LANDAU ASSOCIATES

SHRUB-STEPPE HABITAT MANAGEMENT AND MITIGATION PLAN REPORT

Helion Energy Property

Chelan County, Washington

March 26, 2025

Prepared for

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Helion Energy Property
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LIST OF ABBREVIATIONS AND ACRONYMS

AA ..... assessment area
BLM ..... Bureau of Land Management
CCC ..... Chelan County Code
CCPUD ..... Chelan County Public Utility District
County ..... Chelan County
EIA ..... Ecological Integrity Assessment
ESA ..... Endangered Species Act
FWHCA ..... Fish and Wildlife Habitat Conservation Area
ft ..... feet, foot
IPaC ..... Information for Planning and Conservation
Landau ..... Landau Associates, Inc.
NRCS ..... Natural Resources Conservation Service
OC ..... on-center
PHS ..... Priority Habitat and Species
sf ..... square feet
study area ..... approximately 81 acres of Parcel No. 212205000050
subject property ..... Parcel No. 212205000050
USDA ..... US Department of Agriculture
USFWS ..... US Fish & Wildlife Service
WDFW ..... Washington Department of Fish & Wildlife

1.0 INTRODUCTION

Landau Associates, Inc. (Landau) has prepared this shrub-steppe habitat assessment to assist Helion Energy, LLC (Helion; Client/Owner) with State Environmental Policy Act and Chelan County Code (CCC) requirements for energy facility construction on Chelan County (County) Parcel No. 212205000050 (subject property) in Malaga, Washington (Figure 1). The subject property is located in Section 5 of Township 21N, Range 22E, and comprises 401 acres. Helion proposes to lease approximately 81 acres (3,544,665 square feet [sf]) of the subject property (study area) from the Chelan County Public Utility District (CCPUD). Within the 81-acre lease area, the project construction will comprise of approximately 12.38 acres (project area; 539,256 sf) in the southwest quadrant of the subject property.

The subject property abuts the Columbia River to the north and west and is used by CCPUD to operate and maintain the Rock Island hydroelectric dam and associated infrastructure. The study area consists of relatively flat, undeveloped land with idle farmland along the northeastern boundary, and signs of infrequent use (e.g., tire treads, anthropogenic waste, excavation) throughout the study area. The study area is bisected by Nixon Rapids Lane and bordered by the Malaga-Alcoa Highway (also known as Colockum Road) to the west (Figure 1).

Project development will include construction of a fusion power generator facility, offices, parking area, septic field, detention ponds, a compact gravel transmission pad with transformers, circuit breakers, a control house, and transmission lines, and a new CCPUD access road connecting Malaga-Alcoa Highway to Nixon Rapids Lane near the southern parcel boundary. Construction will require regrading to support site development. On December 23, 2024, Landau assessed and delineated the extent of regulated shrub-steppe habitat and evaluated habitat suitability for target species within the study area to document existing conditions. The shrub-steppe habitat assessment divided the site into eight assessment areas (AAs), five of which were identified as Intermountain Basins Big Sagebrush Steppe (Figure 2).

Following the habitat assessment, it was determined that the proposed project will cause permanent and temporary impacts to shrub-steppe habitat. Based on the project understanding and conceptual plans, the proposed project will impact approximately 455,712 sf (10.46 acres) of existing, moderate to low-moderate quality (overall Ecological Integrity Assessment [EIA] Ranking of “B” and “C”) shrub-steppe habitat (Sheet 2). Of the approximately 455,712 sf that will be impacted, 86,220 sf can be replanted after site regrading is completed. Impacts to the remaining habitat will be offset by 124,732 sf of habitat creation and 274,443 sf of habitat enhancement.

2.0 METHODOLOGY

Landau conducted the shrub-steppe habitat assessment in accordance with protocol from the Washington Department of Fish & Wildlife (WDFW) *Management Recommendations for Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes* (Azerrad et al. 2011). The methodology steps and forms referred to below are from Appendix 9 of the document. The objectives of this habitat assessment were to:

- Identify AAs based on soil and vegetation structure.
- Determine which AAs qualify as shrub-steppe habitat.
- Identify the type of shrub-steppe occurring in each AA.
- Rank shrub-steppe habitat quality on a scale from "A to D" (where an A ranking is the highest quality).
- Provide recommendations on potential impact avoidance measures for the project based on habitat quality and location.

The methodology included the following steps:

1) **Preliminary Delineation of AAs:** To determine where shrub-steppe may occur, potential AAs were first examined using aerial imagery. The AAs encompassed areas of recognizably discrete vegetation patterns.
2) **Refining AA Boundaries:** Maps of the preliminary AA boundaries from Step 1 were refined in the field by walking the entire length and/or boundary of each AA identified and adjusting them in real-time using a global positioning system and printed maps. The following were considered when identifying separate AAs and their boundaries:
   - Changes in management, land use, or vegetative community structure that result in apparent changes in ecological function.
   - Natural changes in hydrology such as a transition from riparian to arid uplands.
   - Abrupt geomorphologic changes.
   - Anthropogenic actions substantially altering a site relative to an adjacent site (e.g., impervious surface, excavation, or previously cultivated fields).
   - Distinct transition between two different ecological systems.
   - Transition where a site has undergone an environmental disturbance such as fire or flooding.
3) **Describing AAs and EIA:** While refining the AA boundaries in the field, Form 1B was completed to assign each AA to one of the five shrub-steppe system types as defined in the Washington Natural Heritage Program's *Ecological Systems of Washington State: A Guide to Identification* (Rocchio and Crawford 2015).AAs that were identified as shrub-steppe habitat were assigned an ecological system type and one sample plot was established. Each plot measured 150 feet (ft) by 50 ft, unless otherwise noted, and was placed to capture potential heterogeneity across the AA. Table A4 was used to evaluate the ecological integrity index measures and rankings and scores were recorded on Form 2B (Azerrad et al. 2011). The ecological integrity index includes an

evaluation of buffer, landscape structure (connectivity and landscape condition model index), vegetation composition, and vegetation structure.

4) **Measuring Vegetation Structural Attribute Metrics:** Along each long axis of the sample plot, fire-sensitive shrub cover was collected by measuring the horizontal linear length of each fire-resistant shrub intercepting the line transect and recording the data on Form 7B. Photographs (6) were taken along sample plot boundaries (Appendix D).

5) **Final Ranking of Shrub-steppe AAs:** Once all metrics in each shrub-steppe AA were measured, the final scores and rankings were calculated into Form 2B.

In addition to surveying shrub-steppe habitat, Landau also inventoried potential habitat for target species (Section 3.2.3). Methods included observation of scat, tracks, burrows, and habitat features encountered on the site, site topography evaluation, and inventories of vegetation and soils to determine if suitable habitat may be present. Findings were documented with site photographs.

2.1 Background Information Review

Landau reviewed the following public domain resources to evaluate existing surface and subsurface conditions, and potential habitat features within the study area (Appendix A):

- Aerial imagery (Google Earth; accessed December 2024).
- US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA NRCS; Appendix A Figure A-1; accessed December 2024).
- WDFW Priority Habitats and Species (PHS) website (Appendix A Figure A-2; accessed December 2024).
- WDFW State Wildlife Action Plan (SWAP) data (Appendix B; accessed December 2024).
- US Fish & Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) official species list (Appendix B; Generated November 19, 2024).
- Email correspondence between Helion and WDFW Regional Biologist (Appendix B).

3.0 INVESTIGATION RESULTS

This section summarizes the results of Landau's background information review and field investigations.

3.1 Background Information Review

Background information was derived from aerial imagery, wildlife studies, soil survey information, and other sources documenting conditions in, and adjacent to, the project area.

3.1.1 Soils

The soils map identifies 5 soil units within the subject property (USDA NRCS; accessed December 2024; Appendix A, Figure A-1). These soil units can be summarized as follows:

1) Cashmont sandy loam, 3 to 8 percent slopes (CcB)
   - Cashmont sandy loam is found on hillslopes, alluvial fans, and terraces with a parent material of alluvium, glaciofluvial deposits, or ablation till. This soil is used for irrigated orchard, hay and pasture, cultivated cropland, rangeland, and wildlife habitat. Native vegetation is Sandberg bluegrass, bluebunch wheatgrass, currant, big sagebrush, antelope bitterbrush, arrowleaf balsamroot, needle-and-thread, and silky lupine. This is a well-drained soil and is not rated as hydric.
2) Pogue fine sandy loam, 3 to 8 percent slopes (PoB)
   - Pogue fine sandy loam is found on terraces with a parent material of glacial outwash. Principal uses are irrigated orchards, irrigated hay and pasture, livestock grazing, and wildlife habitat. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, big sagebrush, antelope bitterbrush, common yarrow, buckwheat, needle-and-thread, arrowleaf balsamroot, silky lupine, and 3-tip sagebrush. This is a somewhat excessively drained soil and is not rated as hydric.
3) Pogue gravelly fine sandy loam, 3 to 8 percent slopes (PrB)
   - Pogue fine sandy loam is found on terraces with a parent material of glacial outwash. Principal uses are irrigated orchards, irrigated hay and pasture, livestock grazing, and wildlife habitat. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, big sagebrush, antelope bitterbrush, common yarrow, buckwheat, needle-and-thread, arrowleaf balsamroot, silky lupine, and 3-tip sagebrush. This is a somewhat excessively drained soil and is not rated as hydric.
4) Pogue gravelly fine sandy loam, 8 to 15 percent slopes (PrC)
   - Pogue fine sandy loam is found on terraces with a parent material of glacial outwash. Principal uses are irrigated orchards, irrigated hay and pasture, livestock grazing, and wildlife habitat. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, big sagebrush, antelope bitterbrush, common yarrow, buckwheat, needle-and-thread, arrowleaf balsamroot, silky lupine, and 3-tip sagebrush. This is a somewhat excessively drained soil and is not rated as hydric.
5) Zen-Rock outcrop complex, 0 to 25 percent slopes (ZrD)

- Zen soils are found on hillslopes, ridges, and benches with a parent material of loess and alluvium derived from basalt. Approximately 10 percent of this complex is Zen-rock outcrop. Typical uses include production of non-irrigated small grain, livestock grazing, watershed, and wildlife habitat. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, Wyoming big sagebrush. This is a well-drained soil and is not rated as hydric.

3.1.2 Wildlife Habitat

Prior to the site investigation WDFW's PHS online map (Appendix A; Figure A-2), WDFW SWAP data, communication with a WDFW Regional Biologist, and the USFWS IPaC tool (Appendix B) were consulted to compile a list of target species for this review. The target species list includes federal and/or state listed threatened or endangered species, federal and/or state candidate or proposed listed species, eagles protected under the Bald and Golden Eagle Protection Act, species identified by WDFW as priority species and/or identified in the State Wildlife Action Plan, that have the potential to utilize the site based on observed range. The resulting list is provided in Table 1. Brief habitat and life cycle descriptions can be found in subsections 1 through 18 below.

