal, Santa Cruz, Cochise, and Greenlee) and in an area near Sedona in Yavapai County (USDA 2019).	Unlikely to occur
Oxeye daisy (*Leucanthemum vulgare*)	TNF	Occurs in a few locations on TNF east of Bear Flat.	Occurs in cultivated, disturbed, or degraded sites on well-drained but moist soils along roadsides and within meadows, grassland, woodland, and forest communities at elevations from 5,000 to 9,500 feet amsl.	Has occurrence records in Apache, Coconino, Gila, and Navajo Counties. Identified growing near Canyon Creek, Pleasant Valley Ranger District, TNF; occurs in Flagstaff and Kachina Village, south of Flagstaff.	Unlikely to occur
Periwinkle (*Vinca major*)	TNF	Occurs on TNF adjacent to private lands (e.g., Grantham Homestead off SR 288). A few occurrences spread throughout the TNF.	Occurs in highly disturbed areas, including old homesteads, roadsides, and waste places; also occurs in riparian areas, forests, and grasslands; typically occurs at elevations below 7,500 feet amsl.	Has occurrence records in Cochise, Coconino, Maricopa, Pima, Santa Cruz, and Yavapai Counties. Occurs on TNF adjacent to private lands (e.g., Grantham Homestead off SR 288).	Unlikely to occur

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Plumeless thistle (*Carduus acanthoides*)	TNF ADA	Distant from known occurrences.	Occurs in sites that are dry and well-drained; occurs in cultivated, disturbed, or degraded sites within meadows, grassland, chaparral, woodland, forest, and riparian communities or roadsides at elevations generally ranging from 4,200 to 8,800 feet amsl.	Although the NRCS Plants Database shows no occurrence records in Arizona, other sources indicate occurrence records in Petrified Forest National Park. SEINet shows no occurrences in Arizona.	Unlikely to occur
Puncturevine (*Tribulus terrestris*)	ADA	No known occurrences, but habitat on site is suitable (WestLand 2018b).	Occurs in cultivated, disturbed, or degraded moist sites along roadsides and within grassland, woodland, and riparian communities; prefers dry, sandy soils but tolerates most soil types; found at elevations below 7,000 feet amsl.	Has occurrence records in all Arizona counties.	May occur
Purple loosestrife (*Lythrum salicaria*)	TNF ADA	Not suitable habitat (WestLand 2018b) and distant from known occurrences.	Occurs in cultivated, disturbed, or degraded sites in perennial and seasonal wetlands; occurs along marsh and pond edges, stream banks, canals, and ditches at elevations generally from 4,500 to 6,800 feet amsl.	Although the NRCS Plants Database and SEINet show no occurrence records in Arizona, other sources indicate occurrence records in on the Apache-Sitgreaves National Forests.	Unlikely to occur

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Purple star-thistle (*Centaurea calcitrapa*)	ADA	Distant from known occurrences.	Occurs in cultivated, disturbed, or degraded sites with fertile soil; occurs in meadows, grassland, woodland, and forest communities and along roadsides at elevations typically ranging from 3,300 to 8,000 feet amsl; germination occurs under a broad range of conditions with fewer viable seeds produced in dry years; plants seldom persist under shady conditions.	Has occurrence records in Yuma County.	Unlikely to occur
Pyracantha (*Pyracantha* spp.)	TNF	Pyracantha does not occur near or within the project area.	Not a common invasive in the desert Southwest; on the TNF, occurred along Cave Creek. Drought resistant, common landscape plant; prefers dry soil and full sun (Dierking 1998).	Has occurrence records in Maricopa County. On TNF, occurred along Cave Creek.	Unlikely to occur
Quackgrass (*Elymus repens*)	TNF ADA	Not suitable habitat and below elevational range (WestLand 2018b). Site is distant from known occurrences.	Occurs in disturbed or degraded sites within grasslands, woodlands, forest communities, or along roadsides at elevations between 6,700 and 8,500 feet amsl. Species is extremely drought tolerant.	Has occurrence records in Coconino, Gila, and Navajo Counties. Documented near Flagstaff, in Grand Canyon National Park, and on one site in TNF, on Pleasant Valley Ranger District.	Unlikely to occur
Red brome (*Bromus rubens*)	TNF ADA	Areas of occurrences are present in the southern and northwestern sections.	Occurs in cultivated, disturbed, or degraded sites along roadsides and in meadows, grassland, chaparral, woodland, and riparian communities, generally below 7,200 feet amsl elevation. Red brome cannot withstand temperatures below freezing.	Has occurrence records in all Arizona counties, except Cochise, Greenlee, La Paz, Navajo, Santa Cruz, and Yuma. Widespread on TNF.	May occur

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Rescuegrass (*Bromus catharticus*)	TNF	A few occurrences have been observed on SEINet. Disturbed areas along roadways and dry sites below 4,500 feet amsl may promote growth.	Occurs in cultivated, disturbed, or degraded soils along roadsides or within desert or semidesert communities at elevations generally below 4,500 feet amsl; can tolerate both cold temperatures and drought conditions.	Has occurrence records in all Arizona counties except Pinal and Greenlee. Likely grows on TNF; occurs at Montezuma Castle National Monument and in the Tucson Mountains.	May occur
Ripgut brome (*Bromus diandrus*)	TNF ADA	Conditions of disturbed areas, dry sites, and elevations between 2,800–3,800 feet amsl may promote growth.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within desert and semidesert communities, at elevations typically ranging from 3,200 to 4,600 feet amsl (White 2013).	Has occurrence records in Cochise, Coconino, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai Counties. Occurs on National Monuments near TNF (Tuzigoot, Montezuma Castle, and Tonto National Monuments), and at the Hassayampa River Preserve; also occurs on the Verde where SR 260 crosses, near the town of Strawberry, in the area of the Willow Fire of 2004 west of Rye, and at Sycamore Creek along the Beeline Highway.	May occur

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Rush skeletonweed (*Chondrilla juncea*)	TNF ADA	Species is not known to occur in Arizona.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities; prefers well-drained, sandy, or gravely soils below 5,500 feet amsl.	No occurrence records in Arizona.	Unlikely to occur
Russian knapweed (*Acroptilon repens*)	TNF ADA	Distant from known occurrences, but suitable habitat present (WestLand 2018b).	Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadows, grassland, and riparian communities at elevations ranging from 3,000 to 8,000 feet amsl; found in a variety of soil types; is a very competitive and aggressive species (White 2013).	Has occurrence records in Apache, Cochise, Greenlee, Maricopa, Navajo, Pima, and Yavapai Counties. Documented in vicinity of Gordon Canyon on SR 260 and at Shumway Millsite on Payson Ranger District, south of Payson.	May occur
Russian olive (*Elaeagnus angustifolia*)	TNF ADA	Russian olive does not occur near or within the project area.	Seedlings tolerant of shade, thrives in a variety of soil and moisture conditions, including bare mineral substrates; found in open areas, grasslands, stream banks, lakeshores, roadsides, and urban areas (Forest Service 2018b). Typically occurs at elevations ranging from 4,000 to 7,500 feet amsl; can dominate riparian vegetation where overstory cottonwoods (*Populus* spp.) have died.	Has occurrence records in Apache, Coconino, and Navajo Counties.	Unlikely to occur

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Russian thistle (*Salsola kali* and *S. tragus*)	TNF	*S. tragus* has two occurrences in TNF: South of Salt River near SR 188 and at Reynolds Creek Ranger Station. *S. kali* does not occur near or within the project area.	*Salsola* spp. occur on cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities; can occur on any type of well-drained uncompacted soil, but is most frequently found in alkaline or saline soil below 8,500 feet amsl; burns easily owing to plant structure.	*Salsola* spp. have occurrence records in all Arizona counties.	May occur
Saltcedar (*Tamarix ramosissima*)	TNF ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (Arizona Department of Environmental Quality 2017; Arizona Game and Fish Department 2017; WestLand 2017b)	*Tamarix* spp. occur in moist meadow and riparian communities, in drainage washes of both natural and artificial water bodies, and in other areas where seedlings can be exposed to extended periods of saturated soil conditions; can grow on saline soils with up to 15,000 parts per million soluble salt; occurs below 7,500 feet amsl elevation.	On TNF, saltcedar occurs along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	May occur
Scotch thistle (*Onopordum acanthium*)	TNF ADA	Distant from known occurrences.	Occurs in cultivated, disturbed, or degraded moist sites within meadows, grassland, woodland, and riparian communities, typically below 7,500 feet amsl; can germinate year-round.	Has occurrence records in Apache, Navajo, and Yavapai Counties. Common in Four Corners area, the Arizona Strip, and along interstate system near Flagstaff; observed on TNF growing in Strawberry at SR 87 bridge.	Unlikely to occur
Serrated tussock (*Nassella trichotoma*)	Federal	Species is not known to occur in Arizona.	Grows in a wide range of climatic conditions and soil types, being able to tolerate floods, drought, exposure to salt and repeated frost.	No occurrence records in Arizona.	Unlikely to occur

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Siberian elm (*Ulmus pumila*)	TNF ADA	One occurrence in TNF: 11.2 miles southwest of Salt River Canyon Bridge.	In Arizona, this species is found in forested areas and high elevations (Forest Service 2018b). Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadow, grassland, woodland, and riparian communities in well-drained soils, typically at elevations below 8,100 feet amsl.	Has occurrence records in Apache, Maricopa, and Navajo Counties. Plus, isolated records from Coconino National Forest east of Flagstaff and in Verde River/Lynx Lake/Thumb Butte areas of Prescott National Forest.	Unlikely to occur
Smallflower tamarisk (*Tamarix parviflora*)	TNF ADA	Smallflower tamarisk does not occur near or within the project area.	Riparian habitats, along permanent or intermittent streams, lakes, and reservoirs; can grow in a wide variety of soils and can tolerate salinity.	Has occurrence records in Arizona but not county-specific records. On TNF, *Tamarix* spp. occur along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	Unlikely to occur
Southern sandbur (*Cenchrus echinatus*)	TNF ADA	Known occurrences near site. Suitable habitat is present (WestLand 2018b).	Occurs in cultivated, disturbed, or degraded sites that contain sandy or gravelly conditions; is an aggressive colonizer with rapid growth under moist conditions; usually occurs at elevations between 3,500 to 4,500 feet amsl.	Has occurrence records in Cochise, Maricopa, Pima, and Yuma Counties. Plus, occurs east of TNF on the Fort Apache Reservation along the ROW for U.S. 60 east; occurs on TNF on ROW of SR 188, a few miles north of Globe.	May occur

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Spotted knapweed (*Centaurea biebersteinii*, *C. stoebe* ssp. *micranthos*)	TNF ADA	Spotted knapweed does not occur near or within the project area.	Found at elevations from sea level to 10,000 feet amsl in areas receiving 8 to 80 inches of rain per year; prefers well-drained light-textured soils that receive summer rain in a wide variety of open forest, prairie, and rangelands; disturbance promotes rapid establishment and spread (Forest Service 2017b).	Although the NRCS Plants Database shows occurrence records only in Santa Cruz County, other sources indicate occurrence records along SRs 89A and 179 in Sedona, on Northern Arizona University campus, along Lake Mary Road and in the vicinity of Prescott; also north of Grand Canyon in the Arizona Strip, and north of TNF above the Mogollon Rim; with an unconfirmed report on the Pleasant Valley Ranger District.	Unlikely to occur
Sulfur cinquefoil (*Potentilla recta*)	TNF	Sulfur cinquefoil does not occur near or within the project area.	Associated with roadsides, disturbed areas, abandoned agricultural fields, and waste areas within grasslands, shrublands, and open-canopy forests; intolerant of complete shade (Zouhar 2003).	Although the NRCS Plants Database shows no occurrence records in Arizona, other sources indicate occurrence records along the Rio de Flag and on the Lake Mary Road on Coconino National Forest.	Unlikely to occur

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Swamp morning-glory (*Ipomoea aquatica*)	Federal	Species is not known to occur in Arizona.	Occurs in moist, marshy, or inundated localities, in shallow pools, ditches, or wet rice fields. Elevation between sea level–3,200 feet amsl.	No occurrence records in Arizona.	Unlikely to occur
Sweet resinbush (*Euryops subcarnosus*)	TNF ADA	Sweet resinbush does not occur near or within the project area.	In Arizona, occurs in semiarid grassland, desert grassland, desert shrub, and desertscrub communities below the Mogollon Rim.	Has occurrence records in Graham, Pima, and Yavapai Counties. Occurs on Fry Mesa south of Safford, on the Santa Rita Experimental Range, and several small patches south of the Globe Ranger Station; west of SR 188 in Tonto Basin, north of U.S. 60, north of the Miami cemetery; and east of Miami cemetery and 2 miles down Bloody Tanks Wash toward Miami.	Unlikely to occur

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Tamarisk (*Tamarix* spp.)[†]	ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (Arizona Department of Environmental Quality 2017; Arizona Game and Fish Department 2017; WestLand 2017b)	*Tamarix* spp. occur in moist meadow and riparian communities, in drainage washes of both natural and artificial water bodies, and in other areas where seedlings can be exposed to extended periods of saturated soil conditions; can grow on saline soils with up to 15,000 parts per million soluble salt; occurs at elevations below 7,500 feet amsl.	*Tamarix* spp. has occurrence records in all Arizona Counties except Greenlee, La Paz, Pinal, and Yuma. On TNF, tamarisk occurs along the Verde River and its tributaries, along much of the Salt River, and along Salt and Verde River reservoirs.	May occur.
Three-lobed morning-glory (*Ipomoea triloba*)	ADA	Only two records of occurrence in TNF, in 1930.	Occurs in cultivated fields, sandy ground, and grassy swamp margins on hedges, in thickets; low to middle elevations.	The NRCS Plants Database shows no occurrence records in Arizona. SEINet has five records in Arizona.	Unlikely to occur

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Tree of heaven (*Ailanthus altissima*)	TNF ADA	Occurrences in Globe and TNF.	Widely distributed in fields, roadsides, fencerows, woodland edges, and forest openings (Forest Service 2018b). Generally occurs below 6,200 feet amsl.	Has occurrence records in Cochise, Coconino, Gila, Greenlee, Maricopa, Pima, Pinal, Santa Cruz, and Yavapai Counties. Occurrences around Cottonwood, Camp Verde, and Jerome; on Coronado National Forest land; in TNF on Verde River near Childs; in Superior and Globe and on National Forest land nearby; near confluence of Pinal Creek and Salt River; and Payson.	May occur
Tropical soda apple (*Solanum viarum*)	Federal	Species is not known to occur in Arizona.	Occurs in areas that have been frequented by animals or that have received natural materials contaminated by seed, including pasturelands, roadsides, or cattle yards (Forest Service 2018b).	No occurrence records in Arizona.	Unlikely to occur
Ward's weed (*Carrichtera annua*)	ADA		Occurs in grasslands, scrub, and chaparral vegetation communities (California Invasive Plant Council 2025).	No occurrence records in Arizona.	Unlikely to occur

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Weeping lovegrass (*Eragrostis curvula*)	TNF	Many occurrences within TNF and a few southwest of Globe toward Pinal Peak.	Occurs in cultivated, disturbed, or degraded areas along roadsides or within meadows, grasslands, and at the margins of chaparral, woodland, and forest communities, generally at elevations between 6,000 to 8,000 feet amsl; this species has high potential for establishment on burned sites.	Has occurrence records in Cochise, Coconino, Gila, Graham, Maricopa, Pima, and Yavapai Counties. Within TNF, seeded extensively along highways, power line corridors, and after fires; seeded in Pinal Mountains after a fire.	Unlikely to occur
Witchweed (*Striga* spp.)	Federal	Species is not known to occur in Arizona.	Parasitic plant that attacks agricultural crops (National Invasive Species Information Center 2017).	No occurrence records in Arizona.	Unlikely to occur
White bietou (*Dimorphotheca cuneata*)	TNF	A few occurrences south of Globe.	On the TNF, occurs in yards and canyons between Six Shooter Canyon and National Forest land to the west; no other records of this species being invasive in the United States.	Occurs in an approximately 40-acre patch on the TNF between Six Shooter Canyon and National Forest land to the west.	Unlikely to occur

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Wild mustard (*Sinapis arvensis*)	TNF ADA	Three occurrences off SR 188 north of Roosevelt Lake.	Occurs in dry, disturbed sites, including waste places, pastures, roadsides, and railroad ROWs, generally at elevations below 6,000 feet amsl.	Has occurrence records in Gila, Maricopa, Pima, and Pinal Counties. Occurs along SR 188 from Punkin Center to Roosevelt, on private lands; is common on Agua Fria National Monument, west of Perry Mesa tobosa grassland in Cave Creek Ranger District.	May occur
Wild oats (*Avena fatua*)	TNF	Has occurrence records in East Plant Site.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within desert, semidesert grasslands, and woodland communities, typically at elevations between 2,500 and 7,200 feet amsl.	Has occurrence records in all Arizona counties except Graham, Greenlee, La Paz, Navajo, Santa Cruz, and Yuma. Found along most highways in TNF.	May occur
Witchweed (*Striga* spp.)	Federal		Parasitic plant that attaches agricultural crops.	No occurrence records in Arizona.	Unlikely to occur.
Yellow bluestem (*Bothriochloa ischaemum*)	ADA		Occurs in disturbed roadsides, waste places, and pastures up to 4,000 feet amsl.	Has occurrence records in Maricopa, Pima, and Cochise Counties.	Unlikely to occur

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Yellow star-thistle (*Centaurea solstitialis*)	TNF ADA	Distant from known occurrences.	Prefers full sunlight and deep, well-drained soils where rainfall is 10 to 60 inches per year; most commonly occurs in disturbed areas (Forest Service 2018b). Generally occurs below 8,200 feet amsl elevation.	Although the NRCS Plants Database only shows occurrence records in Yuma County, other sources indicate that this species has become established in central Arizona, within the communities of Flagstaff, Camp Verde, Payson, Star Valley, and Young; on TNF, this species occurs mainly on the higher elevation Districts (Payson and Pleasant Valley) but has been documented in the Tonto Basin at elevations below 3,000 feet amsl.	Unlikely to occur
Yellow sweetclover (*Melilotus officinalis*)	TNF	Many occurrences within TNF, and a few south of Globe near Pinal Peak.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within meadows, grassland, woodland, and forest communities at elevations typically ranging from 5,000 to 10,500 feet amsl.	Has occurrence records in all Arizona counties except Greenlee, La Paz, Mohave, and Yuma. This species is widespread in Arizona, and very common in riparian zones of the TNF along the Verde River and on the Cave Creek Ranger District.	May occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Peg Leg Analysis Area**
Yellow toadflax (*Linaria vulgaris*)	TNF	Yellow toadflax does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within meadows, grassland, woodland, and riparian communities at elevations typically ranging from 6,400 to 9,200 feet amsl; germination highest on open sites with compacted soils and little vegetation.	Has occurrence records in Coconino County.	Unlikely to occur

Unless otherwise noted, range or habitat information is from the following sources: CABI (2018); NRCS (2025); SEINet (2025); TNF (2018); (White 2013).

Unless otherwise noted, occurrence data is from Arizona Game and Fish Department, transmitted on August 13, 2018, or from SEINet (2025).

* Status definitions are as follows:

ADA = Arizona Department of Agriculture; species is listed as a noxious weed by the ADA (2025). Weeds that previously appeared on the ADA list, but have been removed from the list, are still included in this table because they appeared in the FEIS, which was published in 2021.

Federal = species is listed as a noxious weed by the USDA (2010).

TNF = Tonto National Forest; species is listed as an invasive species by the TNF (2018).

† *Tamarix* spp. is the listed entity on the ADA list (ADA 2025); this includes *T. chinensis, T. parviflora, and T. ramosissima*, which are also TNF species (TNF 2018). Other species, including *T. africana, T. aphylla*, and *T. canariensis,* are shown in the Plants Database (NRCS 2025) as occurring in Arizona. SEINet (2025) shows *T. africana* to occur associated with the Phoenix and Tucson metro areas, *T. aphylla* to occur within the analysis area near Boyce Thompson and the MARRCO corridor, and *T. canariensis* to occur in the Phoenix metro area.

Table A1-9. Noxious and Invasive Weed Species Analyzed for Alternative 6 – Skunk Camp