Table 1. Target species for review and listing status

Species	Federal Status	State Status	Habitat Status[1]	Reference Resource(s)	Consulting Agency
Gray Wolf (*Canis lupus*)	Endangered	Endangered	Federally designated, but not mapped in the study area	IPaC report	USFWS / WDFW
North American wolverine (*Gulo gulo luscus*)	Threatened	Candidate	Not designated	IPaC report	USFWS / WDFW
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	Endangered	Federally proposed, but not mapped in the study area	IPaC report	USFWS / WDFW
Monarch butterfly (*Danaus plexippus*)	Proposed Threatened	Candidate	Not designated	IPaC report	USFWS / WDFW
Bull trout (*Salvelinus confluentus*)	Threatened	Candidate	Federally designated, but not mapped in the study area	IPaC report	USFWS / WDFW
Golden eagle (*Aquila chrysaetos*)	None, protected under Bald and Golden Eagle Protection Act	Candidate, protected under Bald and Golden Eagle Protection Act	State priority species designated, primary association with State priority habitat (shrub-steppe)	IPaC report, PHS map, SWAP data, WDFW Regional Biologist	USFWS[2] / WDFW
Bald eagle (*Haliaeetus leucocephalus*)	None, protected under Bald and Golden Eagle Protection Act	None, protected under Bald and Golden Eagle Protection Act	Not designated	IPaC report, SWAP data	USFWS[2] / WDFW

Species	Federal Status	State Status	Habitat Status[1]	Reference Resource(s)	Consulting Agency
Greater sage-grouse (*Centrocercus urophasianus*)	None	Endangered	Primary association with State priority habitat (shrub-steppe)	SWAP data	WDFW
Northern desert night snake (*Hypsiglena chlorophaea deserticola*)[3]	None	None	Primary association with State priority habitat (shrub-steppe)	SWAP data	WDFW
Pygmy horned lizard (*Phrynosoma douglasii*)	None	None	Primary association with State priority habitat (shrub-steppe)	SWAP data	WDFW
Northern spotted owl (*Strix occidentalis caurina*)	Threatened	Endangered	Federally designated, but not mapped in the study area; State priority species	SWAP data	USFWS / WDFW
Western rattlesnake (*Crotalus oreganus*)	None	None	Not designated; within known range.	WDFW Regional Biologist	WDFW
Rocky Mountain Elk (*Cervus elaphus nelsoni*)	None	None	Primary association with State priority habitat (shrub-steppe)	PHS map, WDFW Regional Biologist	WDFW
Mule deer (*Odocoileus hemionus hemionus*)	None	None	Primary association with State priority habitat (shrub-steppe)	PHS map, WDFW Regional Biologist	WDFW
Black-tailed deer (*Odocoileus hemionus columbianus*)	None	None	State priority species, known range does not overlap study area	WDFW Regional Biologist	WDFW
Bighorn sheep (*Ovis canadensis canadensis*)	None	None	State priority species designated and known range mapped adjacent to study area	PHS map, WDFW Regional Biologist	WDFW
Least chipmunk (*Neotamias minimus*)	None	None	Not designated	WDFW Regional Biologist	WDFW
Burrowing owl (*Athene cunicularia*)	None	Candidate	State priority species with primary association with State priority habitat (shrub-steppe)	SWAP data, WDFW Regional Biologist	WDFW

[1] All federal and state listed species and habitats, as well as state designated priority areas, are regulated as Fish and Wildlife Habitat Conservation Areas (FWHCAs) under CCC 11.78.010.

[2] Though not federally listed, USFWS regulates golden and bald eagles and associated habitat under the Bald and Golden Eagle Protection Act of 1940.

[3] SWAP data indicates that the study area is within the observed range of *Hypsiglena torquata*. Recently, genetic testing has resulted in the splitting of *H. torquata* into six unique species/sub-species. Of the six, *Hypsiglena chlorophaea deserticola* is the only sub-species to occur in this region.

In addition to individual species, the subject parcel falls within the Columbia Plateau Regional Biodiversity Corridor and includes estimated shrub-steppe habitat as mapped by the WDFW PHS online map. Biodiversity corridors are used by regional planners to identify largely intact ecologically important corridors that enable native species migration among key areas and support population viability.

3.1.2.1 Gray wolf

Gray wolves are habitat generalists with a circumpolar range including North America, Europe, and Asia. Prior to European settlement, gray wolves occupied or transited most of the coterminous US, except the southeast. Suitable gray wolf habitat contains adequate ungulate populations and a low risk of conflict with humans and livestock (USFWS 2023). The project area is nearest to the Naneum single wolf territory to the west near Jumpoff Ridge. The nearest gray wolf pack is the Maverick pack north of Cashmere (WDFW 2023). These occurrences do not overlap the project area.

3.1.2.2 North American wolverine

Wolverine habitat includes boreal forest, taiga, and tundra ecosystems, and, in Washington, they occur in the Cascade Mountain Range in alpine and subalpine forest habitats. The Washington population within the Cascade Range is estimated to be less than 25 individuals but appears relatively stable. Wolverines were extirpated from Washington in the mid-1900s as a result of predator control and persecution. However, they became reestablished in the North Cascades beginning in the 1990s and in the South Cascades (i.e., south of Interstate 90) by 2008. Litters of wolverine kits were observed in the vicinity of Mount Rainier National Park in 2018 and 2020 (WDFW 2024a). The project area is outside the observed range of North American wolverine.

3.1.2.3 Yellow-billed cuckoo

The western DPS is the subspecies present in western North America and was federally listed as a threatened species by USFWS on October 3, 2014 (USFWS 2014). Yellow-billed cuckoo habitat consists of open lowland, and deciduous woodlands with clearings and shrubby vegetation, often near rivers and streams. A large, continuous riparian habitat dominated by cottonwoods and willows is preferred. Yellow-billed cuckoos typically build their own nests and care for their own young; their nests consist of loose platforms of twigs lined with leaves or finer materials and are often placed in willows, cottonwoods, and shrubs (WDFW 2012). Increased development and damming of rivers have drastically reduced populations of yellow-billed cuckoo, and the species is considered functionally extirpated in Washington state and are not discussed further in this document (WDFW 2017).

3.1.2.4 Monarch butterfly

On December 10, 2024, monarch butterflies were proposed threatened under the Endangered Species Act (ESA) (USFWS 2024). Monarchs breed and travel through Washington but do not overwinter in the state. Monarchs require secure patches of milkweed and nectar resources during breeding, roosting sites and safe travel corridors for migration. Milkweeds and monarchs in Washington occur in weedy

fields and sparsely vegetated habitats, typically near wetlands or riparian areas, or along roadways. In Washington, they are found east of the Cascades where milkweed occurs, often concentrating along the large river courses of the Columbia and Snake Rivers (WDFW 2025a). The most common milkweed species in the Columbia Basin are showy milkweed (*Asclepias speciosa*), narrow-leaved milkweed (*A. fascicularis*), and swamp milkweed (*A. incarnata*). Pallid milkweed (*A. cryptoceras*) is also a rare occurrence in the Basin (Kusch 2020).

3.1.2.5 Bull trout

In 1999, all populations of bull trout within the coterminous US were listed as threatened under the ESA (USFWS 1999). Juvenile rearing and spawning typically occurs in smaller tributaries and headwater streams, and juvenile bull trout prefer cold water temperatures between 39°F and 50°F (McPhail and Baxter 1996). Juvenile bull trout can reside in gravel substrate for more than 220 days (i.e., from egg deposition to emergence), making them especially vulnerable to sediment deposition and bedload movement (USFWS 1999). They are strongly associated with the stream bottom and cover features, such as wood, boulders, and interstitial spaces in the substrate (USFWS 2010). The study area is approximately 0.25 miles from the Columbia River, the nearest potential habitat for bull trout.

3.1.2.6 Golden eagle

In Washington, the golden eagle is found mostly in dry open forests of eastern Washington, shrub-steppe, canyonlands, high-elevation alpine zones of all regions, and sparingly in clearcut areas in western Washington. It is associated with steep terrain, which often includes cliffs where nests occur. Nests are situated on cliff ledges, rocky outcrops, large trees, or human made structures, such as power poles and transmission towers. Most eastside nests are on cliffs. Shrublands and grasslands, open meadows, avalanche chutes, talus fields and rock outcrops, balds, bogs, recently burned areas, and clearcuts are used as hunting sites (WDFW 2015).

3.1.2.7 Bald eagle

Bald eagles often nest, roost, and perch in mature trees near large bodies of water including rivers, lakes, and marine shorelines (Buehler 2000). Most nest sites in Washington are in or near the marine environment, including the Salish Sea, the Pacific Coast and associated estuaries, and the lower Columbia River. Bald eagles are scarce or absent in higher elevations and portions of the Columbia Basin and Palouse region (WDFW 2024b). This species is an opportunistic predator and scavenger, with fish making up a large portion of their diet, though they also eat birds, reptiles, amphibians, crabs, and small mammals such as rabbits and muskrats (Buehler 2000; Cornell Lab 2025).

3.1.2.8 Greater sage-grouse

Greater sage-grouse requires large areas of shrub-steppe habitat dominated by sagebrush. The current range of sage-grouse is about eight percent of the historic range, with the grouse occurring in two relatively isolated areas, the nearest of which is centered in the Moses Coulee area of Douglas County, approximately seven miles northeast of the study area on the opposite side of the Columbia River. Some degraded habitat that lacks the grass and forb understory needed for nesting and brood rearing is

nonetheless suitable for wintering grouse. Sagebrush, grasses, forbs, and insects comprise the annual diet of sage grouse. During the winter, greater sage grouse feed almost exclusively on sagebrush. Forbs are important to nesting hens in the pre-laying period. They also eat insects, including ants and grasshoppers, which are essential in the diet of growing chicks (WDFW 2025b).

Winter scat shows evidence of a uniquely designed digestive system that processes a diet of almost exclusively sagebrush leaves. Terpenes contained in sagebrush leaves are segregated in the gut (cecal) and excreted separately resulting in the indicative “cecal tar” (USDA NRCS 2010).

3.1.2.9 Northern desert night snake

In Washington, night snakes are most common in arid areas that support shrub-steppe vegetation, as they prefer areas of denser vegetation (California Herps 2025; WDFW 2025c). Individuals are usually found in rocky areas and being nocturnal, use rocks as their primary shelter during the day. Night snakes generally stay close to the surface; however, during prolonged periods of hot weather, they may move deep into talus, rock fissures or rodent burrows. Night snakes eat small lizards and smaller snakes, as well as lizard eggs, frogs, and other small prey (WDFW 2025c).

3.1.2.10 Pygmy horned lizard

In Washington pygmy horned lizards generally occur in semiarid sagebrush plains with rocky to sandy soils (lithosols). These lizards require loose soil so they can burrow for shelter. Pygmy horned lizards will also utilize rodent burrows. This species eats primarily ants, though they will also eat other small insects (WDFW 2025d).

3.1.2.11 Northern spotted owl

Formerly a widespread and uncommon resident of coniferous forests in western Washington and the east slope of the Cascade Range, the northern spotted owl is now rare throughout Washington. The northern spotted owl inhabits mid to late succession coniferous forests preferring high canopy closure, complex canopy structure, large decaying trees and snags, and a high volume of downed wood (WDFW 2025e). East of the Cascades these stands are typically Dougals-fir or white fir/Douglas-fir mix (CFR 50 Part 17). The most common prey are northern flying squirrels, but spotted owls will also prey on bushy-tailed woodrats, snowshoe hares, and other small mammals (WDFW 2025e).

3.1.2.12 Western rattlesnake

The western rattlesnake occupies a wide diversity of habitats, from shrubby coastal dunes to timberline, shrubby basins and canyons, and open mountain forests (Brown et al. 1995). It is primarily terrestrial but occasionally climbs trees or shrubs. It occupies inactive mammal burrows, crevices, caves, or similar secluded sites. Pregnant females may congregate near the winter den until parturition (Ashton and Patton 2001). These temperate snakes generally exhibit three distinct periods of movement and behavior throughout an active season: an outbound spring migration after egress away from hibernacula (den); a period of mid-summer movements associated with hunting and mating grounds; and an inbound fall migration back to hibernacula, prior to ingress (Howarth et al. 2023; Maida et al. 2020).

3.1.2.13 Rocky Mountain elk

In Washington, Rocky Mountain elk are found primarily in the mountain ranges and shrub-steppe east of the Cascades, with small herds being established or reestablished throughout the Pacific Northwest. Many Rocky Mountain elk populations currently in Washington stem from elk transplanted from Yellowstone National Park in the early 1900's (WDFW 2025f). Sagebrush is often the tallest plant to forage during snowy and frozen conditions. Where sagebrush remains above snowpack, it is heated by the sun, warming and softening the surrounding snow, providing elk easier access to sagebrush and other forage (WLFW 2017).

3.1.2.14 Mule deer

Mule deer are a common deer species of the western United States. Mule deer inhabit areas east of the Cascades in Washington, preferring open forests and sagebrush meadows (WDFW 2004). Mule deer are well adapted to arid, rocky environments typical of many parts of the American west (NPS 2020). Mule deer may utilize shrub-steppe habitat year-round but depend on shrub-steppe locally for overwintering habitat. Big sagebrush and bitterbrush forage satisfy survival or maintenance needs in fall and winter but are used primarily for cover in spring, when preferred forb and grass species are available to meet maintenance and production requirements (USDA 1982).