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
African rue (*Peganum harmala*)	TNF ADA	Disturbed areas and existing roadways, but no abundant water source except precipitation/spring runoff. Riparian corridors and moist soils are lacking (WestLand 2018a).	Favors disturbed and barren areas with moist soil such as roadsides, riparian corridors, and irrigation ditches; will grow in alkaline soils and high saline soils (Forest Service 2014a). Typically occurs at elevations below 4,500 feet amsl; seeds can germinate under fairly saline conditions.	Maricopa County. Also has been observed in Pima County along Interstate 10 near Vail, but not on TNF.	May occur
African sumac (*Rhus lancea*)	TNF	African sumac does not occur near or within the project area.	Occurs in well-drained sites in woodlands, grassland margins, and riparian communities; occurs in disturbed, degraded, or cultivated sites, typically below 2,000 feet amsl.	The NRCS Plants Database indicates that there are no records in Arizona. No records on TNF; however, a recent record occurs in Cave Creek approximately 3 miles downstream of the Cave Creek parcel.	Unlikely to occur
Anchored water hyacinth (*Eichhornia azurea*)	Federal	Anchored water hyacinth does not occur near or within the project area.	Freshwater, perennial, aquatic plant found in permanent water bodies, prefers open, slow-moving water environments.	No records in Arizona.	Unlikely to occur
Arabian schismus (*Schismus arabicus*)	TNF	Arabian schismus occurs within the TNF and observed 20 miles south of Globe.	Occurs in disturbed, degraded, or cultivated sites in desert and semidesert grassland communities and along roadsides, typically at elevations below 4,500 feet amsl.	Has occurrence records in Cochise, Maricopa, Mojave, Pima, and Pinal Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Asian mustard (Sahara mustard) (*Brassica tournefortii*)	TNF ADA	Asian mustard occurs widespread within the TNF and very close to the area to the north and west.	Occurs in areas with windblown sediments and disturbed areas within desert grasslands, desertscrub, and roadsides at elevations typically below 2,600 feet amsl.	Has occurrence records in Maricopa, Pima, Pinal, and Yuma Counties. Widespread throughout TNF.	May occur
Black mustard (*Brassica nigra*)	TNF ADA	Occurrences along SR 87 within TNF. Occurrences within the TNF.	Occurs in dry disturbed sites such as along roadsides, railroad rights-of-way (ROWs), pastures, and waste places at elevations below 7,000 feet amsl.	Has occurrence records in Cochise, Coconino, Maricopa, Pima, and Pinal Counties. Occurs along SR 188 through Tonto Basin, and along SR 87 within TNF.	May occur
Blue mustard (*Chorispora tenella*)	TNF	Occurrence near or possibly within the TNF on the east side of the area.	Occurs in disturbed sites, including waste places, pastures, roadsides, and railroad ROWs, typically at elevations below 7,500 feet amsl.	Has occurrence records in Apache, Coconino, Maricopa, Navajo, and Yavapai Counties. Has been found outside of the TNF along SR 69 between Cordes Junction and Prescott; in Prescott; and north of Holbrook.	May occur
Branched broomrape (Hemp broomrape) (*Orobanche ramosa*)	Federal ADA	Branched broomrape does not occur near or within the project area.	Requires relatively high temperatures for optimum germination and growth and occurs mainly in irrigated crops grown under summer conditions in tropical and subtropical climates. Adapted to soils of generally high pH and are associated with the crops they attack.	No records in Arizona.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Buffelgrass (*Pennisetum ciliare,* also known as *Cenchrus ciliaris*)	TNF ADA	Observed in the vicinity of U.S. 60 and SR 188 throughout the TNF.	Alkaline soils and within arid areas with high nutrients and moisture (Invasive Species Specialist Group 2006). Extremely drought tolerant and reestablishes quickly and expands infestation following fire (Northam and Meyer 2009).	Has occurrence records in Maricopa, Pima, Pinal, and Yuma Counties. Common in Phoenix and spreading onto TNF along U.S. 60 and SR 87, Pima Road in Scottsdale, Cave Creek Road, and others.	May occur
Bull thistle (*Cirsium vulgare*)	TNF ADA	Abundance of occurrences to the north of the TNF, west of the Apache-Sitgreaves National Forests. An occurrence near SR 288 within the TNF has been observed.	Occurs most often in areas that have been recently or repeatedly disturbed (e.g., overgrazed rangelands, recently burned forests, clear-cuts, and along roads and ditches); prefers soil of intermediate moisture (Forest Service 2018b). Typically occurs at elevations between 4,500 and 9,100 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, and Navajo Counties. Common from Flagstaff to south of Mogollon Rim.	May occur
Camelthorn (*Alhagi maurorum*)	TNF ADA	Due to the need for moist sites, occurrences should be limited or non-existent within the TNF; however, a few occurrences have been observed near Globe.	Occurs in moist sites that are cultivated, disturbed, or degraded; typically found at 4,500 to 5,000 feet amsl within meadows, grasslands, and riparian communities.	Has occurrence records in Apache, Coconino, Gila, Maricopa, and Navajo Counties. Heavy infestations in northeastern part of state; near Painted Rock Dam; southwest of Phoenix; west of Phoenix near Loop 101; Chandler; U.S. 60 just north of Globe; U.S. 60 north of the Salt River; but not yet on TNF.	May to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Skunk Camp Analysis Area**
Canada thistle (*Cirsium arvense*)	TNF ADA	Canada thistle does not occur near or within the project area.	Occurs most commonly in disturbed upland areas (e.g., barrens, meadows, fields, pastures), but can also invade wet areas with fluctuating water levels (Forest Service 2018b). Typically occurs at elevations between 4,200 to 8,300 feet amsl.	Has occurrence records in Apache, Coconino, and Yavapai Counties. Occurs in northeastern part of state, and near the OW Ranch, west of Canyon Creek on the TNF.	Unlikely to occur
Common teasel (Fuller's teasel) (*Dipsacus fullonum*)	TNF	Not abundant; however, there are occurrences within the TNF at Sharp Creek Campground.	Prefers open, sunny habitats and commonly occurs in disturbed areas, including roadsides and pastures; grows in both moist and arid soils, but more commonly found in mesic soils (Forest Service 2014b). Typically occurs at elevations ranging from 4,700 to 8,700 feet amsl.	Has occurrence records in Coconino County. Occurs at Watson Woods on Granite Creek near Prescott; at Shumway Millsite, south of Payson and at Sharp Creek Campground on TNF.	Unlikely to occur
Dalmatian toadflax (*Linaria dalmatica*)	TNF ADA	One occurrence in TNF south of Pine near SR 260.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadows, grassland, woodland, and riparian communities at elevations ranging from 4,400 to 10,000 feet amsl.	Has occurrence records in Coconino and Yavapai Counties. Common around Flagstaff; widespread in ponderosa pine (*Pinus ponderosa*) forests on Kaibab, Coconino, and Prescott National Forests; on TNF, grows at Hot Shot Base, along SR 87 between Payson and Rye, and near the Verde River 1 mile downstream from Childs.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Diffuse knapweed (*Centaurea diffusa*)	TNF ADA	Two occurrences in TNF near Young near SR 288.	Prefers well-drained soils within cultivated, disturbed, or degraded sites along roadsides or within meadows, grassland, woodland, and forest communities at elevations typically below 7,200 feet amsl (Forest Service 2017b).	Has occurrence records in Apache County. Common on private lands in Young; on TNF occurs at Pleasant Valley airport; Pleasant Valley Ranger Station, along Cherry Creek, and along SR 288 at Board Tree Saddle (south of Young).	Unlikely to occur
Dodder (*Cuscuta* spp.) (except for natives)	Federal	Nonnative dodder does not occur near or within the project area.	Parasitic annual plant species that can invest a variety of host species, including crops, weed species, shrubs, and trees (University of California Statewide Integrated Pest Management Program 2017).	Has occurrence records in all counties except Apache, Graham, and Greenlee.	Unlikely to occur
Downy brome (cheatgrass) (*Bromus tectorum*)	TNF ADA	Disturbed areas and generally dry soils may create occurrences for this species. Known occurrences are near U.S. 60 near Superior and Globe and northward near Willow near SR 288.	Occurs from valley bottoms to high mountainous areas; quickly invades disturbed sites (Northam and Meyer 2009). Prefers well-drained soils of any texture but is not well adapted to saline or sodic soil conditions or wet soil (NRCS 2018).	Has occurrence records in all counties except, Cochise, Greenlee, La Paz, Pinal, Santa Cruz, and Yuma.	May occur
Dyer's woad (*Isatis tinctoria*)	TNF ADA	Dyer's woad does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland or woodland communities; prefers dry rocky or sandy soils at elevations from 4,300 to 7,000 feet amsl.	No records in Arizona.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Dudaim melon (cantaloupe) (*Cucumis melo*)	ADA	Dudaim melon does not occur near or within the project area.	Occurs in disturbed areas with abundant moisture, including fields, roadsides, and ditches (Winston et al. 2014).	No records in Arizona (Winston et al. 2014).	Unlikely to occur
Field bindweed (*Convolvulus arvensis*)	TNF ADA	Disturbed areas with known species occurrences north of Willow along SR 288.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland, chaparral, woodland, forest, and riparian communities at elevations ranging from 3,500 to 10,000 feet amsl.	Has occurrence records in all Arizona counties.	May occur
Field sandbur (*Cenchrus spinifex incertus*)	TNF ADA	Occurs east of TNF on the Fort Apache Reservation along the right-of-way (ROW) for U.S. 60 east; Occurs on TNF on ROW of SR 188, a few miles north of Globe. Occurrences near the Superstition Mountains.	Prefers sandy or gravelly sites that have been disturbed, or degraded sites at elevations between 3,500 and 5,000 feet amsl.	Has occurrence records in all counties except La Paz, Pinal, and Yuma. Occurs east of TNF on the Fort Apache Reservation along the ROW for U.S. 60 east; occurs on TNF on ROW of SR 188, a few miles north of Globe.	May occur
Five-stamen tamarisk (*Tamarix chinensis*)	TNF ADA	Known occurrences throughout the TNF.	Desert riparian habitats, including seeps, springs, and roadsides; may tolerate saline soil.	Has occurrence records in all Arizona counties except Greenlee, La Paz, Pinal, and Yuma. On TNF, saltcedar occurs along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	May occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Fountain grass (*Pennisetum setaceum*)	TNF ADA	Documented in all desert districts within the TNF; very abundant along U.S. 60 between Superior and mountain tunnel; also occurs along SR 87, along the road to Bartlett and Horseshoe Reservoirs, and in the Salt River Recreation Area. Occurrence near Superior and locations to the northwest of TNF.	Usually found along roadways or in rangelands (Northam and Meyer 2009). Prefers arid to semiarid conditions but can occur in mesic environments; usually occurs in areas with mild winters and summer moisture; prefers open, sunny areas with well-drained soils.	Has occurrence records in Cochise, Maricopa, Pima, and Santa Cruz Counties. Documented in all desert districts within the TNF; very abundant along U.S. 60 between Superior and mountain tunnel; also occurs along SR 87, along the road to Bartlett and Horseshoe Reservoirs, and in the Salt River Recreation Area.	May occur
Floating water hyacinth (*Eichhornia crassipes*)	ADA	Floating water hyacinth does not occur near or within the project area.	Aquatic, floating plant that occurs in tropical and subtropical freshwater lakes and rivers.	Has occurrence records in Maricopa County.	Unlikely to occur
Giant reed (*Arundo donax*)	TNF ADA	One occurrence in the yard of Sallie Valkenburgh, San Carlos near SR 170.	Occurs in moist areas, including ditches, streams, river banks, and floodplains; prefers well-drained soils with abundant moisture; will tolerate a wide variety of conditions, including high salinity; will tolerate a wide range of soil types from clay to sand; typically occurs below 4,000 feet amsl.	Has occurrence records in Cochise, Maricopa, and Navajo Counties. Occurs upstream of TNF on the Upper Verde, with potential to invade in a large river scouring event.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Giant salvinia (*Salvinia molesta*)	Federal ADA	Giant salvinia does not occur near or within the project area.	Prefers warm freshwater in temperate and subtropical climates (Chambers and Hawkins 2002). Occurrence records from the southwest portion of Arizona, in and near the Colorado River.	Found in slow-moving water or still water canals, ponds, rivers, lakes, and reservoirs (Chambers and Hawkins 2002).	Unlikely to occur
Globe chamomile (stinknet) (*Oncosiphon piluliferum*)	TNF ADA	Disturbed areas along existing roadways within the elevational range of the species may provide habitat for this species. Occurrences are present west of the TNF.	Occurs in disturbed areas, including waste places, pastures, and along roadsides; typically found at elevations below 3,500 feet amsl; this annual is a pioneer species within disturbed sites.	Has occurrence records in Maricopa, Pinal, and Yavapai Counties. Documented along Interstate 17 north of Phoenix, near Skunk Tank Ridge south of Cave Creek on the Cave Creek Ranger District, at the Cave Creek Ranger Station, at the Sonoran Desert National Monument, Pinal City near Superior, along SR 84 west of Casa Grande, Extension Service Demonstration Garden (east Broadway in Phoenix), on Carefree Highway, 4 miles east of Interstate 17, and growing in cultivation at the Desert Botanical Garden and Boyce Thompson Arboretum.	May occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Globe-podded hoary cress (whitetop) (*Cardaria draba*)	TNF ADA	A few occurrences present to the north of the TNF. On the TNF, occurs on the Pleasant Valley Ranger District.	Occurs in cultivated, disturbed, or degraded moist sites along roadsides or within meadows, grassland, chaparral, woodland, forest, and riparian communities; prefers alkaline to saline soils, but will tolerate a wide variety of soil and moisture conditions; typically found between 3,000 and 8,000 feet amsl.	Has occurrence records in Navajo, Santa Cruz, and Yavapai Counties. *Cardaria* spp. have been recorded in Prescott, Camp Verde, Flagstaff, and Cottonwood, and on the upper Verde River near Perkinsville; on the TNF, occurs on the Pleasant Valley Ranger District.	Unlikely to occur
Hairy white-top (*Cardaria pubescens*)	TNF	On the TNF, occurs on the Pleasant Valley Ranger District.	Occurs in cultivated, disturbed, or degraded moist sites along roadsides or within meadows, grassland, chaparral, woodland, forest, and riparian communities; prefers alkaline to saline soils, but can tolerate a wide range of soils and moisture conditions; typical elevation is 3,000 to 8,000 feet amsl.	*Cardaria* spp. have been recorded in Prescott, Camp Verde, Flagstaff, and Cottonwood, and on the upper Verde River near Perkinsville; on the TNF, occurs on the Pleasant Valley Ranger District.	Unlikely to occur
Halogeton (saltlover) (*Halogeton glomeratus*)	ADA	Halogeton does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides or within grassland or woodland communities; prefers open areas and alkaline and saline soils, generally at elevations ranging from 4,000 to 6,500 feet amsl.	Has occurrence records in Apache, Navajo, and Mohave Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Hydrilla (waterthyme) (*Hydrilla verticillata*)	Federal ADA	Waterthyme does not occur near or within the project area.	Found mainly in freshwater aquatic systems but can tolerate low salinity. Sometimes found in upper reaches of estuaries. Found in shallow water, but in clear water can survive depths to 49 feet (Chambers and Hawkins 2002).	Has occurrence records in Maricopa County.	Unlikely to occur
Japanese brome (*Bromus japonicus*)	TNF	Disturbed areas along existing roadways give the possibility for occurrence; however, elevation may be too low to occur. Known occurrences north of Willow near SR 288 and west of Tonto Basin near SR 87.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within semidesert grassland and wooded communities at elevations ranging from 4,500 to 7,200 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, Gila, Greenlee, Maricopa, Pima, and Navajo Counties.	May occur
Japanese knotweed (*Polygonum cuspidatum*)	TNF	Japanese knotweed does not occur near or within the project area.	Riparian areas, including along streams and rivers, low-lying areas, utility ROWs; it rapidly colonizes scoured areas and can survive severe floods; can tolerate full shade, high temperatures, high salinity, and drought (Forest Service 2018b).	No occurrence records in Arizona and is not known from TNF.	Unlikely to occur
Johnsongrass (*Sorghum halepense*)	ADA		Occurs in disturbed areas such as roadsides, ditches, and fields.	Has occurrence records in every county in Arizona and has been documented in the TNF.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Jointed goatgrass (*Aegilops cylindrica*)	TNF ADA	Occurs along SR 87 from Payson to Strawberry, and in the Young area. Lower elevations in the TNF may prevent growth; disturbed areas and dry sites may promote possible growth.	Occurs above 4,000 feet amsl, occurs in disturbed areas. Occurs in dry sites in grassland or wooded communities and roadsides at elevations ranging from 5,300 to 7,000 feet amsl.	Has occurrence records in Apache, Cochise, Coconino, Gila, Navajo, and Yavapai Counties. Occurs along SR 87 from Payson to Strawberry, and in the Young area.	May occur
Karoo bush (African sheepbush) (*Pentzia incana*)	TNF	Has been documented at one site on TNF, north of the Oak Flat Campground on the Globe Ranger District. An occurrence near U.S. 60 east of Superior.	Occurs in dry, disturbed sites, including waste places, pastures, and along roadsides within desert, semidesert, grassland, chaparral oak (*Quercus* spp.) scrub and pinyon-juniper (*Pinus spp.-Juniperus* spp.) woodland communities typically at elevations below 5,300 feet amsl.	Occurrence records in Graham County. Has been documented at one site on TNF, north of the Oak Flat Campground on the Globe Ranger District.	May occur
Kochia (*Kochia scoparia*) *(Bassia scoparia)*	TNF ADA	Disturbed areas along existing roadways and dry sites with low rainfall may promote growth. There are two occurrences north of Tonto Basin in the TNF.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities in well-drained, uncompacted soil, below 8,500 feet amsl; thrives in warm, low-rainfall environments; burns easily owing to plant structure.	Has occurrence records in Apache, Cochise, Coconino, Navajo, and Pima Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Leafy spurge (*Euphorbia esula*)	TNF ADA	Leafy spurge does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within fields, pastures, rangeland, and riparian communities, typically between 4,600 and 9,500 feet amsl.	Has occurrence records in Coconino County. Has been documented in the Coconino National Forest but not on the TNF.	Unlikely to occur
Lehmann's lovegrass (*Eragrostis lehmanniana*)	TNF ADA	Within TNF, seeded extensively along highways, powerline corridors, and after fires. Known occurrences observed throughout the TNF.	Occurs in cultivated, disturbed, and degraded sites on sandy flats and on calcareous slopes within desert grassland, semidesert grassland, and woodland communities and roadsides, generally at elevations between 3,500 and 4,000 feet amsl.	Has occurrence records in Cochise, Coconino, Graham, Maricopa, and Pima Counties. Within TNF, seeded extensively along highways, powerline corridors, and after fires.	May occur
Lightning weed (*Drymaria arenarioides*)	Federal	Lightning weed does not occur near or within the project area.	Prefers dry areas, acidic soils, hills and plains, and stressed rangelands (Scher et al. 2015). It is well adapted to soils and climates within the *Bouteloua-Aristida* type.	Invades rangeland, displacing desired vegetation and is highly toxic to livestock. This species has not been documented in the United States, but is spreading northward, reportedly to within 1 mile of New Mexico (Scher et al. 2015).	Unlikely to occur
Malta star-thistle (*Centaurea melitensis*)	TNF ADA	Widespread on TNF at low elevations below 3,000 feet.	Occurs in cultivated, disturbed, or degraded sites along roadways and within grassland and woodland communities at elevations below 7,200 feet amsl; is a competitive and aggressive plant.	Has occurrence records in Apache, Cochise, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai Counties. Widespread on TNF at low elevations below 3,000 feet amsl.	Known to occur