3.1.2.15 Black-tailed deer

Black-tailed deer are the most common deer subspecies in Western Washington, occurring from the crest of the Cascades west to the Pacific Ocean. Black-tailed deer prefer brushy, logged lands and coniferous forests. They typically spend their entire lives in areas less than 3 square miles and do not migrate long distances, though mountain-dwelling deer may seek lower elevations in winter (WDFW 2004). Black-tailed deer do not naturally occur in shrub-steppe habitat.

3.1.2.16 Bighorn sheep

Bighorn sheep inhabit alpine meadows, grassy mountain slopes, canyonlands, and foothill country near rugged rocky cliffs and bluffs. Prior to giving birth, ewes isolate themselves in steep rocky areas. Generally, bighorn sheep are opportunistic feeders that adapt their diet to the forage available. They primarily eat grasses and forbs but will browse numerous shrubs, including elderberry, willow, bitterbrush and young trees (WDFW 2025g). WDFW manages 16 herds throughout the State, including the Quilomene herd, whose range overlaps with the study area (WDFW 2016). As of 2021, the Quilomene herd was the largest in the State and the herd is assumed stable as hunting permits for the herd have been issued by WDFW consistently since 2021.

3.1.2.17 Least chipmunk

Least chipmunks are found in various habitats, including coniferous forests, clearcuts, deciduous woods, sagebrush, riparian zones, and, in western regions, may even be found in alpine tundra. It feeds mostly on seeds, nuts, fruits, and acorns. During the summer, least chipmunks will den in hollow logs or stumps, in rock piles, under debris, in evacuated burrows, and occasionally in tree cavities above ground. Winter nests are excavated up to 3 ft below ground surface (Hammerson and Cannings 2004). Burrows have

two to four entrances measuring 2.5 to 3.5 in wide, though entrances have been reportedly smaller (1 in to 2 in wide) in rock pile dens (Verts and Carraway 2001).

3.1.2.18 Burrowing owl

Burrowing owls live in open, treeless areas with low, sparse vegetation, usually on gently sloping terrain of steppe and grassland environments. They feed on invertebrates and small vertebrates, including lizards, birds, and mammals (Cornell Lab 2025b). Burrowing owls nest in inactive mammal burrows such as those made by ground squirrels, yellow-bellied marmots, and American badgers (WDFW 2025h). The nest burrow can be several yards long and is usually less than 3 feet deep, but size depends on the mammal that originally excavated it. Burrows tend to make numerous twists and turns, with a mound of dirt at the entrance and an opening at least 4–6 inches wide (Cornell Lab 2025b). This species exhibits a preference for specific habitat characteristics, including a complex of burrows, short and/or sparse vegetation that provides optimal visibility, and sufficient prey populations (Nordstrom 2003; Haug et al. 1993). Silt loam textured soils significantly increase the longevity and reusability of nesting burrows, as opposed to sandy soils (Nordstrom 2003; Green and Anthony 1989).

3.2 Field Investigation

Landau ecologists Justin Kay and Madeline Henry conducted a field investigation on December 23, 2024. The weather during the investigation was overcast with light precipitation and temperatures at or above freezing. The recent snow accumulation over the previous week melted and soil was observed to be muddy in AA2, but otherwise sandy and dry. Conditions on the ground were clear of snow and vegetative and habitat features were observable where present.

Five of the eight AAs (AAs 1, 2, 3, 4, and 5) were characterized as shrub-steppe habitat based on the vegetation composition and structure (Table 1). The data forms used to record field observations are included in Appendix C. Selected photographs are provided in Appendix D.

Table 1. Assessment Area Summary

Assessment Area (AA)	Ecological System Type	Habitat Category (Form 1B)	Shrub-Steppe Presence[1]	Overall EIA Rank[2] (Form 2B)
AA1	Intermountain Basins Big Sagebrush Steppe	III (E) [6]	Y	B (3.6 points)
AA2	Intermountain Basins Big Sagebrush Steppe	III (E) [6]	Y	C (3.4 points)
AA3	Intermountain Basins Big Sagebrush Steppe	III (H) [3]	Y	C (3.0 points)
AA4	Intermountain Basins Big Sagebrush Steppe	III (E) [3]	Y	C (3.2 points)
AA5	Intermountain Basins Big Sagebrush Steppe	III (E) [5]	Y	C (2.5 points)
AA6	- - -	IV (J) [6]	N	- - -
AA7	- - -	IV (J) [5]	N	- - -
AA8	- - -	IV (J) [5]	N	- - -

[1] N = no; non-shrub-steppe areas not ranked; Y = yes
[2] Ranking: A = > 4.5; B = 3.5 – 4.4; C = 2.5 – 3.4; D = < 2.4; EIA = Ecological Integrity Assessment

3.2.1 Vegetation Composition

The dominant native vegetation within the shrub-steppe areas was big sagebrush (*Artemisia tridentata*), rubber rabbitbrush (*Ericameria nauseosa*), snowy buckwheat (*Eriogonum niveum*), silky lupine (*Lupinus sericeus*), yarrow (*Achillea millefolium*), and bluebunch wheatgrass (*Pseudoroegneria spicata*). Antelope bitterbrush (*Purshia tridentata*) was dominant in less disturbed AAs (AAs 1, 2, and 3) and sparse to not present throughout the remainder of the study area. Similarly, shrub seedlings were present in the less disturbed AAs and generally not present in areas of disturbance.

Cryptobiotic crust was present throughout the study area. Prevalence ranged from very sparse in the more disturbed AAs (AAs 4, 5, 6, 7, and 8), to present in protected areas in AAs having experienced recent agricultural activities (AAs 2 and 3), to fairly intact (AA1).

AAs 6, 7, and 8 do not meet the shrub-steppe habitat criteria due to a lack of big sagebrush or antelope bitterbrush, evidence of recent fire, predominance of invasive species, few or no bunch grasses or native forbs, or increased levels of disturbance. These non-shrub-steppe AAs were dominated by cheatgrass (*Bromus tectorum)* with higher coverage of yellow salsify (*Tragopogon dubius*) and tumble mustard (*Sisymbrium altissimum*). Invasive species are also common along the roadside margins of AAs 1, 4, and 5. Site disturbance and invasive species hinder the development of shrub-steppe plant communities as big sagebrush and antelope bitterbrush grow too slowly to outcompete hardy, fast-growing invasive species, especially when clearing and grading activities occur regularly. A summary of the plants identified during the site investigation is provided in Table 2.

Table 2. Plant Inventory

Common Name	Scientific Name	Assessment Area (AA) Presence
Big Sagebrush	*Artemisia tridentata*	**1/2/3/4/5**
Antelope bitterbrush	*Purshia tridentata*	**1/2/3**
Rubber Rabbitbrush	*Ericameria nauseosa*	**1/2/3/4/5/6/7/8**
Serviceberry	*Amelanchier alnifolia*	**6**
Snow Buckwheat	*Eriogonum niveum*	**1/2/4/5/6/7/8**
Arrowleaf Balsamroot	*Balsamorhiza sagittata*	**1**
Silky Lupine	*Lupinus sericeus*	**1/4/5/7**
Yarrow	*Achillea millefolium*	**5/6/7/8**
Desert Parsley	*Lomatium dissectum*	**1**
Bristly Fiddlehead	*Amsinckia tessellate*	**5/7**

Common Name	Scientific Name	Assessment Area (AA) Presence
Giant Blazing Star	*Mentzelia laevicaulis*	**2**
Bluebunch Wheatgrass	*Pseudoroegneria spicata*	**1/4/7/8**
Black Medick[1]	*Medicago lupulina*	**3**
Yellow Salsify[1]	*Tragopogon dubius*	**1/5**
Russian Thistle[1]	*Salsola tragus*	**4/5**
Cheatgrass[1]	*Bromus tectorum*	**1/2/3/4/5/6/7/8**
Tumble Mustard[1]	*Sisymbrium altissimum*	**4/5/8**

[1] Non-native species. These species are naturalized and not included on the Chelan County Noxious Weed List.

3.2.2 Habitat Evaluation

Shrub-steppe habitat within the study area was determined to be Intermountain Basins Big Sagebrush Steppe due to the geographic location and vegetative composition. In a pristine state, Intermountain Basins Big Sagebrush Steppe is dominated by *Artemisia spp.* and/or antelope bitterbrush in an open to moderately dense layer (5 to 40 percent cover) with at least 25 percent perennial bunchgrass and forb cover. The natural fire regime maintains a patchy distribution of shrubs and a cryptobiotic crust forms in the space between vascular plants. Approximately 76 acres (3,317,321 sf) of shrub-steppe habitat was identified during the site investigation. Table 3 provides habitat observations made during the site investigation.

Table 3. Habitat Observation Summary

Assessment Area (AA)	Native Shrub Layer (>5%)	Native Forbs and Bunchgrasses (>25%)	Tracks and Scat	Rock Piles or Burrows	Cliffs, Tall Trees, or Perches	Level of Disturbance
1	Y	Y	elk + mule deer	none observed	Power poles adjacent (north)	L
2	Y	N	elk + mule deer	none observed	none observed	M
3	Y	N	elk + mule deer	none observed	none observed	M
4	Y	Y	elk + mule deer	none observed	none observed	M
5	Y	N	elk + mule deer	none observed	none observed	H
6	N	N	mule deer	loose river cobble quarry	none observed	H
7	N	N	elk + mule deer	none observed	none observed	H
8	N	N	mule deer	none observed	none observed	H

Flat with small topographic changes, the study area is generally comprised of well-drained sandy soils with cobble and boulder sized rock scattered across the surface of site. Exceptions include soils in AA2, which were muddy from recent snowmelt and soil alterations from past agricultural activities, and AA6, which is a small quarry of smooth cobble and boulder sized rock.

Human manipulation is present in all AAs, but particularly in AAs 6, 7, and 8 where the shrub-steppe vegetative community is not present and in AA3 where a dirt access road, vehicle turnaround, and material storage have removed the vegetation. AAs 7 and 8 are moderately disturbed with evidence of heavy machinery use, past clearing and grading activities, and refuse piles. Site disturbance has a positive correlation to the presence of invasive species. The presence of invasive species such as cheatgrass has greatly reduced the native bunchgrasses onsite, which is a more common occurrence in bluebunch wheatgrass dominated shrub-steppe than in fescue dominated shrub-steppe.

The study area is not fenced, but the adjacent Malaga-Alcoa Highway is a potential barrier for some species, separating the study area from the relatively undisturbed rangeland and Colockum State Wildlife Area west of the Malaga-Alcoa Highway. Despite this, signs of elk and mule deer were nearly ubiquitous throughout the study area. Observed signs of use included hoof tracks, scat, bones, and past browse damage to sagebrush. An adult and two juvenile mule deer were observed foraging midday to the northeast of AA3. A gang of approximately nine elk was observed descending the slopes west of the study area near dusk. Elk bugling was heard occasionally from mid-morning to dusk from the west of the study area. The big sagebrush and antelope bitterbrush present within the study area provide adequate cover and winter forage for elk and mule deer and the sparse but present native forb and bunchgrass communities provide forage from spring to fall.

Bighorn sheep have similar sized and shaped scat (pellets) and tracks (3 to 3.5 in long cloven hoof) to mule deer. Bighorn sheep pellets are more teardrop-shaped with a pointed end and a slightly flattened, indented end while mule deer scat is generally more symmetrically ovoid. Bighorn sheep tracks are blocky with straighter edges, while mule deer tracks are rounded, taking a more heart-shaped appearance. While the study area may provide winter forage, all scat and tracks observed within the study area were from elk or deer, but it is presumed that bighorn sheep could use the study area to forage during winter months. Similarly, no sign of gray wolf was observed in the project area, but the presence of elk and mule deer and relative proximity to the Naneum single wolf territory near Jumpoff Ridge indicate that it is possible gray wolf could follow their prey into the study area. However, human activity (highway and power facility operations) in the general vicinity is likely to dissuade gray wolves from spending extended periods in the study area.

Despite ranking as moderate to low-moderate quality and lacking signs of their presence, shrub-steppe habitat indicates that night snake, pygmy horned lizard, and greater sage-grouse could make use of the study area as part of their life history. Night snake and pygmy horned lizard do not often leave behind easily identifiable signs of their presence, and neither species was observed during the field investigation. The loose sands required for pygmy horned lizard to burrow were not observed within the study area. Greater sage-grouse droppings with the tell-tale cecal tar were not observed and the study area is approximately seven miles southwest of the nearest breeding range.

Aside from mule deer and elk, little to no evidence of use by the target species was observed in the study area. Monarch butterflies cannot survive without milkweed plants as they are the only source of forage for the butterfly and the sole structure upon which they lay their eggs. In the Columbia Basin, milkweed plants die back each year leaving remnant stalks that typically persist through the winter. No remnant milkweed stalks were observed in the study area and preferable monarch butterfly and milkweed habitat is more likely to occur along the banks of the Columbia River, approximately 0.25 miles northeast of the study area. The required milkweed is not present for monarch butterflies, so they are presumed not present.

No cliffs, rocky outcroppings, or tall trees that would be suitable nesting sites for golden or bald eagles were observed within the study area. Several tall power poles run adjacent to the study area, but no nests were observed on these structures. Similarly, no suitable nesting habitat for bald eagles is present within the study area as no mature trees or perches are present and the nearest suitable body of water is the Columbia River.

Late seral coniferous forests are not present within the study area nor were they observed in the immediate vicinity, so it is presumed that northern spotted owl does not make use of the study area.

Burrows were not observed within the study area. Burrowing owls, western rattlesnake, and least chipmunk utilize burrows for denning. Western rattle snake and least chipmunk will also make use of rock piles for denning, but rock piles are either not present or unsuitable for denning. The AA6 quarry is disturbed irregularly and comprised of smooth river cobble, which is less preferrable than jagged rock piles on or at the toe of talus slopes, such as those west of the study area. Soils are also rocky and sandy, which may not provide the structural integrity required for burrowing, especially in burrows of the dimensions utilized by burrowing owls, western rattlesnakes, and least chipmunks.

North American wolverine, bull trout, and black-tailed deer do not utilize shrub-steppe habitat as a primary feature of their life history and are not present. Based on findings from the background review and field investigation, it is unlikely that gray wolves, bighorn sheep, golden eagle, burrowing owl, pygmy horned lizard, greater sage grouse, least chipmunk, and western rattlesnake make use of the study area beyond irregular foraging and dispersal habitat. It is possible that northern desert night snake utilizes the study area as part of their life history as suitable habitat is present, though no sign of the species was observed. Of the species reviewed, only mule deer and Rocky Mountain elk make regular use of the study area.

4.0 REGULATORY CONSIDERATIONS AND MANAGEMENT RECOMMENDATIONS

Shrub-steppe habitat within the study area is regulated by the County. Chapter 11.78 *Fish and Wildlife Habitat Conservation Overlay District (FWOD)* does not explicitly reference shrub-steppe habitat. However, CCC 11.78.010 and -.050 identify mule deer and elk winter range habitat and migration corridors as habitats of local importance as regulated FWHCAs. Major developments that will impact FWHCAs are required to prepare a habitat management and mitigation plan for impacts/alterations to habitat conservation areas and to mitigate at a ratio of 1:1 (mitigation area: disturbed area) for on-site mitigation, or 2:1 for off-site mitigation (CCC 11.78.060(11)).

Based on the project understanding and conceptual construction drawings, the proposed project will impact approximately 455,712 sf of shrub-steppe habitat in portions of AAs 1, 4, and 5 (Figure 3). Mitigation is required to compensate for loss of shrub-steppe habitat and will occur in the form of restoration, creation, and enhancement. Based on the site development plans and available area, all habitat loss can be mitigated on site.

5.0 IMPACT ASSESSMENT

Estimated limits of proposed clearing and grading were overlaid with the AAs to determine impacts to shrub-steppe habitat. The areas of onsite shrub-steppe habitat vary in size and cover much of the study area. Based on the project understanding at the time of this report and the conceptual construction drawings, development will impact approximately 455,712 sf (10.46 acres) of existing, moderate to low-moderate quality shrub (overall EIA Rankings of and “B” and “C”) shrub-steppe habitat. Figure 3 shows the proposed site development and Figure 4 shows the conceptual mitigation plan.

6.0 MITIGATION

The project mitigation plan was designed in accordance with guidance from Chelan County, WDFW (Azerrad et al. 2011; Benson et al. 2011), and the Bureau of Land Management (BLM; Dunwiddie and Camp 2013) guidance and requirements for mitigation sequencing, which allow for impacts to FWHCAs when impacts are unavoidable and necessary and where project design efforts have been made to reduce and/or minimize impacts. The CCC outlines mitigation reporting requirements, preferences, and performance standards. WDFW and BLM guidance was used as a primary source for best available science in creating the compensatory mitigation plan and specifications.

The mitigation plan was developed using the sequence provided in Chapter 11.77.070 of the CCC, which outlines priorities for mitigation associated with alterations to "critical areas and/or special status species." Landau created the conceptual mitigation plan using the approaches outlined in applicable WDFW (Azerrad et al. 2011; Benson et al. 2011) and BLM (Dunwiddie and Camp 2013) guidance. Guidance was used to assess site conditions, create the goals and objectives of mitigation, outline site preparation tasks, generate a planting list, and establish a monitoring and maintenance plan.

This section presents the mitigation sequencing and a mitigation plan for unavoidable impacts to shrub-steppe habitat.

6.1 Mitigation Sequencing

Section 17.77.070 of the CCC outlines requirements for mitigation associated with alterations to FWHCAs. Additionally, site-specific management considerations were evaluated based on guidance from WDFW (Azerrad et al. 2011). Mitigation shall be undertaken in the following order of preference:

1) Avoid the impact altogether by not taking a certain action or parts of an action.
2) Minimize impacts by limiting the degree, magnitude, or duration of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts.
3) Rectify the impact by repairing, rehabilitating, or restoring the affected environment.
4) Reduce or eliminate the impact over time by preservation and maintenance operations.
5) Compensate for the impact by replacing, enhancing, or providing substitute resources or environments.

Monitor the required compensation and take remedial or corrective measures when necessary. Mitigation for individual actions may include a combination of the above measures. The mitigation sequencing details that focus on avoidance and minimization are described below.

6.1.1 Avoidance

Avoidance of impacts to all shrub-steppe habitat within the project area is not feasible based on the intended site use as a fusion power generation facility. The study area is approximately 81 acres (3,544,665 sf) in size. Of the 81 acres, approximately 76.16 acres (3,317,321 sf) are shrub-steppe habitat and Helion proposes a 12.38-acre (539,256 sf) project footprint avoiding 63.78 acres (2,778,065 sf) of

shrub-steppe habitat. Given the requirements to safely operate this facility, minimization, restoration, and creation are appropriate mitigation measures.

6.1.2 Minimization

During the development planning process, the footprint for the proposed project was optimized to avoid impacts to shrub-steppe habitat to the maximum extent feasible. Impacts were minimized through the design by condensing the footprint to the minimum sf necessary and siting the facility in an already degraded area. Additionally, limits of clearing and grading will be clearly demarcated with temporary fencing to avoid additional impacts during construction.

6.1.3 Restoration

Site topography necessitates some grading in areas that will be outside of the final facility footprint. In these areas, impacted habitat will be restored to equivalent or greater condition through native planting, seeding, and weed control. Approximately 86,240 sf of shrub-steppe habitat will be restored as part of the mitigation.

6.1.4 Creation

Restoration alone will not compensate for the total proposed impacts. To mitigate impacts that cannot be offset through restoration, shrub-steppe habitat will be created in areas where shrub-steppe habitat is not currently present. These areas are adjacent to existing shrub-steppe habitat and restoration areas. Approximately 124,732 sf of shrub-steppe habitat will be created as part of the mitigation.

6.1.5 Enhancement

With restoration and creation opportunities exhausted within the study area, degraded portions of shrub-steppe habitat adjacent to current, restoration, and creation areas will be enhanced to make up the remaining difference. Approximately 274,443 sf of degraded or low-quality shrub-steppe habitat will be enhanced as part of mitigation.

6.2 Mitigation Plan

A combination of restoration, creation, and enhancement of shrub-steppe habitat will be used to compensate for unavoidable project impacts. Project impacts, mitigation areas, and mitigation ratios are summarized in Table 4 below, while restoration, creation, and enhancement areas along with plat selection are shown on Figure 4.

Table 4. Mitigation Calculation Summary

Impacts (sf)	Restoration and Creation (sf)	Mitigation Ratio Achieved
455,712	Restoration: 86,240 Creation: 124,732 Enhancement: 274,443 Total: 485,415	1.07:1

6.2.1 Site Preparation

6.2.1.1 Soil Preparation

Soil in the restoration planting areas will be impacted by site grading activities. Grading with heavy equipment has the potential to compact soils and make it difficult for plants to become established. Loose soil is necessary to ensure seeds and new plants can be installed to the correct depth and to allow new roots to penetrate the surrounding soil. To ensure these conditions, soil will be evaluated post-grading for compaction and loosened or back-tilled to a minimum depth of 12 inches to increase the likelihood of plant establishment success. Soil within the creation areas should also be evaluated to determine if decompaction is needed. Soil should be deemed too compact if digging a 12-inch hole is difficult or impossible to complete with hand tools in a reasonable amount of time (i.e., less than 2 minutes). Prior to seeding, a cultipacker or similar equipment should be used to loosen dirt clods and smooth soil to improve seed contact and germination.

Additionally, grading often removes topsoil and the beneficial microbes that allow plants to thrive. Soil will be amended with an appropriate microbial soil amendment (i.e., beneficial bacteria and fungi) in areas where grading has occurred or where herbicide has been applied.

6.2.1.2 Weed Control

Disturbed, bare soils are ideal conditions for most invasive species in the area and much of the area proposed for creation is currently dominated by invasive species. Species of particular concern include cheatgrass (*Bromus tectorum*), diffuse knapweed (*Centaurea diffusa*), Russian thistle (*Salsola tragus*), and tumble mustard (*Sisymbrium altissimum*). Weed control should be conducted prior to planting to reduce competition for native species and to reduce the seed bank of invasive species.

Mowing, burning, and tilling are not recommended as they are largely less effective than chemical treatment in terms of overall control and cost (Dunwiddie and Camp 2013). However, disking may be used initially to remove large areas of invasive species, so long as all plant material is disposed of offsite. Manual removal for small infestations of invasive species is allowable so long as all plant matter is disposed of offsite. Targeted chemical control using non-persistent herbicide, such as RoundUp Pro® (glyphosate), and pre-emergent treatments are preferred for control of cheatgrass and the other invasive forbs (Dunwiddie and Camp 2013; Benson et al. 2011). The use of herbicides with longer periods of soil persistence, such as Plateau® (imazapic), may be considered only for applications occurring at least 9 months prior to planting (Dunwiddie and Camp 2013). Approved herbicides must be applied by a licensed applicator following label specifications.

Within the mitigation areas, weed control for cheatgrass should start in early fall the year prior to plant installation to limit the use of herbicides too close to native planting the following year. Cheatgrass is a fall-emerging plant that overwinters and then matures in spring and early summer. Herbicide should be applied in October/November after fall rains trigger cheatgrass emergence and again the following spring and summer. Herbicide should be applied in creation and restoration mitigation areas to reduce the seed bank the following year. Herbicide should not be applied in enhancement areas in order to avoid damage to native plants.

Following grading, at least two additional herbicide treatments should occur prior to planting; in spring between April 1 and May 31 before cheatgrass matures, and again in mid-summer (late July to August timeframe) to control invasives forbs. Depending on the success and timing of the initial herbicide applications, an additional application or spot-spraying may be needed in September prior to planting to target fall-emerged cheatgrass and any remaining invasive species not yet dormant for the season (Benson et al. 2011). The last herbicide application should be conducted at least 1 month before planting so that the herbicide doesn't interfere with new plant and seed survival and growth. Follow-up herbicide treatment is described in the site maintenance program section below.

6.2.2 Planting Plan

A planting plan has been designed that will restore, create, and enhance shrub-steppe habitat functions onsite post-construction. The planting plan covers 485,415 sf. The planting plan, as well as project phasing, is presented in this section.