Common Name (*Scientific Name*)	**Status***	**Known Records of Occurrence**	**Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)**	**Geographical Range in Arizona**	**Likelihood of Occurrence in Skunk Camp Analysis Area**
Mediterranean grass (*Schismus barbatus*)	TNF	Mediterranean grass occurs throughout the TNF.	Occurs in roadways and cultivated, disturbed, or degraded sites along roadways and in desert and semidesert grassland communities, generally at elevations below 5,000 feet amsl.	All Arizona Counties except Apache, Cochise, Graham, Greenlee, and Navajo.	May occur
Mediterranean sage (*Salvia aethiopis*)	TNF	Mediterranean sage does not occur near or within the project area.	Occurs in roadways and cultivated, disturbed, or degraded sites along roadways and within meadows, grassland, woodland, and riparian communities; prefers well-drained soil; occurs at elevations typically below 8,500 feet amsl.	Has occurrence records in Coconino and Yavapai Counties.	Unlikely to occur
Mexican paloverde (Jerusalem thorn) (*Parkinsonia aculeata*)	TNF	On TNF, a 2-acre infestation occurs from areas burned in the Cave Creek Complex fire near Camp Creek.	On the TNF, infestation occurred from a single ornamental planting in Camp Creek area; typically invades waste areas at low elevations. Invasive on degraded rangelands; tolerant of drought, waterlogging, and saline conditions.	Has occurrence records in Gila, Graham, Maricopa, Pima, Pinal, Santa Cruz, and Yuma Counties where it is a native species. On TNF, a 2-acre infestation occurs from areas burned in the Cave Creek Complex fire near Camp Creek.	May occur
Morning-glory (*Ipomoea purpurea, I. hederacea, I. triloba, Ipomoea x leucantha*)	ADA	This species is widespread throughout Arizona and can take hold in disturbed areas.	Suitable habitat depends on species. For example, *I. hederacea* and *I. purpurea* occur in disturbed areas, *I. tenuiloba* occurs in pinyon-juniper woodlands.	There are 69 species of *Ipomoea*, consisting of native and introduced species, occurring in the NRCS Plants Database, 15 of which have occurrence records in Arizona.	May occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Musk thistle (*Carduus nutans*)	TNF ADA	Musk thistle does not occur near or within the project area.	Grows from sea level up to 8,000 feet amsl in neutral to acidic soils; invades open areas (e.g., meadows or prairies) and spreads rapidly in areas of natural disturbance, including landslides and flooding; does not grow well in conditions that are excessively wet, dry, or shady (Forest Service 2018b). Typically occurs between 4,200 and 8,100 feet amsl.	Has occurrence records in Apache and Navajo Counties.	Unlikely to occur
Natal grass (*Melinis repens*)	ADA		Occurs on rocky slopes and moist canyon bottoms from 2,500 to 4,500 feet amsl.	Has occurrence records in Maricopa, Pima, Pinal, Graham, Santa Cruz, and Cochise Counties.	Unlikely to occur
Oleander (*Nerium oleander*)	TNF	On TNF, near Camp Creek and Boyce Thompson Arboretum.	On the TNF, has naturalized in Camp Creek and near Boyce Thompson Arboretum; in California has been found in floodplain and riparian zones.	Has occurrence records in Maricopa County. On TNF, near Camp Creek and Boyce Thompson Arboretum.	Unlikely to occur
Onionweed (*Asphodelus fistulosus*)	Federal TNF ADA	Onionweed does not occur near or within the project area.	In the Sonoran Desert region, it seems to do best at altitudes above the desert floor that receive moderate rainfall during winter. Tends to invade disturbed land leaving its potential threat to natural areas unclear. Elevation is 2,000–>4,500 feet amsl (USDA 2019).	Known in the five southeastern counties (Pima, Pinal, Santa Cruz, Cochise, and Greenlee) and in an area near Sedona in Yavapai County (USDA 2019). Not known to occur on TNF.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Oxeye daisy (*Leucanthemum vulgare*)	TNF	Occurs in a few locations on TNF east of Bear Flat.	Occurs in cultivated, disturbed, or degraded sites on well-drained but moist soils along roadsides and within meadows, grassland, woodland, and forest communities at elevations from 5,000 to 9,500 feet amsl.	Has occurrence records in Apache, Coconino, Gila, and Navajo Counties. Identified growing near Canyon Creek, Pleasant Valley Ranger District, TNF; occurs in Flagstaff and Kachina Village, south of Flagstaff.	Unlikely to occur
Periwinkle (*Vinca major*)	TNF	Occurs on TNF adjacent to private lands (e.g., Grantham Homestead off SR 288). A few occurrences spread throughout the TNF.	Occurs in highly disturbed areas, including old homesteads, roadsides, and waste places; also occurs in riparian areas, forests, and grasslands; typically occurs at elevations below 7,500 feet amsl.	Has occurrence records in Cochise, Coconino, Maricopa, Pima, Santa Cruz, and Yavapai Counties. Occurs on TNF adjacent to private lands (e.g., Grantham Homestead off SR 288).	Possible to occur
Plumeless thistle (*Carduus acanthoides*)	TNF ADA	SEINet shows no occurrences in Arizona; however, TNF (2018) indicates occurrences in the Petrified Forest National Park. Disturbed areas and dry sites may promote some communities.	Occurs in sites that are dry and well-drained; occurs in cultivated, disturbed, or degraded sites within meadows, grassland, chaparral, woodland, forest, and riparian communities or roadsides at elevations generally ranging from 4,200 to 8,800 feet amsl.	Although the NRCS Plants Database shows no occurrence records in Arizona, other sources indicate occurrence records in Petrified Forest National Park. SEINet shows no occurrences in Arizona.	May occur
Puncturevine (*Tribulus terrestris*)	ADA	SEINet shows occurrences through the TNF, most common across the north of the TNF.	Occurs in cultivated, disturbed, or degraded moist sites along roadsides and within grassland, woodland, and riparian communities; prefers dry, sandy soils but tolerates most soil types; found at elevations below 7,000 feet amsl.	Has occurrence records in all Arizona counties.	May occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Purple loosestrife (*Lythrum salicaria*)	TNF ADA	Purple loosestrife does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites in perennial and seasonal wetlands; occurs along marsh and pond edges, stream banks, canals, and ditches at elevations generally from 4,500 to 6,800 feet amsl.	Although the NRCS Plants Database and SEINet show no occurrence records in Arizona, other sources indicate occurrence records in on the Apache-Sitgreaves National Forests.	Unlikely to occur
Purple star-thistle (*Centaurea calcitrapa*)	ADA	Purple star-thistle does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites with fertile soil; occurs in meadows, grassland, woodland, and forest communities and along roadsides at elevations typically ranging from 3,300 to 8,000 feet amsl; germination occurs under a broad range of conditions with fewer viable seeds produced in dry years; plants seldom persist under shady conditions.	Has occurrence records in Yuma County.	Unlikely to occur
Pyracantha (*Pyracantha* spp.)	TNF	Pyracantha does not occur near or within the project area.	Not a common invasive in the desert Southwest; on the TNF, occurred along Cave Creek. Drought resistant, common landscape plant; prefers dry soil and full sun (Dierking 1998).	Has occurrence records in Maricopa County. On TNF, occurs along Cave Creek.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Quackgrass (*Elymus repens*)	TNF ADA	Two occurrences in TNF near Airplane Flats Campground and Upper Canyon Creek Campground.	Occurs in disturbed or degraded sites within grasslands, woodlands, forest communities, or along roadsides at elevations between 6,700 and 8,500 feet amsl; is extremely drought tolerant.	Has occurrence records in Coconino, Gila, and Navajo Counties. Documented near Flagstaff, in Grand Canyon National Park, and on one site in TNF, on Pleasant Valley Ranger District.	Unlikely to occur
Red brome (*Bromus rubens*)	TNF ADA	Areas of occurrences are present in the southern and northwestern sections.	Occurs in cultivated, disturbed, or degraded sites along roadsides and in meadows, grassland, chaparral, woodland, and riparian communities, generally at elevations below 7,200 feet amsl. Red brome cannot withstand temperatures below freezing.	Has occurrence records in all Arizona counties, except Cochise, Greenlee, La Paz, Navajo, Santa Cruz, and Yuma. Widespread on TNF.	May occur
Rescuegrass (*Bromus catharticus*)	TNF	A few occurrences have been observed on SEINet. Disturbed areas along roadways and dry sites below 4,500 feet may promote growth.	Occurs in cultivated, disturbed, or degraded soils along roadsides or within desert or semidesert communities generally below 4,500 feet amsl. Elevation; can tolerate both cold temperatures and drought conditions.	Has occurrence records in all Arizona counties except Pinal and Greenlee. Likely grows on TNF; occurs at Montezuma Castle National Monument and in the Tucson Mountains.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Ripgut brome (*Bromus diandrus*)	TNF ADA	Conditions of disturbed areas, dry sites, and elevations between 2,800-3,800 feet amsl may promote growth.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within desert and semidesert communities, at elevations typically ranging from 3,200 to 4,600 feet amsl.	Has occurrence records in Cochise, Coconino, Graham, Maricopa, Mohave, Pima, Pinal, and Yavapai Counties. Occurs on National Monuments near TNF (Tuzigoot, Montezuma Castle, and Tonto National Monuments), and at the Hassayampa River Preserve; also occurs on the Verde where SR 260 crosses, near the town of Strawberry, in the area of the Willow Fire of 2004 west of Rye, and at Sycamore Creek along the Beeline Highway.	Unlikely to occur
Rush skeletonweed (*Chondrilla juncea*)	TNF ADA	Rush skeletonweed does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities; prefers well-drained, sandy, or gravely soils below 5,500 feet amsl.	No occurrence records in Arizona.	Unlikely to occur
Russian knapweed (*Acroptilon repens*)	TNF ADA	Russian knapweed does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadows, grassland, and riparian communities at elevations ranging from 3,000 to 8,000 feet amsl; found in variety of soil types; is a very competitive and aggressive species (White 2013).	Has occurrence records in Apache, Cochise, Greenlee, Maricopa, Navajo, Pima, and Yavapai Counties. Documented in vicinity of Gordon Canyon on SR 260 and at Shumway Millsite on Payson Ranger District, south of Payson.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Russian olive (*Elaeagnus angustifolia*)	TNF ADA	Russian olive does not occur near or within the project area.	Seedlings tolerant of shade, thrives in a variety of soil and moisture conditions, including bare mineral substrates; found in open areas, grasslands, stream banks, lakeshores, roadsides, and urban areas (Forest Service 2018b). Typically occurs at elevations ranging from 4,000 to 7,500 feet amsl; can dominate riparian vegetation where overstory cottonwoods (*Populus* spp.) have died.	Has occurrence records in Apache, Coconino, and Navajo Counties.	Unlikely to occur
Russian thistle (*Salsola kali* and *S. tragus*)	TNF	*S. tragus* has two occurrences in TNF: South of the Salt River near SR 188 and at Reynolds Creek Ranger Station. *S. kali* does not occur near or within the project area.	*Salsola* spp. occur on cultivated, disturbed, or degraded sites along roadsides and within grassland and woodland communities; can occur on any type of well-drained uncompacted soil, but is most frequently found in alkaline or saline soil below 8,500 feet amsl; burns easily owing to plant structure.	*Salsola* spp. have occurrence records in all Arizona counties.	May occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Saltcedar (*Tamarix ramosissima*)	TNF ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (Arizona Department of Environmental Quality 2017; Arizona Game and Fish Department 2017; WestLand 2017b)	*Tamarix* spp. occur in moist meadow and riparian communities, in drainage washes of both natural and artificial water bodies, and in other areas where seedlings can be exposed to extended periods of saturated soil conditions; can grow on saline soils with up to 15,000 parts per million soluble salt; occurs below 7,500 feet amsl elevation.	On TNF, saltcedar occurs along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	May occur
Scotch thistle (*Onopordum acanthium*)	TNF ADA	Scotch thistle does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded moist sites within meadows, grassland, woodland, and riparian communities, typically below 7,500 feet amsl; can germinate year-round.	Has occurrence records in Apache, Navajo, and Yavapai Counties. Common in Four Corners area, the Arizona Strip, and along the interstate system near Flagstaff; observed on TNF growing in Strawberry at SR 87 bridge.	Unlikely to occur
Serrated tussock (*Nassella trichotoma*)	Federal	Serrated tussock does not occur near or within the project area.	Grows in a wide range of climatic conditions and soil types, being able to tolerate floods, drought, exposure to salt and repeated frost.	No occurrence records in Arizona.	Unlikely to occur
Siberian elm (*Ulmus pumila*)	TNF ADA	One occurrence in TNF: 11.2 miles southwest of Salt River Canyon Bridge.	In Arizona, this species is found in forested areas and high elevations (Forest Service 2018b). Occurs in cultivated, disturbed, or degraded sites along roadsides and within meadow, grassland, woodland, and riparian communities in well-drained soils, typically below 8,100 feet amsl elevation.	Has occurrence records in Apache, Maricopa, and Navajo Counties. Plus, isolated records from Coconino National Forest east of Flagstaff and in Verde River/Lynx Lake/Thumb Butte areas of Prescott National Forest.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Smallflower tamarisk (*Tamarix parviflora*)	TNF ADA	Smallflower tamarisk does not occur near or within the project area.	Riparian habitats, along permanent or intermittent streams, lakes, and reservoirs; can grow in a wide variety of soils and can tolerate salinity.	Has occurrence records in Arizona but not county-specific records. On TNF, *Tamarix* spp. occur along the Verde River and its tributaries; along much of the Salt River; and along Salt and Verde River reservoirs.	Unlikely to occur
Southern sandbur (*Cenchrus echinatus*)	TNF ADA	Southern sandbur does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded sites that contain sandy or gravelly conditions; is an aggressive colonizer with rapid growth under moist conditions; usually occurs at elevations between 3,500 to 4,500 feet amsl.	Has occurrence records in Cochise, Maricopa, Pima, and Yuma Counties. Plus, occurs east of TNF on the Fort Apache Reservation along the ROW for U.S. 60 east; occurs on TNF on ROW of SR 188, a few miles north of Globe.	Unlikely to occur
Spotted knapweed (*Centaurea biebersteinii*) (*C. stoebe* ssp. *micranthos*)	TNF ADA	Spotted knapweed does not occur near or within the project area.	Found at elevations from sea level to 10,000 feet amsl in areas receiving 8 to 80 inches of rain per year; prefers well-drained light-textured soils that receive summer rain in a wide variety of open forest, prairie, and rangelands; disturbance promotes rapid establishment and spread (Forest Service 2017b).	Although the NRCS Plants Database shows occurrence records only in Santa Cruz County, other sources indicate occurrence records along SRs 89A and 179 in Sedona, on Northern Arizona University campus, along Lake Mary Road and in the vicinity of Prescott; also north of Grand Canyon in the Arizona Strip, and north of TNF above the Mogollon Rim; with an unconfirmed report on the Pleasant Valley Ranger District.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Sulfur cinquefoil (*Potentilla recta*)	TNF	Sulfur cinquefoil does not occur near or within the project area.	Associated with roadsides, disturbed areas, abandoned agricultural fields, and waste areas within grasslands, shrublands, and open-canopy forests; intolerant of complete shade (Zouhar 2003).	Although the NRCS Plants Database shows no occurrence records in Arizona, other sources indicate occurrence records along the Rio de Flag and on the Lake Mary Road on Coconino National Forest.	Unlikely to occur
Swamp morning-glory (*Ipomoea aquatica*)	Federal	Swamp morning-glory does not occur near or within the project area.	Occurs in moist, marshy, or inundated localities, in shallow pools, ditches, or wet rice fields. Elevations between sea level–3,200 feet.	No occurrence records in Arizona.	Unlikely to occur
Sweet resinbush (*Euryops subcarnosus*)	TNF ADA	Sweet resinbush does not occur near or within the project area.	In Arizona, occurs in semiarid grassland, desert grassland, desert shrub, and desertscrub communities below the Mogollon Rim.	Has occurrence records in Graham, Pima, and Yavapai Counties. Occurs on Fry Mesa south of Safford, on the Santa Rita Experimental Range, and several small patches south of the Globe Ranger Station; west of SR 188 in Tonto Basin, north of U.S. 60, north of the Miami cemetery; and east of Miami cemetery and 2 miles down Bloody Tanks Wash toward Miami.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Tamarisk (*Tamarix* spp.)[†]	ADA	*Tamarix* spp. occur on West Plant Site, established in low numbers within disturbed areas (Arizona Department of Environmental Quality 2017; Arizona Game and Fish Department 2017; WestLand 2017b)	*Tamarix* spp. occur in moist meadow and riparian communities, in drainage washes of both natural and artificial water bodies, and in other areas where seedlings can be exposed to extended periods of saturated soil conditions; can grow on saline soils with up to 15,000 parts per million soluble salt; occurs at elevations below 7,500 feet amsl.	*Tamarix* spp. has occurrence records in all Arizona Counties except Greenlee, La Paz, Pinal, and Yuma. On TNF, tamarisk occurs along the Verde River and its tributaries, along much of the Salt River, and along Salt and Verde River reservoirs.	May occur.
Three-lobed morning-glory (*Ipomoea triloba*)	ADA	Only two records of occurrence in TNF, in 1930.	Occurs in cultivated fields, sandy ground, and grassy swamp margins on hedges, in thickets; low to middle elevations.	The NRCS Plants Database shows no occurrence records in Arizona. SEINet has five records in Arizona.	Unlikely to occur
Tree of heaven (*Ailanthus altissima*)	TNF ADA	Occurrences in Globe and TNF.	Widely distributed in fields, roadsides, fencerows, woodland edges, and forest openings (Forest Service 2018b). Generally occurs below 6,200 feet amsl.	Has occurrence records in Cochise, Coconino Gila, Greenlee, Maricopa, Pima, Pinal, Santa Cruz, and Yavapai Counties. Occurrences around Cottonwood, Camp Verde, and Jerome; on Coronado National Forest lands; in TNF on Verde River near Childs; in Superior and Globe and on National Forest land nearby; near confluence of Pinal Creek and Salt River; and Payson.	May occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Tropical soda apple (*Solanum viarum*)	Federal	Tropical soda apple does not occur near or within the project area.	Occurs in areas that have been frequented by animals or that have received natural materials contaminated by seed, including pasturelands, roadsides, or cattle yards (Forest Service 2018b).	No occurrence records in Arizona.	Unlikely to occur
Ward's weed (*Carrichtera annua*)	ADA		Occurs in grasslands, scrub, and chaparral vegetation communities (California Invasive Plant Council 2025).	No occurrence records in Arizona.	Unlikely to occur
Weeping lovegrass (*Eragrostis curvula*)	TNF	Many occurrences within TNF and a few southwest of Globe toward Pinal Peak.	Occurs in cultivated, disturbed, or degraded areas along roadsides or within meadows, grasslands, and at the margins of chaparral, woodland, and forest communities, generally at elevations between 6,000 to 8,000 feet amsl; this species has high potential for establishment on burned sites.	Has occurrence records in Cochise, Coconino, Gila, Graham, Maricopa, Pima, and Yavapai Counties. Within TNF, seeded extensively along highways, powerline corridors, and after fires; seeded in Pinal Mountains after a fire.	Unlikely to occur
Witchweed (*Striga* spp.)	Federal	Witchweed does not occur near or within the project area.	Parasitic plant that attacks agricultural crops (National Invasive Species Information Center 2017).	No occurrence records in Arizona.	Unlikely to occur
White bietou (*Dimorphotheca cuneata*)	TNF	A few occurrences south of Globe.	On the TNF, occurs in yards and canyons between Six Shooter Canyon and National Forest land to the west; no other records of this species being invasive in the United States.	Occurs in an approximately 40-acre patch on the TNF between Six Shooter Canyon and National Forest land to the west.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Wild mustard (*Sinapis arvensis*)	TNF ADA	Three occurrences off SR 188 north of Roosevelt Lake.	Occurs in dry, disturbed sites, including waste places, pastures, roadsides, and railroad ROWs, generally below 6,000 feet amsl.	Has occurrence records in Gila, Maricopa, Pima, and Pinal Counties. Occurs along SR 188 from Punkin Center to Roosevelt, on private lands; is common on Agua Fria National Monument, west of Perry Mesa tobosa grassland in Cave Creek Ranger District.	Unlikely to occur
Wild oats (*Avena fatua*)	TNF	Has occurrence records in East Plant Site.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within desert, semidesert grasslands, and woodland communities, typically at elevations between 2,500 and 7,200 feet amsl.	Has occurrence records in all Arizona counties except Graham, Greenlee, La Paz, Navajo, Santa Cruz, and Yuma. Found along most highways in TNF.	May occur
Witchweed (*Striga* spp.)	Federal		Parasitic plant that attaches agricultural crops.	No occurrence records in Arizona.	Unlikely to occur.
Yellow bluestem (*Bothriochloa ischaemum*)	ADA		Occurs in disturbed roadsides, waste places, and pastures up to 4,000 feet amsl.	Has occurrence records in Maricopa, Pima, and Cochise Counties.	Unlikely to occur