6.2.2.1 Vegetation and Spacing

The planting plan is designed to restore, create, and enhance shrub-steppe habitat functions by increasing the diversity of food sources and habitat structures for large ungulates, birds, rodents, lizards, snakes, and insects, while decreasing invasive weed cover. Using onsite and adjacent habitat as a reference, species have been selected based on presence, vigor, potential habitat benefits, and commercial availability of plants or seed. The planting plan is based on an average density of shrub seedlings planted at 6 ft on-center (OC) in a triangular pattern, plus forbs and grasses seeded at 12 pounds per acre[1] using a seed drill method for creation and restoration areas. In enhancement areas where native shrubs would be damaged by the seed drill, forb and grass plugs (4 to 10 cubic inches) will be installed to retain existing native vegetation. Planting and seeding will occur between October 15 and December 15 with no plants being installed in frozen conditions or when freezing is anticipated within 5 days of planting. Long-term weather forecasts and the Farmers' Almanac should be consulted to target planting before hard freezes set in. Areas that will be seeded using a seed drill method should be seeded prior to planting shrub plugs so that plugs are not disturbed by seed-planting equipment.

The layout of shrub species (big sagebrush, gray rabbitbrush, and antelope bitterbrush) will include informal and irregular groupings of 9 to 24 to resemble naturally occurring plant assemblages. Given the

[1] Seeding rates are based on an assessment of soil type (sandy to sandy loam), annual precipitation (9 to 14 inches), and installation method (seed drill) per Benson 2011.

complexity of site topography, existing soils, and construction schedules, the actual layout of plants will be determined by a qualified biologist representing Helion.

Table 5. Conceptual Sagebrush Prairie Planting List

	Common Name	Scientific Name	Size	Spacing
Shrubs	Big sagebrush	*Artemisia tridentata ssp. tridentata*	10 ci	6 ft OC
	Gray rabbitbrush	*Ericameria nauseosa*	10 ci	6 ft OC
	Antelope bitterbrush	*Purshia tridentata*	10 ci	6 ft OC
	Common Name	**Scientific Name**	**Size**	**Seed Mixture Percentage[1]**
Grasses	Blue bunch wheatgrass	*Pseudoregneria spicata*	seed/4 to 10 ci	30%
	Thickspike wheatgrass	*Elymus lanceolatus*	seed/4 to 10 ci	17%
	Sandberg's bluegrass	*Poa secunda*	seed/4 to 10 ci	10%
	Indian ricegrass	*Achnatherum hymenoides*	seed/4 to 10 ci	10%
	Needle and thread grass	*Hesperostipa comata*	seed/4 to 10 ci	5%
	Sand dropseed	*Sporobolus crytandrus*	seed/4 to 10 ci	5%
	Bottlebrush squirreltail	*Elymus elymoides*	seed/4 to 10 ci	7%
Forbs	Common yarrow	*Achillea millefolium*	seed/4 to 10 ci	1%
	Arrowleaf balsamroot	*Balsamirhiza sagittata*	seed/4 to 10 ci	4%
	Creamy buckwheat	*Eriogonum heracleoides*	seed/4 to 10 ci	2%
	Snow buckwheat	*Eriogonum niveum*	seed/4 to 10 ci	1%
	Bigleaf lupine	*Lupinus polyphyllus*	seed/4 to 10 ci	4%
	Silverleaf phacelia	*Phacelia hastata*	seed/4 to 10 ci	2%
	Threadleaf fleabane	*Erigeron filifolius*	seed/4 to 10 ci	2%

[1]Enhancement areas will be planted at approximately 6 ft OC when factoring in retained native species.

6.2.3 Mitigation Goals, Objectives, and Performance Standards

Goals are broad statements that generally define the intent or purpose of the proposed mitigation. Objectives specify the direct actions necessary to achieve the stated goals. Performance standards are the measurable values of specific variables that ensure objectives have been met and provide the basis for determining if mitigation is a success.

The performance standards for this project are adapted from standards listed in CCC 11.78.060(15). These standards are applicable to regulated FWHCAs in the County, spanning varied habitat types and needs. Several standards have been altered in this plan to specifically assess the progress of shrub-steppe habitat plantings over a 5-year monitoring period. These alterations include the following:

- Omitting the percent survival standards for Years 2 through 5 in favor of a total cover standard: Landau has altered the Year 1 survival standard of 70 percent for shrubs as a visual estimate to ensure the plantings have a high likelihood of achieving the proposed cover standards by Year 5.
- Adding a total cover standard for Years 3 and 5: Habitat functions are more directly assessed by evaluating whether plant cover exists than whether initial plantings have survived, particularly when seed is a major component of the revegetation strategy. Monitoring transects and photo points will be established to evaluate total plant cover progress.
- Adding a species diversity standard to ensure the mitigation planting meets the structural and forage needs of the wildlife community.

- The invasive species cover standard has been maintained in all cases except cheatgrass, where the maximum threshold has been changed to 50 percent.

Three main goals have been outlined for this effort:

- **Goal #1:** Compensate for temporary impacts to shrub-steppe habitat functions by restoring shrub-steppe habitat outside the edge of new development where it has been impacted by grading activities.
  - **Objective A:** Restore at least 1.98 acres (86,240 sf) of shrub-steppe habitat.
    - **Performance Standard 1A:** Plant Survival – at the end of Year 1, there will be approximately 70 percent survival of planted shrubs (visually estimated). Appropriate native volunteer species will be included in the Year 1 survival estimate. If less than 70 percent survival occurs, significant areas of dead or missing plants should be replaced prior to the Year 2 fall monitoring visit to reach the 70 percent threshold.
    - **Performance Standard 2A:** Species Diversity – at the end of each monitoring year, at least three native shrubs, five native forbs, and six native grasses will be present. Appropriate native volunteer species will be included in the species diversity assessment.
    - **Performance Standard 3A:** Plant Cover[2] – total native plant cover will be formally assessed in Years 3 and 5. Appropriate native volunteer species will be included in the total plant cover assessment.
      - In Year 3, shrub cover will be 10 percent or greater and native grass and forb cover will be 40 percent or greater, with forbs comprising at least 10 percent total cover.
      - In Year 5, shrub cover will be 20 percent or greater and native grass and forb cover will be 60 percent or greater, with forbs comprising at least 15 percent total cover.
    - **Performance Standard 4A:** Invasive Species – total aerial cover of non-cheatgrass invasive species will be 20 percent or less in all monitoring years. Cheatgrass cover will not exceed 50 percent in all monitoring years.
- **Goal #2:** Compensate for permanent impacts to shrub-steppe habitat functions by creating shrub-steppe habitat in previously converted areas that do not currently have shrub-steppe habitat.
  - **Objective A:** Create at least 2.86 acres (124,732 sf) of shrub-steppe habitat.
    - **Performance Standard 1A:** Plant Survival – at the end of Year 1, there will be approximately 70 percent survival of planted shrubs (visually estimated). Appropriate native volunteer species will be included in the Year 1 survival estimate. If less than 70 percent survival occurs, significant areas of dead or missing plants should be replaced prior to the Year 2 fall monitoring visit to reach the 70 percent threshold.
    - **Performance Standard 2A:** Species Diversity – at the end of each monitoring year, at least three native shrubs, five native forbs, and six native grasses will be present.

[2] Percent cover will be assessed as percent total cover (percentage of the plot or transect area covered by a particular class of plants). The sum of total cover values for all plant classes may be greater than 100 percent when forbs and grasses form an understory below the shrub layer.

Appropriate native volunteer species will be included in the species diversity assessment.

- **Performance Standard 3A:** Plant Cover – total native plant cover will be formally assessed in Years 3 and 5. Appropriate native volunteer species will be included in the total plant cover assessment.
  - In Year 3, shrub cover will be 10 percent or greater and native grass and forb cover will be 40 percent or greater, with forbs comprising at least 10 percent total cover.
  - In Year 5, shrub cover will be 20 percent or greater and native grass and forb cover will be 60 percent or greater, with forbs comprising at least 15 percent total cover.
- **Performance Standard 4A:** Invasive Species – total aerial cover of non-cheatgrass invasive species will be 20 percent or less in all monitoring years. Cheatgrass cover will not exceed 50 percent in all monitoring years.

- **Goal #3:** Compensate for permanent impacts to shrub-steppe habitat functions by enhancing existing degraded shrub-steppe habitat adjacent to other mitigation areas or higher quality existing shrub-steppe habitat.
  - **Objective A:** Enhance at least 6.30 acres (274,443 sf) of shrub-steppe habitat.
    - **Performance Standard 1A:** Plant Survival – at the end of Year 1, there will be approximately 70 percent survival of planted shrubs (visually estimated). Appropriate native volunteer species will be included in the Year 1 survival count. If less than 70 percent survival occurs, significant areas of dead or missing plants should be replaced prior to the Year 2 fall monitoring visit to reach the 70 percent threshold.
    - **Performance Standard 2A:** Species Diversity – at the end of each monitoring year, at least three native shrubs, five native forbs, and six native grasses will be present. Appropriate native volunteer species will be included in the species diversity assessment.
    - **Performance Standard 3A:** Plant Cover – total native plant cover will be formally assessed in Years 3 and 5. Appropriate native volunteer species will be included in the total plant cover assessment.
      - In Year 3, shrub cover will be 10 percent or greater and native grass and forb cover will be 40 percent or greater, with forbs comprising at least 10 percent total cover.
      - In Year 5, shrub cover will be 20 percent or greater and native grass and forb cover will be 60 percent or greater, with forbs comprising at least 15 percent total cover.
    - **Performance Standard 4A:** Invasive Species – total aerial cover of non-cheatgrass invasive species will be 20 percent or less in all monitoring years. Cheatgrass cover will not exceed 50 percent in all monitoring years.

7.0 MONITORING, MAINTENANCE, AND CONTINGENCY PLAN

Monitoring and maintenance are important elements for the success of the mitigation project. The proposed planting areas will be monitored during and after completion of the initial construction work, as described below.

7.1 Installation Quality Control Oversight

During earthwork and plant installation, a qualified biologist[3] representative will verify that grade and soil conditions match specifications and plant materials are healthy and consist of the correct species and sizes as designated in the planting plan, and that they are placed in the correct growing environments. When plant installation is complete, the biologist representative will conduct an inspection and provide detailed notes regarding any changes to the final mitigation plan. This "as-built" plan will serve as the baseline for monitoring and the monitoring period will commence when the qualified biologist approves the as-built plan. The as-built plan will also divide the planting area into six to eight areas for randomized sample plots and to establish eight photo points, which will be used to track restoration site progress during the monitoring period.

7.2 Monitoring

Monitoring will take place once annually for five years, beginning with approval of the as-built report. Qualified professionals will conduct an annual monitoring inspection during mid to late spring. These monitoring site visits shall record and disclose the following in an annual report provided to Helion for submission to the County:

- Visual assessment of the overall site
- Year 1 visual estimate of mortality by species within established transects or plots
- Counts of dead plants where mortality is significant in any monitoring year
- Estimate of total native species cover within each vegetation plot (plot size and selection are described below)
- Estimate of non-native, invasive weed cover within each vegetation plot
- Tabulation of established native species within each vegetation plot, including both planted and volunteer species
- Diversity count of native shrubs, grasses, and forbs throughout each area
- Photographic documentation from at least 8 fixed reference points
- Any intrusions into or clearing of the planting areas, vandalism, or other actions that impair the intended functions of the mitigation area

[3] Defined in CCC 14.98.1517 as "the holder of at least a four-year degree in science with specific or related fields with course work in wildlife, streams, wetlands, or fisheries, with at least two years of relevant professional experience in assessment and mitigation."

- Recommendations for maintenance or repair of any portion of the mitigation area.

Vegetation monitoring plots will be permanently established in four areas of the mitigation project. In general, sample plots will measure 100 ft by 25 ft. The dimensions of sample plots may vary depending on the dimensions of the mitigation area. Sample plots will be randomly generated by placing a numbered grid over each defined area and using a random number generator to select the center of one end of the sample plot. A random generator will then be used to select a true north compass direction for the center line of the plot. If the selected compass direction results in a portion of the plot falling outside of the mitigation area, a new direction will be randomly selected until the entire plot falls within the mitigation area.

Photo points will be permanently established using metal T-Posts to provide a comparison from one year to the next. Photo directions for each photo point will be established at the start of monitoring and will remain consistent throughout the monitoring period. Photo points will be selected to provide adequate coverage across the planting area. Some photo points may have more than one photo direction, depending on the location.

7.3 Site Maintenance Program

The primary maintenance activity that will be required within the mitigation area is the removal of invasive species. To support site success, weed control activities should be conducted by an experienced and licensed contractor for the duration of the monitoring period. The contractor must be able to identify and differentiate native species from non-native invasive species. Weed control should occur in May/June and October/November. May/June weed control treatment should prioritize forbs including diffuse knapweed, Russian thistle, and tumble mustard and cheatgrass that have overwintered. October/November weed control should prioritize cheatgrass treatment and should be conducted after autumnal rains have begun and cheatgrass has emerged. In addition to species listed in Section 3.2.1 above, noxious weeds on the most recent Chelan County Noxious Weed List[4] or those weeds recommended for control in future monitoring reports should be hand-weeded, spot-sprayed, or otherwise controlled for the duration of the monitoring period. Spot-spraying may only be used if it can be conducted without damage to the native plant community and, if used, may only be conducted on a windless day. Additional planting may be required if performance standards are not being met.

7.4 Contingency Plan

A contingency plan may be necessary if monitoring results indicate that the mitigation is not successfully meeting performance standards. In this case, the monitoring report will include a discussion of possible causes for failure to meet performance standards and will recommend appropriate actions to address the problem. The proposed contingency actions will depend on the problem being addressed. For example, if most of a single species has low survival, a more appropriate replacement species will be determined for the site conditions. If invasive species out-compete the native vegetation, additional control efforts may be warranted. If implementation of a contingency plan is deemed necessary, all

[4] https://www.co.chelan.wa.us/files/noxious-weed/documents/2024%20Chelan%20County%20Weed%20List.pdf

proposed actions will be planned and submitted to the County for approval before they are implemented.

8.0 ASSESSMENT OF NO NET LOSS

The proposed project will replace the area and functions of impacted existing shrub-steppe habitat. Following grading, shrub-steppe habitat will be restored where it currently exists, created in previously converted areas where it is presumed to have existed historically, and enhanced in adjacent areas to increase habitat quality and connectivity.

The proposed mitigation plan allows for no net loss of habitat functions and is expected to replace or improve upon the functions and values of the impacted habitat through equivalent or greater area of restoration, creation, and enhancement within the study area.

9.0 USE OF THIS REPORT

The findings and mitigation plan presented herein are based on Landau's understanding of existing site conditions, the site plan, background resource review, interpretation of vegetative and soil conditions during the December 23, 2024, field investigation, and guidance developed by WDFW and the CCC. Within the limitations of scope, schedule, and budget, services were provided in accordance with generally accepted sensitive-area mitigation principles and practices. Landau makes no other warranty, either express or implied.

This report was prepared by Landau for exclusive use by Helion Energy and its authorized representatives for specific application to this project. No other party is entitled to rely on the information, conclusions, and/or recommendations included in this document without the express written consent of Landau. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau, shall be at the user's sole risk.

Shrub-steppe maps and assessments are considered preliminary until approval by the WDFW and/or local jurisdictional agencies. Changes in government code, regulations, and/or laws could affect shrub-steppe boundaries and/or the ways in which assessments are conducted.

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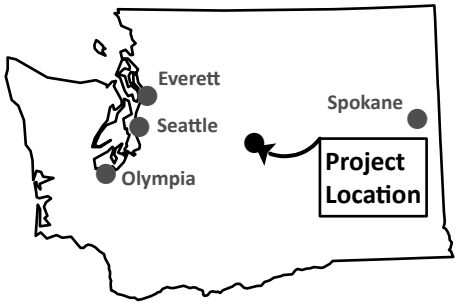

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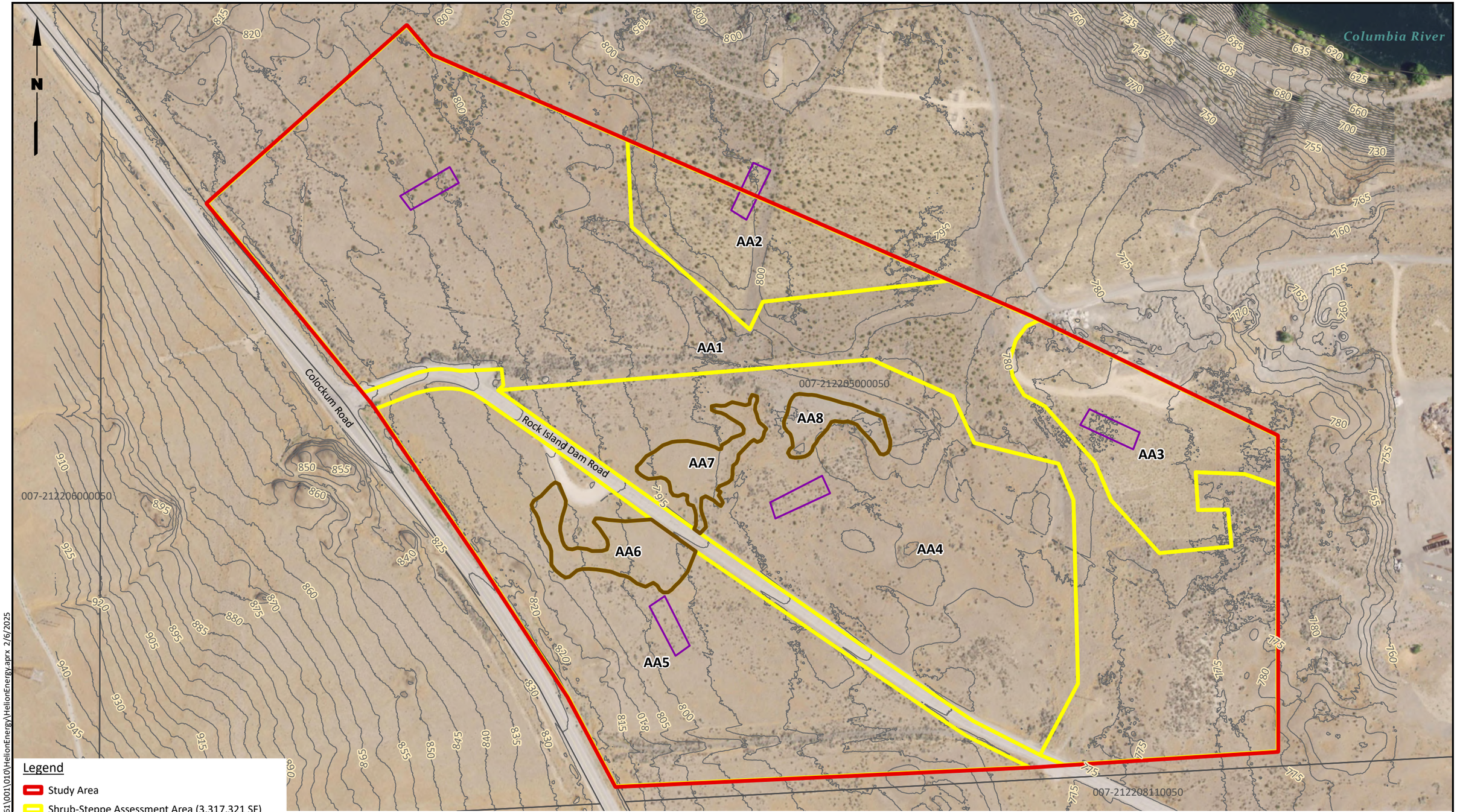
LANDAU ASSOCIATES

Shrub Steppe Habitat Assessment	**Vicinity Map**	Figure 1



Legend

- Study Area
- Shrub-Steppe Assessment Area (3,317,321 SF)
- Non-Shrub-Steppe Assessment Area (124,539 SF)
- Transects
- Parcels

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 250 500

Scale in Feet

Source: Esri NAIP Imagery; WA DNR Lidar 2020, Facet 2024.

LANDAU ASSOCIATES

Shrub Steppe Habitat Assessment	**Existing Conditions**	Figure 2

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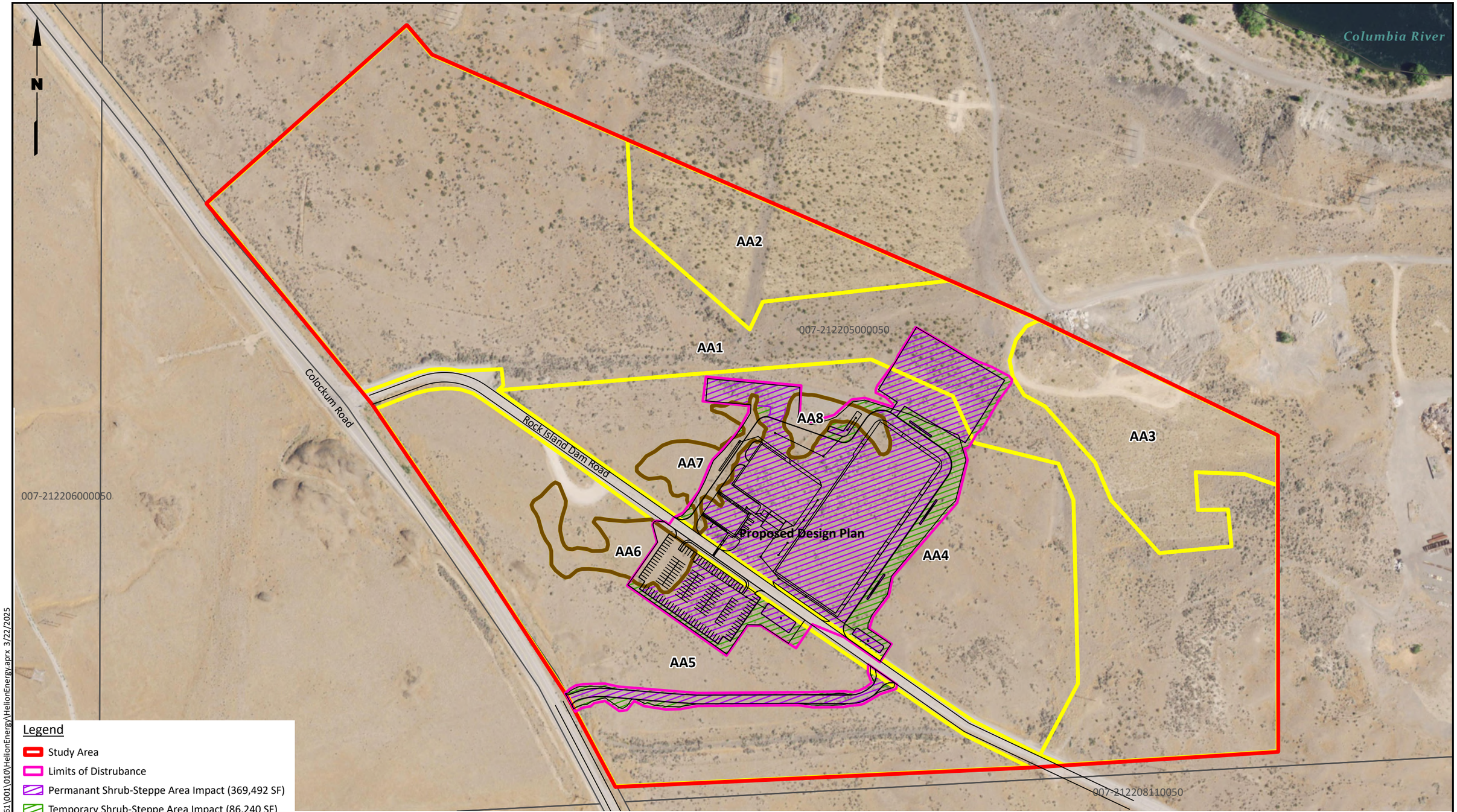

Legend

- Study Area
- Limits of Distrubance
- Permanant Shrub-Steppe Area Impact (369,492 SF)
- Temporary Shrub-Steppe Area Impact (86,240 SF)
- Shrub-Steppe Assessment Area (3,317,321 SF)
- Non-Shrub-Steppe Assessment Area (124,539 SF)
- Parcel