Common Name (*Scientific Name*)	Status*	Known Records of Occurrence	Habitat Components (Elevation, Soils, Vegetation Association, Slope, Aspect, etc.)	Geographical Range in Arizona	Likelihood of Occurrence in Skunk Camp Analysis Area
Yellow star-thistle (*Centaurea solstitialis*)	TNF ADA	One occurrence recorded in TNF, Pleasant Valley across from Pleasant Inn along SR 288.	Prefers full sunlight and deep, well-drained soils where rainfall is 10 to 60 inches per year; most commonly occurs in disturbed areas (Forest Service 2018b). Generally occurs below 8,200 feet amsl elevation.	Although the NRCS Plants Database only shows occurrence records in Yuma County, other sources indicate that this species has become established in central Arizona, within the communities of Flagstaff, Camp Verde, Payson, Star Valley, and Young; on TNF, this species occurs mainly on the higher elevation districts (Payson and Pleasant Valley) but has been documented in the Tonto Basin at elevations below 3,000 feet amsl.	Unlikely to occur
Yellow sweetclover (*Melilotus officinalis*)	TNF	Many occurrences within TNF, and a few south of Globe near Pinal Peak.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within meadows, grassland, woodland, and forest communities at elevations typically ranging from 5,000 to 10,500 feet amsl.	Has occurrence records in all Arizona counties except Greenlee, La Paz, Mohave, and Yuma. This species is widespread in Arizona, and very common in riparian zones of the TNF along the Verde River and on the Cave Creek Ranger District.	May occur
Yellow toadflax (*Linaria vulgaris*)	TNF	Yellow toadflax does not occur near or within the project area.	Occurs in cultivated, disturbed, or degraded areas along roadsides and within meadows, grassland, woodland, and riparian communities at elevations typically ranging from 6,400 to 9,200 feet amsl; germination highest on open sites with compacted soils and little vegetation.	Has occurrence records in Coconino County.	Unlikely to occur