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LANDAU ASSOCIATES

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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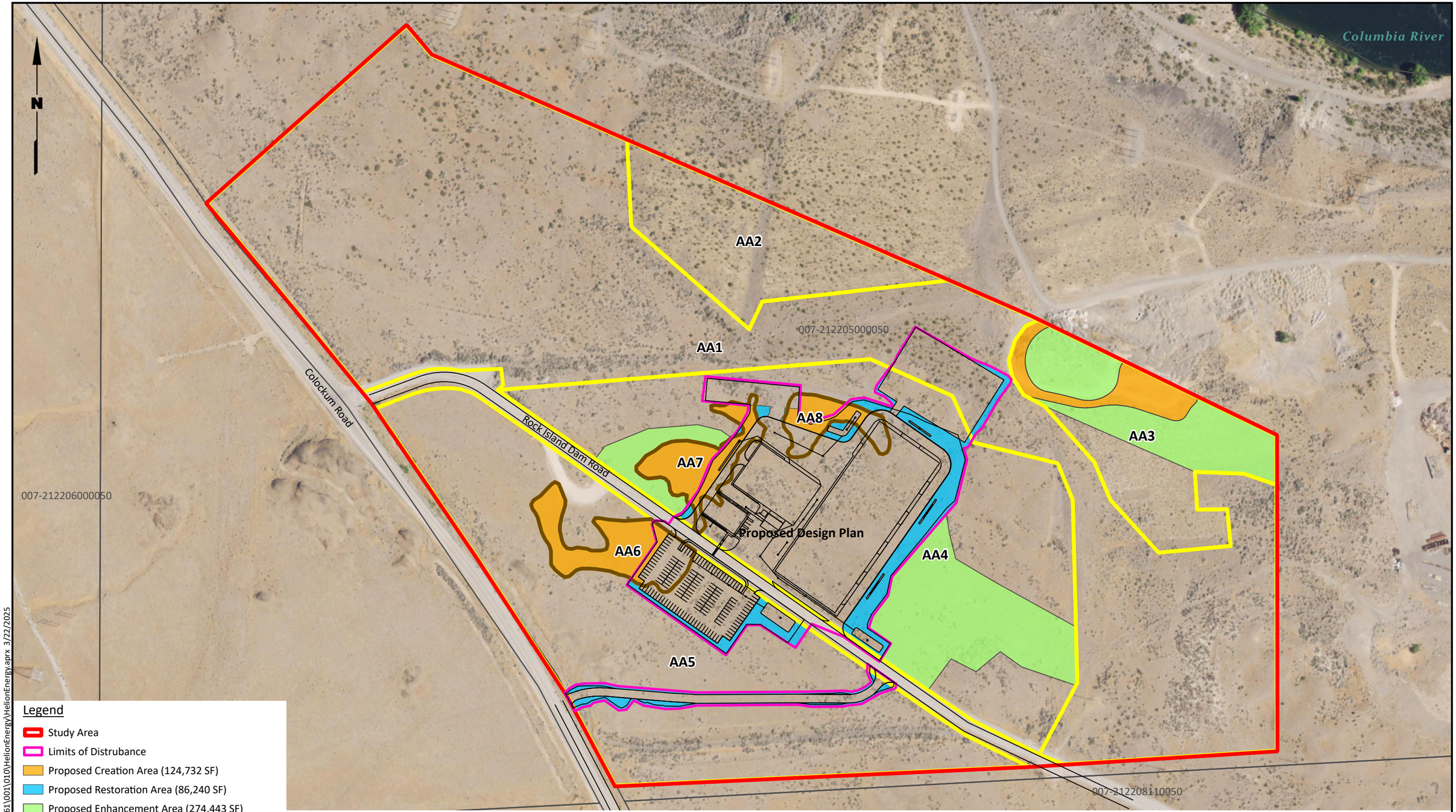
Scale in Feet

Source: Esri NAIP Imagery; WA DNR Lidar 2020, Facet 2024.

Shrub Steppe Habitat Assessment	**Proposed Conditions**	Figure 3



Legend

- Study Area
- Limits of Distrubance
- Proposed Creation Area (124,732 SF)
- Proposed Restoration Area (86,240 SF)
- Proposed Enhancement Area (274,443 SF)
- Shrub-Steppe Assessment Area (3,317,321 SF)
- Non-Shrub-Steppe Assessment Area (124,539 SF)
- Parcel

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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Scale in Feet

Source: Esri NAIP Imagery; WA DNR Lidar 2020, Facet 2024.

Shrub Steppe Habitat Assessment	**Conceptual Mitigation**	Figure 4

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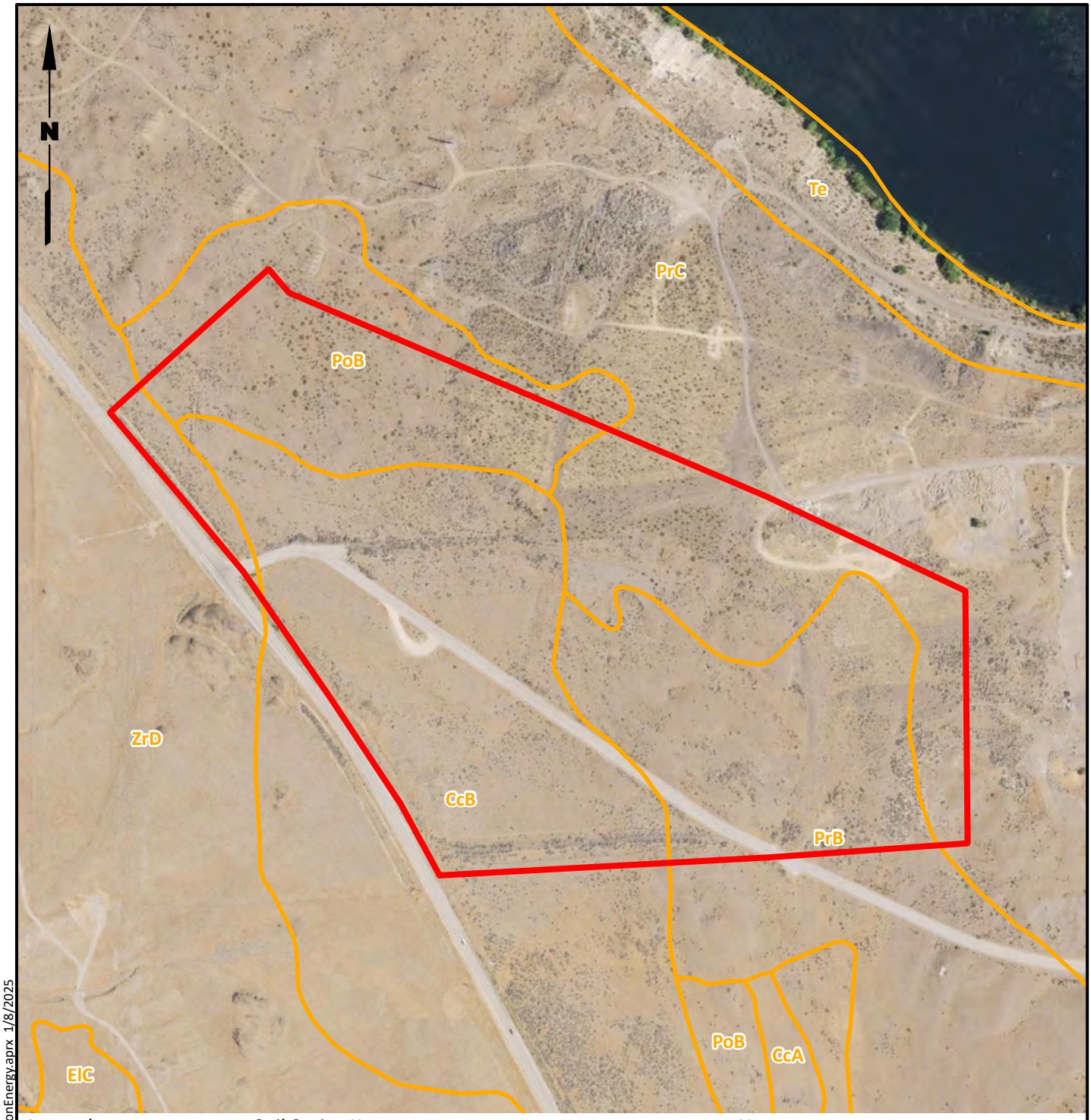
APPENDIX A

Background Review



Legend

- Study Area
- Soil Series

Soil Series Key

CcA - Cashmere Sandy Loam, 0-3% Slopes
CcB - Cashmere Sandy Loam, 3-8% Slopes
EIC - Ellisforde Silt Loam, 8-15% Slopes
Pob - Pogue Fine Sandy Loam, 3-8% Slopes
PrB - Pogue Gravelly Fine Sandy Loam, 3-8% Slopes
PrC -Pogue Gravelly Fine Sandy Loam, 8-15% Slopes
Te - Terrace Escarpments
Zrd - Zen-Rock Outcrop Complex, 0-25% Slopes

Data Sources: USDA NRCS: Esri NAIP Imagery;

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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Scale in Feet

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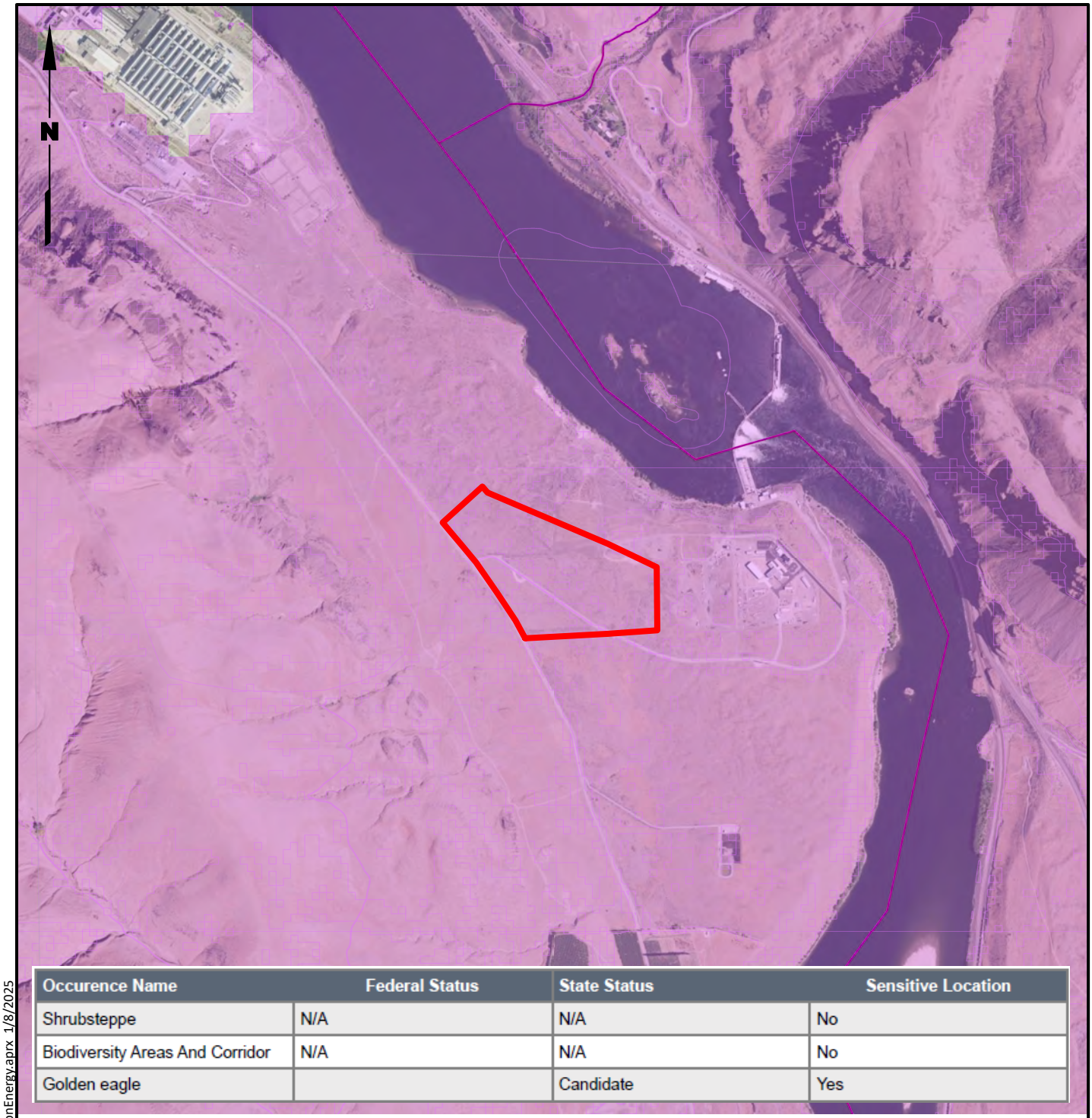
LANDAU ASSOCIATES

Shrub Steppe Habitat Assessment	**Soils Map**	Figure A-1



Occurence Name	Federal Status	State Status	Sensitive Location
Shrubsteppe	N/A	N/A	No
Biodiversity Areas And Corridor	N/A	N/A	No
Golden eagle		Candidate	Yes

Legend

- Study Area
- Priority Habitat and Species Areas

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 2,000 4,000

Scale in Feet

Data Sources: WDFW: Esri NAIP Imagery;

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LANDAU ASSOCIATES

Shrub Steppe Habitat Assessment

WA Department of Fish and Wildlife Priority Habitats and Species Areas

Figure A-2

APPENDIX B

Species Lists

Jeff Fellows

From: Joe Irwin <Joe.Irwin@helionenergy.com>
Sent: Wednesday, November 27, 2024 10:45 AM
To: Jeff Fellows
Subject: Re: Helion Follow Up
Attachments: Species List_ Washington Fish And Wildlife Office.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

Great!