Unless otherwise noted, range or habitat information is from the following sources: CABI (2018); NRCS (2025); SEINet (2025); TNF (2018); White (2013).

Unless otherwise noted, occurrence data is from Arizona Game and Fish Department, transmitted on August 13, 2018, or from SEINet (2025)..

* Status definitions are as follows:

ADA = Arizona Department of Agriculture; species is listed as a noxious weed by the ADA (2025).

Federal = species is listed as a noxious weed by the USDA (2010).

TNF = Tonto National Forest; species is listed as an invasive species by the TNF (2018).

† Tamarix spp. is the listed entity on the ADA list (ADA 2025); this includes T. chinensis, T. parviflora, and T. ramosissima, which are also TNF species (TNF 2018). Other species, including T. africana, T. aphylla, and T. canariensis, are shown in the Plants Database (NRCS 2025) as occurring in Arizona. SEINet (2025) shows T. africana to occur associated with the Phoenix and Tucson metro areas, T. aphylla to occur within the analysis area near Boyce Thompson and the MARRCO corridor, and T. canariensis to occur in the Phoenix metro area.

Appendix 2: Detailed Soil Analysis Results

A detailed breakdown of soil map unit acreages for each alternative is provided in the following tables (Tables A2-1 through A2-5). Included with each map unit name is that unit's susceptibility to wind or water erosion (if known). Descriptions of the predominant map units are provided in FEIS Section 3.3. Soil data are derived from SSURGO (NRCS 2017) and GTES (Forest Service 2018a) data sets. All GTES data relate to land currently managed by the Forest Service, and SSURGO data relate to non-Forest Service land.

Note that the acreage totals shown in Tables A2-1 through A2-5 may not exactly match the total disturbed acreage shown in the FEIS. This is the result of differences in coverage between the two data sources, attempting to combine the two disparate data sources, and the scale of the available data, which is generally at an insufficient scale to delineate the location of each soil unit with respect to a specific disturbance feature. Overall, the acreages shown in this process memo are highly similar to the disturbance footprints, and the rough percentages of dominant soils included in Section 3.3 of the FEIS are valid, as are the conclusions presented about susceptibility of soils to wind and water erosion.

Table A2-1. Acreage and Indication of Susceptibility to Erosion from Wind and Water for Each Map Unit within Alternative 2

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
Alternative 2 – Near West Proposed Action	AZ655 (SSURGO)	Co	53504	Contine clay loam	37	No	No
		Mv	53514	Mohall loam MLRA 40	44	No	Yes
	AZ661 (SSURGO)	4	713427	Beardsley-Suncity complex, 1 to 10 percent slopes	65	No	Yes
		11	60103	Carrizo family-Brios-Riverwash complex, 0 to 5 percent slopes	21	No	Yes
		15	1612701	Cellar-Anklam-Rock outcrop complex, 20 to 70 percent slopes	1	No	No

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		24	643414	Contine loam, 0 to 3 percent slopes	14	No	No
		27	2405601	Delnorte-Nahda complex, 3 to 20 percent slopes	6	No	Yes
		32	60089	Dateland-Denure complex, 0 to 3 percent slopes	5	No	Yes
		33	713429	Denure-Mohall complex, 1 to 5 percent slopes	547	No	Yes
		65	643413	Mohall clay loam, 0 to 5 percent slopes	34	No	Yes
		66	60098	Mohall sandy loam, 0 to 3 percent slopes	163	No	Yes
		82	2383677	Rock outcrop-Lajitas complex, 5 to 60 percent slopes	42	No	Yes
		83	1451362	Rock outcrop-Lampshire complex, 10 to 60 percent slopes	24	No	Yes
		84	2231679	Rock outcrop-Lampshire complex, chaparral, 5 to 50 percent slopes	157	No	Yes
	AZ687 (SSURGO)	410	2434218	Urban land and Haplic Torriarents soils, 2 to 15 percent slopes	7	No	No
		420	2434219	Deloro-Andrada-Sasabe, deep	11	No	Yes

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
				complex, 2 to 15 percent slopes			
		450	2434224	Andrada extremely gravelly sandy loam, 10 to 40 percent slopes	148	No	Yes
		460	2435414	Caralampi extremely gravelly sandy loam, moderately deep, 20 to 40 percent slopes	159	No	No
		490	2434223	Pantak-Cammerman-Rock outcrop complex, 20 to 65 percent slopes	64	No	No
		500	2450459	Mined land	600	No	No
		570	2434222	Rock outcrop-Mabray-Pantak complex, 20 to 70 percent slopes	113	No	Yes
		600	2455461	Oxyaquic Torrifluvents and Typic Fluvaquents soils and Riverwash, 0 to 5 percent slopes	4	No	N/A
		710	2433864	Rock outcrop-Woodcutter complex, tuff, 15 to 50 percent slopes	190	No	Yes
	GTES	214	Not applicable (N/A)	CEMI2, LATR	5,274	N/A	N/A
		303	N/A	FOSP2, QUTU2, GRANITE OUTCROP	603	N/A	N/A
		485	N/A	QUTU2	1,457	N/A	N/A

Table A2-2. Acreage and Indication of Susceptibility to Erosion from Wind and Water for Each Map Unit within Alternative 3

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
Alternative 3 – Near West – Ultrathickened	AZ655 (SSURGO)	Co	53504	Contine clay loam	37	No	No
		Mv	53514	Mohall loam MLRA 40	44	No	Yes
	AZ661 (SSURGO)	4	713427	Beardsley-Suncity complex, 1 to 10 percent slopes	65	No	Yes
		11	60103	Carrizo family-Brios-Riverwash complex, 0 to 5 percent slopes	21	No	Yes
		15	1612701	Cellar-Anklam-Rock outcrop complex, 20 to 70 percent slopes	1	No	No
		24	643414	Contine loam, 0 to 3 percent slopes	14	No	No
		27	2405601	Delnorte-Nahda complex, 3 to 20 percent slopes	6	No	Yes
		32	60089	Dateland-Denure complex, 0 to 3 percent slopes	5	No	Yes
		33	713429	Denure-Mohall complex, 1 to 5 percent slopes	547	No	Yes
		65	643413	Mohall clay loam, 0 to 5 percent slopes	34	No	Yes
		66	60098	Mohall sandy loam, 0 to 3 percent slopes	163	No	Yes

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		82	2383677	Rock outcrop-Lajitas complex, 5 to 60 percent slopes	42	No	Yes
		83	1451362	Rock outcrop-Lampshire complex, 10 to 60 percent slopes	24	No	Yes
		84	2231679	Rock outcrop-Lampshire complex, chaparral, 5 to 50 percent slopes	157	No	Yes
	AZ687 (SSURGO)	410	2434218	Urban land and Haplic Torriarents soils, 2 to 15 percent slopes	7	No	No
		420	2434219	Deloro-Andrada-Sasabe, deep complex, 2 to 15 percent slopes	11	No	Yes
		450	2434224	Andrada extremely gravelly sandy loam, 10 to 40 percent slopes	148	No	Yes
		460	2435414	Caralampi extremely gravelly sandy loam, moderately deep, 20 to 40 percent slopes	159	No	No
		490	2434223	Pantak-Cammerman-Rock outcrop complex, 20 to 65 percent slopes	64	No	No
		500	2450459	Mined land	600	No	No

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		570	2434222	Rock outcrop-Mabray-Pantak complex, 20 to 70 percent slopes	113	No	Yes
		600	2455461	Oxyaquic Torrifluvents and Typic Fluvaquents soils and Riverwash, 0 to 5 percent slopes	4	No	Not available
		710	2433864	Rock outcrop-Woodcutter complex, tuff, 15 to 50 percent slopes	190	No	Yes
	GTES	214	Not applicable (N/A)	CEMI2, LATR	5,274	N/A	N/A
		303	N/A	FOSP2, QUTU2, GRANITE OUTCROP	603	N/A	N/A
		485	N/A	QUTU2	1,457	N/A	N/A

Table A2-3. Acreage and Indication of Susceptibility to Erosion from Wind and Water for Each Map Unit within Alternative 4

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
Alternative 4 – Silver King	AZ655 (SSURGO)	Co	53504	Contine clay loam	37	No	No
		Mv	53514	Mohall loam MLRA 40	44	No	Yes
	AZ661 (SSURGO)	4	713427	Beardsley-Suncity complex, 1 to 10 percent slopes	65	No	Yes
		11	60103	Carrizo family-Brios-Riverwash complex, 0 to 5 percent slopes	21	No	Yes
		15	1612701	Cellar-Anklam-Rock outcrop complex, 20 to 70 percent slopes	1	No	No
		24	643414	Contine loam, 0 to 3% slopes	14	No	No
		27	2405601	Delnorte-Nahda complex, 3 to 20 percent slopes	6	No	Yes
		32	60089	Dateland-Denure complex, 0 to 3 percent slopes	5	No	Yes
		33	713429	Denure-Mohall complex, 1 to 5 percent slopes	547	No	Yes
		65	643413	Mohall clay loam, 0 to 5 percent slopes	34	No	Yes
		66	60098	Mohall sandy loam, 0 to 3 percent slopes	163	No	Yes
		82	2383677	Rock outcrop-Lajitas complex, 5 to 60 percent slopes	42	No	Yes

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		83	1451362	Rock outcrop-Lampshire complex, 10 to 60 percent slopes	24	No	Yes
		84	2231679	Rock outcrop-Lampshire complex, chaparral, 5 to 50 percent slopes	157	No	Yes
	AZ687 (SSURGO)	410	2434218	Urban land and Haplic Torriarents soils, 2 to 15 percent slopes	7	No	No
		420	2434219	Deloro-Andrada-Sasabe, deep complex, 2 to 15 percent slopes	10	No	Yes
		450	2434224	Andrada extremely gravelly sandy loam, 10 to 40 percent slopes	155	No	Yes
		460	2435414	Caralampi extremely gravelly sandy loam, moderately deep, 20 to 40 percent slopes	177	No	No
		490	2434223	Pantak-Cammerman-Rock outcrop complex, 20 to 65 percent slopes	77	No	No
		500	2450459	Mined land	601	No	No
		570	2434222	Rock outcrop-Mabray-Pantak complex, 20 to 70 percent slopes	113	No	Yes
		600	2455461	Oxyaquic Torrifluvents and Typic Fluvaquents soils and Riverwash, 0 to 5 percent slopes	4	No	Not available
		655	2432847	Bodecker soils and Riverwash, 0 to 5 percent slopes	5	No	No

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		710	2433864	Rock outcrop-Woodcutter complex, tuff, 15 to 50 percent slopes	190	No	Yes
	GTES	214	Not applicable (N/A)	CEMI2, LATR	1,002	N/A	N/A
		303	N/A	FOSP2, QUTU2, GRANITE OUTCROP	5,345	N/A	N/A
		485	N/A	QUTU2	1,457	N/A	N/A

Table A2-4. Acreage and Indication of Susceptibility to Erosion from Wind and Water for Each Map Unit within Alternative 5

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
Alternative 5 – Peg Leg	AZ655 (SSURGO)	Co	53504	Contine clay loam	37	No	No
		Mv	53514	Mohall loam MLRA 40	44	No	Yes
	AZ661 (SSURGO)	4	713427	Beardsley-Suncity complex, 1 to 10 percent slopes	65	No	Yes
		9	1612778	Bucklebar-Hayhook complex, 1 to 10 percent slopes	87	No	No
		11	60103	Carrizo family-Brios-Riverwash complex, 0 to 5 percent slopes	21	No	Yes
		15	1612701	Cellar-Anklam-Rock outcrop complex, 20 to 70 percent slopes	113	No	No
		16	1612699	Cellar-Rock outcrop complex, 20 to 70 percent slopes	571	No	No
		24	643414	Contine loam, 0 to 3 percent slopes	14	No	No
		27	2405601	Delnorte-Nahda complex, 3 to 20 percent slopes	6	No	Yes
		32	60089	Dateland-Denure complex, 0 to 3 percent slopes	5	No	Yes
		33	713429	Denure-Mohall complex, 1 to 5 percent slopes	547	No	Yes
		40	2231681	Fig family-Topock complex, 5 to 50 percent slopes	475	No	No
		48	60082	Gran-Rock outcrop-Pantano complex, 20 to 60 percent slopes	141	No	No

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		62	1451358	Mabray-Rock outcrop complex, 20 to 75 percent slopes	38	No	Yes
		65	643413	Mohall clay loam, 0 to 5 percent slopes	34	No	Yes
		66	60098	Mohall sandy loam, 0 to 3 percent slopes	163	No	Yes
		70	1912475	Ohaco-Cave complex, 1 to 15 percent slopes	810	No	No
		71	1469239	Oracle-Romero-Combate complex, 1 to 20 percent slopes	2	No	Yes
		74	60083	Pantano-Anklam-Rock outcrop complex, 3 to 20 percent slopes	4,243	No	No
		78	581585	Queencreek soils and riverwash, 0 to 5 percent slopes	848	No	No
		79	60080	Quiburi-Gila complex, 0 to 3 percent slopes	13	No	Yes
		82	2383677	Rock outcrop-Lajitas complex, 5 to 60 percent slopes	42	No	Yes
		83	1451362	Rock outcrop-Lampshire complex, 10 to 60 percent slopes	57	No	Yes
		84	2231679	Rock outcrop-Lampshire complex, chaparral, 5 to 50 percent slopes	157	No	Yes
		90	1451354	Schrap-Rock outcrop complex, 5 to 60 percent slopes	18	No	No
		96	2398225	Topawa very gravelly sandy loam, 5 to 20 percent slopes	1	No	No

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		98	2026282	Tubac-Rillino complex, 3 to 25 percent slopes	4,210	No	No
		101	60106	Typic Fluvaquents, wetrock soils, and water, 0 to 3 percent slopes	3	Yes	Yes
	AZ687 (SSURGO)	400	2434217	Tenneco-Bodecker complex, 0 to 3 percent slopes	5	No	No
		410	2434218	Urban land and Haplic Torriarents soils, 2 to 15 percent slopes	7	No	No
		420	2434219	Deloro-Andrada-Sasabe, deep complex, 2 to 15 percent slopes	101	No	Yes
		450	2434224	Andrada extremely gravelly sandy loam, 10 to 40 percent slopes	151	No	Yes
		460	2435414	Caralampi extremely gravelly sandy loam, moderately deep, 20 to 40 percent slopes	159	No	No
		490	2434223	Pantak-Cammerman-Rock outcrop complex, 20 to 65 percent slopes	64	No	No
		500	2450459	Mined land	610	No	No
		547	2434221	Oxyaquic Torrifluvents-Riverwash-Water complex, 0 to 5 percent slopes	4	No	Yes
		570	2434222	Rock outcrop-Mabray-Pantak complex, 20 to 70 percent slopes	113	No	Yes
		585	2434220	Rock outcrop-Lampshire complex, 5 to 40 percent slopes	10	No	Yes

Alternative	Source	Map Unit Symbol	Map Unit Key	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		600	2455461	Oxyaquic Torrifluvents and Typic Fluvaquents soils and Riverwash, 0 to 5 percent slopes	4	No	Not available
		710	2433864	Rock outcrop-Woodcutter complex, tuff, 15 to 50 percent slopes	190	No	Yes
	GTES	214	Not applicable (N/A)	CEMI2, LATR	641	N/A	N/A
		303	N/A	FOSP2, QUTU2, GRANITE OUTCROP	553	N/A	N/A
		485	N/A	QUTU2	1,457	N/A	N/A

Table A2-5. Acreage and Indication of Susceptibility to Erosion from Wind and Water for Each Map Unit within Alternative 6

Alternative	Source	Map Unit Symbol	Map Unit Symbol	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
Alternative 6 – Skunk Camp	AZ655 (SSURGO)	Co	53504	Contine clay loam	37	No	No
		Mv	53514	Mohall loam MLRA 40	44	No	Yes
	AZ661 (SSURGO)	4	713427	Beardsley-Suncity complex, 1 to 10 percent slopes	65	No	Yes
		6	1478840	Bodecker-Riverwash complex, 0 to 5 percent slopes	795	Yes	No
		11	60103	Carrizo family-Brios-Riverwash complex, 0 to 5 percent slopes	21	No	Yes
		15	1612701	Cellar-Anklam-Rock outcrop complex, 20 to 70 percent slopes	1	No	No
		20	2383686	Chiricahua-deloro-leyte soils, 10 to 50 percent slopes	1,226	No	Yes
		24	643414	Contine loam, 0 to 3 percent slopes	14	No	No
		27	2405601	Delnorte-Nahda complex, 3 to 20 percent slopes	6	No	Yes
		32	60089	Dateland-Denure complex, 0 to 3 percent slopes	5	No	Yes

Alternative	Source	Map Unit Symbol	Map Unit Symbol	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		33	713429	Denure-Mohall complex, 1 to 5 percent slopes	547	No	Yes
		55	2383676	Holguin-Rock outcrop complex, 15 to 60 percent slopes	147	No	No
		65	643413	Mohall clay loam, 0 to 5 percent slopes	34	No	Yes
		66	60098	Mohall sandy loam, 0 to 3 percent slopes	163	No	Yes
		72	1652032	Oxyaquic Torrifluvents-Riverwash complex, 0 to 5 percent slopes	6	No	Yes
		78	581585	Queencreek soils and riverwash, 0 to 5% slopes	130	No	No
		82	2383677	Rock outcrop-Lajitas complex, 5 to 60 percent slopes	42	No	Yes
		83	1451362	Rock outcrop-Lampshire complex, 10 to 60 percent slopes	26	No	Yes
		84	2231679	Rock outcrop-Lampshire complex, chaparral, 5 to 50 percent slopes	383	No	Yes
		98	2026282	Tubac-Rillino complex, 3 to 25 percent slopes	506	No	No

Alternative	Source	Map Unit Symbol	Map Unit Symbol	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		104	2383683	White House-Stronghold complex, 5 to 60 percent slopes	7,130	No	Yes
	AZ687 (SSURGO)	410	2434218	Urban land and Haplic Torriarents soils, 2 to 15 percent slopes	7	No	No
		420	2434219	Deloro-Andrada-Sasabe, deep complex, 2 to 15 percent slopes	11	No	Yes
		450	2434224	Andrada extremely gravelly sandy loam, 10 to 40 percent slopes	148	No	Yes
		460	2435414	Caralampi extremely gravelly sandy loam, moderately deep, 20 to 40 percent slopes	160	No	No
		490	2434223	Pantak-Cammerman-Rock outcrop complex, 20 to 65 percent slopes	71	No	No
		500	2450459	Mined land	592	No	No
		570	2434222	Rock outcrop-Mabray-Pantak complex, 20 to 70 percent slopes	21	No	Yes
		600	2455461	Oxyaquic Torrifluvents and Typic Fluvaquents soils and Riverwash, 0 to 5 percent slopes	1	No	Not available

Alternative	Source	Map Unit Symbol	Map Unit Symbol	Map Unit Name	Acreage within Map Unit	High Susceptibility to Wind Erosion (Yes or No)	High Susceptibility to Water Erosion (Yes or No)
		655	2432847	Bodecker soils and Riverwash, 0 to 5 percent slopes	<1	No	No
		710	2433864	Rock outcrop-Woodcutter complex, tuff, 15 to 50 percent slopes	57	No	Yes
	GTES	214	Not applicable (N/A)	CEMI2, LATR	265	N/A	N/A
		298	N/A	PRVE, CAHO3, BADLANDS	38	N/A	N/A
		303	N/A	FOSP2, QUTU2, GRANITE OUTCROP	984	N/A	N/A
		485	N/A	QUTU2	1,267	N/A	N/A

Appendix 3: Ecological Response Units

Six ERUs occur within the analysis area. These ERUs are described below. ERUs are described more fully in the *Tonto National Forest Land Management Plan* (Forest Service 2023), *Ecological Response Units of the Southwestern United States* (Wahlberg et al. 2014), and *Regional Riparian Mapping Project* (Triepke et al. 2018).

Tables A3-1 to A3-5 break down the acreages of ERUs occurring in each alternative on Forest Service lands as well as the acreages and percent of impact for each alternative.

Desert Ecosystems (Sonoran Desertscrub)

The Desert Ecosystems ERU within the analysis area consists of the Mojave-Sonoran Desert Scrub (MSDS) ERU, which is representative of the Sonoran Desertscrub plant community. MSDS-ERU supports succulents, desert grasses, desert scrub, and some herbaceous cover with varying levels of overall cover. On National Forest Lands, the MSDS-ERU is typically located on steeper mountain slopes and characterized by saguaro (*Carnegiea gigantea*), paloverde (*Parkinsonia* spp.), and small shrubs and trees such as brittlebush (*Encelia farinosa*), fairyduster (*Calliandra eriophylla*) and jojoba (*Simmondsia chinensis*). Ephemeral drainages can hold dense vegetation such as catclaw acacia (*Senegalia greggii*) and wolfberry (*Lycium* spp.). Historically, fires were rare to absent in desert ecosystems resulting in high severity effects to desert species, which typically do not have adaptations to fire. Invasive plant species are a concern for this ERU because invasive grass species in particular can provide fuel to introduce uncharacteristic fires into these desert areas.

Semi-Desert Grasslands

Semi-desert Grasslands ERU is a low-elevation grassland and shrubland that typically occurs adjacent to an above desert communities and below interior chaparral and woodlands. Species composition and dominance varies and can include a variety of native and nonnative perianal and annual grasses with a shrub or tree component with variable percent cover. Some portions of this ERU currently exist in in a disclimax state where shrubs and scrub vegetation are dominant due to past land use practices. Historically, fires occurred relatively frequently and served to maintain open conditions, prevent shrub invasion, and retain species diversity.

Interior Chaparral

Interior Chaparral ERU is a shrub dominated ecosystem that is typically located on mountain foothills and lower slopes where desert landscapes transition into wooded evergreens. Species composition and dominance vary but often include manzanita (*Arctostaphylos* spp.), crucifixion thorn (*Canotia holacantha*), desert ceanothus (*Ceanothus greggii*), mountain mahogany (*Cercocarpus* spp.), little-leaved mountain mahogany (*Cercocarpus intricatus*), bitterbrush (*Purshia* spp.), silktassles (*Garrya* spp.), Stansbury cliffrose (*Purshia stansburiana*), shrub live oak (*Quercus turbinella*), and sumacs (*Rhus* spp.). Fire is the primary natural disturbance in this ERU.

Juniper Grass

The juniper grass ERU occurs in warmer, drier settings just below and often intergrading with the pinyon-juniper zone. Trees occur as individuals in smaller groups and can range from young to old. A dense matrix of native grasses and forbs are characteristic of this ERU. Shrubs are typically absent or scattered. Disturbances including fire, insects, and disease are low-severity and high-frequency. Historical long-term fire suppression and grazing in this ERU has led to filling in of canopy gaps, increased tree density, and reduced composition, density, and vigor of herbaceous understory.

Pinyon-Juniper Evergreen Shrub

The pinyon-juniper evergreen shrub ERU is typically found on lower slopes between chaparral and montane forests. Dominant tree and shrub species include twoneedle pinyon (*Pinus edulis*), single leaf pinyon (*P. monophyla*), Utah juniper (*Juniperus osteosperma*), oneseed juniper (*J. monosperma*), alligator juniper (*J. deppeana*), manzanita, mountain mahogany, bitterbrush, silktassles, Stansbury cliffrose, turbinella oak (*Quercus turbinella*), and sumacs. Pinyon may be absent in some areas; however, juniper is always present. Oaks (Quercus spp.) are subordinate but become more common in mild climate zones. This ERU typically has longer fire intervals and less sever fire events as compared to Interior Chaparral. Historically, this ERU had tree canopy cover greater than 10 percent at later successional stages. Similar to the Juniper Grass ERU, historic long-term fire suppression in this ERU has led to filling in of canopy gaps, increased tree density, and reduced composition, density, and vigor of herbaceous understory.

Riparian

Riparian ERUs mapped within the analysis area include Desert Willow ERU, Fremont Cottonwood—Conifer ERU, Fremont Cottonwood/Shrub ERU, and Sycamore—Fremont Cottonwood ERU. Riparian species composition and community structure is influenced by moisture regimes, water availability, flood regime, climate, soils, and other landscape features. Some riparian species are groundwater dependent.

Desert Willow ERU often occurs along ephemeral drainages or drier reaches of interrupted alluvial channels. Typical species include desert willow (Chilopsis linearis), netleaf hackberry (Celtis laevigata), and mesquite (Prosopis spp.). Fremont Cottonwood—Conifer ERU typically contains Fremont cottonwood (Populus fremontii), along with velvet mesquite (Prosopis velutina), and juniper (Juniperus spp.). Fremont Cottonwood/Shrub ERU can be dominated by Fremont cottonwood, Gooding's willow (Salix gooddingii), velvet ash (Fraxinus velutina), and often include willow species (Salix spp.), boxelder (Acer negundo), and desert willow. This ERU also supports a mesquite bosque subtype. Sycamore—Fremont Cottonwood ERU is typically dominated by Fremont cottonwood with other riparian species such as boxelder, velvet ash, Arizona walnut (Juglans major), and willow species occurring.

Table A3-1. Alternative 2 Ecological Response Unit Acreages and Percent Impacted on National Forest System Lands

Ecological Response Unit	Analysis Area (acres)	Acres Impacted	Percent of Analysis area impacted	Percent TNF Impacted
Desert Ecosystem –Sonoran Desert Scrub	41,545	6,245	15.0	0.8
Semi-Desert Grasslands	4,604	158	3.4	<0.1
Interior Chaparral	4,360	409	9.4	0.1
Juniper Grass	2,368	166	7.0	<0.1
Pinyon-Juniper Evergreen Shrub	<1	0	0	0
Riparian Total	1,945	186	9.6	0.3
Desert Willow	1,310	106	8.1	1.2
Fremont Cottonwood--Conifer	0	0	0	0
Fremont Cottonwood / Shrub	558	76	13.6	0.2
Sycamore-Fremont Cottonwood	76	5	6.1	<0.1
Total Acres	54,821	7,164	13.1	0.3

Note: Acreages in this table are rounded to the nearest whole number. Total acreages may not add up due to rounding.

Table presents acres of project footprint within each ERU; percentage of that ERU within the overall analysis area that could be changed by the project on Forest Service lands only; and percentage of the ERU category that could be changed by the Project within Tonto National Forest.

The Oak Flat Parcel was excluded.

Table A3-2. Alternative 3 Ecological Response Unit Acreages and Percent Impacted on National Forest System Lands

Ecological Response Unit	Analysis Area (acres)	Acres Impacted	Percent of Analysis area impacted	Percent TNF Impacted
Desert Ecosystem –Sonoran Desert Scrub	41,545	6,245	15.0	0.8
Semi-Desert Grasslands	4,604	158	3.4	<0.1
Interior Chaparral	4,360	409	9.4	0.1
Juniper Grass	2,368	166	7.0	<0.1
Pinyon-Juniper Evergreen Shrub	<1	0	0	0
Riparian Total	1,945	186	9.6	0.3
Desert Willow	1,310	106	8.1	1.2
Fremont Cottonwood--Conifer	0	0	0	0
Fremont Cottonwood / Shrub	558	76	13.6	0.2
Sycamore-Fremont Cottonwood	76	5	6.1	<0.1
Total Acres	54,821	7,164	13.1	0.3

Note: Acreages in this table are rounded to the nearest whole number. Total acreages may not add up due to rounding.

Table presents acres of project footprint within each ERU; percentage of that ERU within the overall analysis area that could be changed by the project on Forest Service lands only; and percentage of the ERU category that could be changed by the Project within TNF.

The Oak Flat Parcel was excluded.

Table A3-3. Alternative 4 Ecological Response Unit Acreages and Percent Impacted on National Forest System Lands

Ecological Response Unit	Analysis Area (acres)	Acres Impacted	Percent of Analysis area impacted	Percent TNF Impacted
Desert Ecosystem –Sonoran Desert Scrub	38,786	5,783	14.9	0.7
Semi-Desert Grasslands	9,313	1,372	14.7	0.4
Interior Chaparral	5,218	409	7.8	0.1
Juniper Grass	2,382	166	7.0	<0.1
Pinyon-Juniper Evergreen Shrub	<1	0	0	0
Riparian Total	1,748	180	10.3	0.3
Desert Willow	1,100	128	11.6	1.4
Fremont Cottonwood--Conifer	0	0	0	0
Fremont Cottonwood / Shrub	571	47	8.3	0.1
Sycamore-Fremont Cottonwood	76	5	6.1	<0.1
Total Acres	57,447	7,909	13.8	0.3

Note: Acreages in this table are rounded to the nearest whole number. Total acreages may not add up due to rounding.

Table presents acres of project footprint within each ERU; percentage of that ERU within the overall analysis area that could be changed by the project on Forest Service lands only; and percentage of the ERU category that could be changed by the Project within TNF.

The Oak Flat Parcel was excluded.

Table A3-4. Alternative 5 Ecological Response Unit Acreages and Percent Impacted on National Forest System Lands

Ecological Response Unit	Analysis Area (acres)	Acres Impacted	Percent of Analysis area impacted	Percent TNF
Desert Ecosystem –Sonoran Desert Scrub	31,153	1,751	5.6	0.2
Semi-Desert Grasslands	5,676	194	3.4	0.1
Interior Chaparral	4,360	409	9.4	0.1
Juniper Grass	2,368	166	7.0	<0.1
Pinyon-Juniper Evergreen Shrub	<1	0	0	0
Riparian Total	1,652	78	4.7	0.1
Desert Willow	1,026	34	3.3	0.4
Fremont Cottonwood--Conifer	0	0	0	0
Fremont Cottonwood / Shrub	550	39	7.1	0.1
Sycamore-Fremont Cottonwood	76	5	6.1	<0.1
Total Acres	45,209	2,597	5.7	0.1

Note: Acreages in this table are rounded to the nearest whole number. Total acreages may not add up due to rounding.

Table presents acres of project footprint within each ERU; percentage of that ERU within the overall analysis area that could be changed by the project on Forest Service lands only; and percentage of the ERU category that could be changed by the Project within TNF.

The Oak Flat Parcel was excluded.

Table A3-5. Alternative 6 Ecological Response Units Acreages and Percent Impacted on National Forest System Lands

Ecological Response Unit	Analysis Area (acres)	Acres Impacted	Percent of Analysis area impacted	Percent TNF Impacted
Desert Ecosystem –Sonoran Desert Scrub	31,279	1,316	4.2	0.2
Semi-Desert Grasslands	6,332	74	1.2	<0.1
Interior Chaparral	8,598	520	6.0	0.2
Juniper Grass	2,619	147	5.6	<0.1
Pinyon-Juniper Evergreen Shrub	<1	0	0	0
Riparian Total	1,665	71	4.2	0.1
Desert Willow	1,026	34	3.3	0.4
Fremont Cottonwood--Conifer	9	0	0	0
Fremont Cottonwood / Shrub	544	34	6.3	0.1
Sycamore-Fremont Cottonwood	86	2	2.4	<0.1
Total Acres	50,493	2,128	4.2	0.1

Note: Acreages in this table are rounded to the nearest whole number. Total acreages may not add up due to rounding.

Table presents acres of project footprint within each ERU; percentage of that ERU within the overall analysis area that could be changed by the project on Forest Service lands only; and percentage of the ERU category that could be changed by the Project within TNF.

The Oak Flat Parcel was excluded.