I have already had good conversations with WDFW and USFW to identify all threatened or endangered species on our site.

The regional biologist (Lisa Dowling) with WDFW provided the following information about our site:

"This is a shrubsteppe biodiversity and conservation corridor area that appears to be landlocked, so no anticipated fish use. Based on our Priority Species and Habitats database, it is a habitat concentration area or within the observed range for the species listed below.

Western rattlesnake
Elk
Mule deer
Black-tailed deer
Bighorn sheep
Least chipmunk
Golden eagle
Burrowing owl

It is currently under snow, so I won't be able to verify plant community until springtime, but would expect to see sagebrush, bitterbrush, bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, arrowleaf balsamroot, buckwheat, spiny phlox, and lomatium. Very likely some presence of noxious weeds, some typical ones in this area are cheatgrass and knapweed."

I have also attached a form that was produced from https://ipac.ecosphere.fws.gov/. A representative from USFW pointed me to this resource for a federal list of endangered or threatened species.

Will follow up with more soon.

-Joe

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405

In Reply Refer To: 11/19/2024 22:37:47 UTC
Project Code: 2025-0021840
Project Name: Helion

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

PROJECT SUMMARY

Project Code: 2025-0021840
Project Name: Helion
Project Type: Power Gen - Nuclear
Project Description: Commerical Site Diligence Project
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@47.3373306,-120.10438270569288,14z

Counties: Chelan County, Washington

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Gray Wolf *Canis lupus* Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico. There is **final** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Threatened

BIRDS

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

FISHES

NAME	STATUS
Bull Trout *Salvelinus confluentus* Population: U.S.A., coterminous, lower 48 states There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Joe Irwin
Address: 1415 75th Street SW
City: Everett
State: WA
Zip: 98203
Email joe.irwin@helionenergy.com
Phone: 2037703190

WDFW SWAP data within 1,000 ft of study area

MERGE_SRC
AQCH_ObservedRange
ATCU_ObservedRange
CEUR_ObservedRange
HALE_ObservedRange
HYTO_ObservedRange
PHDO_ObservedRange
STOC_ObservedRange

Description
Golden eagle, Aquila chrysaetos (AQCH), Observed Range - AQCH_ObservedRange
Burrowing owl, Athene cunicularia (ATCU), Potential Range - ATCU_PotentialRange
Greater sage-grouse, Centrocercus urophasianus (CEUR), Observed Range - CEUR_ObservedRange
Bald eagle, Haliaeetus leucocephalus (HALE), Observed Range - HALE_ObservedRange
Night snake, Hypsiglena torquata (HYTO), Observed Range - HYTO_ObservedRange
Pygmy horned lizard, Phrynosoma douglasii (PHDO), Observed Range - PHDO_ObservedRange
Northern spotted owl, Strix occidentalis (STOC), Observed Range - STOC_ObservedRange

APPENDIX C

Data Forms

Data Forms

Form 1B. Form used to assign assessment areas to broad habitat categories. To use the form, the appropriate selection should be checked off for Formation, Shrub, and herbaceous vegetation attributes. Invasive species should also be recorded.

AA1		
FORMATION (Please check one)		
I. Closed forest		
II. Woodland		
III. Shrubland	x	
IV Herbaceous		
V. Acquatic		
VI Vineland		
VII. Bare ground		
DOMINANT OR CO-DOMINANT SHRUBS (Please check one)		
A. *Artemisia arbuscula*		
B. *Artemisia. spp.*		
C. *Artemisia arbuscula – Artemisia. spp.*		
D. *Artemisia arbuscula – Purshia tridentata*		
E. *Artemisia. spp. – Purshia tridentata*	x	
F. Other		
G. Other – *Artemisia arbuscula*		
H. Other – *Artemisia. spp.*		
I. Other – *Purshia tridentata*		
J. No (or few) shrubs		
DOMINANT OR CO-DOMINANT HERBACEOUS VEGETATION (Please check one)		
1. Bunchgrasses		
2. Forbs		
3. Annual grasses		
4. Bunchgrasses – Forbs		
5. Bunchgrasses – Annual grasses		
6. Forbs – Annual grasses	x	
7. Other (e.g., bare ground)		

INVASIVE SPECIES (In order of dominance)	
Species name	Dominant or co-dominant (yes / no)
Cheatgrass	yes
Yellow salsify	no

Form 2B. Data form used for summarizing the findings from an assessment of each metric and for assigning an overall rank to an assessment area.

AA1

Metric Attributes Metric	Assigned Metric Points (M)	Assigned Metric Rank	Average Metric Score	Overall EIA Score (∑M ÷ 5)	Overall EIA Rank*
Buffer					
Edge length	5	A			
Edge width	5	A			
Edge condition	3	C			
		Subtotal	4.333333333	0.866666667	
Landscape Context					
Connectivity	4	B			
Landscape condition model index	5	C			
		Subtotal	4.5	0.9	
Vegetation Composition					
Native plant species cover	1	D			
Native bunchgrass cover	1	D			
Cover of native increasers	1	D			
Invasive species cover	1	D			
		Subtotal	1	0.2	
Vegetation Structure					
Biological soil crust	3	C			
Fire-sensitive shrubs	5	A			
		Subtotal	4	0.8	
Physiochemical					
Soil surface condition	4	B			
		Subtotal	4	0.8	
		TOTAL	17.83333333	3.566666667	Overall EIA Rank = B

* Ranking: A = > 4.5; B = 3.5 – 4.4; C = 2.5 – 3.4; D = < 2.4

Form 7B. Data sheet for recording information gathered in the field using the Line Intercept method.

EIA Field Data Sheet (Line Intercept Data)											
Study Location: Chelan PUD Rock Island Dam Property	Date: 12/23/2024		Observer name(s): J. Kay		Line intercept #: A/B		Assessment Area: AA1				
Individual lengths of shrub or cluster of shrubs (cm) along intercept (use other side of this sheet if necessary)	Fire Sensitive Shrub Species										
	Artemisia *arbuscula*	Artemisia *rigida*	Artemisia *tridentata*		Artemisia *tripartita*	*Purshia tridentata*		*Eriogonum spp.*		*Gutierrezia spp.*	*Krascheninnikovia lanata*
			A	**B**		**A**	**B**	**A**	**B**		
			244	640		0	244	76	107		
			244	152		0	366	61	30		
			61	0		0	198	15	0		
			305	0		0	0	107	0		
			30	0		0	0	15	0		
			0	0		0	0	30	0		
			0	0		0	0	76	0		
			0	0		0	0	30	0		
			0	0		0	0	15	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
			0	0		0	0	0	0		
Individual Species Lengths Summed	0	0	884	792	0	0	808	425	137	0	0
Summed lengths of all species (S) = 3046											
(S □0.01) ÷ 91.44m □100 = Total % Canopy Cover											
Total % Canopy Cover = 33.31											

Data Forms

Form 1B. Form used to assign assessment areas to broad habitat categories. To use the form, the appropriate selection should be checked off for Formation, Shrub, and herbaceous vegetation attributes. Invasive species should also be recorded.

AA2		
FORMATION (Please check one)		
I. Closed forest		
II. Woodland		
III. Shrubland	x	
IV Herbaceous		
V. Acquatic		
VI Vineland		
VII. Bare ground		
DOMINANT OR CO-DOMINANT SHRUBS (Please check one)		
A. *Artemisia arbuscula*		
B. *Artemisia. spp.*		
C. *Artemisia arbuscula – Artemisia. spp.*		
D. *Artemisia arbuscula – Purshia tridentata*		
E. *Artemisia. spp. – Purshia tridentata*	x	
F. Other		
G. Other – *Artemisia arbuscula*		
H. Other – *Artemisia. spp.*		
I. Other – *Purshia tridentata*		
J. No (or few) shrubs		
DOMINANT OR CO-DOMINANT HERBACEOUS VEGETATION (Please check one)		
1. Bunchgrasses		
2. Forbs		
3. Annual grasses		
4. Bunchgrasses – Forbs		
5. Bunchgrasses – Annual grasses		
6. Forbs – Annual grasses	x	
7. Other (e.g., bare ground)		

INVASIVE SPECIES (In order of dominance)	
Species name	Dominant or co-dominant (yes / no)
Cheatgrass	yes

Form 2B. Data form used for summarizing the findings from an assessment of each metric and for assigning an overall rank to an assessment area.

AA2

Metric Attributes Metric	Assigned Metric Points (M)	Assigned Metric Rank	Average Metric Score	Overall EIA Score (∑M ÷ 5)	Overall EIA Rank*
Buffer					
Edge length	4	B			
Edge width	5	A			
Edge condition	3	C			
		Subtotal	4	0.8	
Landscape Context					
Connectivity	4	B			
Landscape condition model index	5	A			
		Subtotal	4.5	0.9	
Vegetation Composition					
Native plant species cover	1	D			
Native bunchgrass cover	1	D			
Cover of native increasers	1	D			
Invasive species cover	1	D			
		Subtotal	1	0.2	
Vegetation Structure					
Biological soil crust	4	B			
Fire-sensitive shrubs	5	A			
		Subtotal	4.5	0.9	
Physiochemical					
Soil surface condition	3	C			
		Subtotal	3	0.6	
		TOTAL	17	3.4	Overall EIA Rank = C

* Ranking: A = > 4.5; B = 3.5 – 4.4; C = 2.5 – 3.4; D = < 2.4

Form 7B. Data sheet for recording information gathered in the field using the Line Intercept method.

EIA Field Data Sheet

(Line Intercept Data)

Study Location: Chelan PUD Rock Island Dam Property	Date: 12/23/2024	Observer name(s): J. Kay	Line intercept #: A/B	Assessment Area: AA2

Individual lengths of shrub or cluster of shrubs (cm) along intercept (use other side of this sheet if necessary)	Fire Sensitive Shrub Species											
	Artemisia *arbuscula*	Artemisia *rigida*	Artemisia *tridentata*		Artemisia *tripartita*	*Purshia tridentata*		*Eriogonum spp.*		*Gutierrezia spp.*	*Krascheninnikovia lanata*	
			A	**B**		**A**	**B**	**A**	**B**			
			46	76		168	122	0	15			
			152	91		213	305	0	15			
			46	0		30	168	0	46			
			0	0		15	259	0	15			
			0	0		0	152	0	61			
			0	0		0	0	0	30			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
Individual Species Lengths Summed	0	0	244	167	0	426	1006	0	182	0	0	Summed lengths of all species (S) = 2025
(S □0.01) ÷ 91.44m □100 = Total % Canopy Cover												Total % Canopy Cover = 22.15

Data Forms

Form 1B. Form used to assign assessment areas to broad habitat categories. To use the form, the appropriate selection should be checked off for Formation, Shrub, and herbaceous vegetation attributes. Invasive species should also be recorded.

AA3		
FORMATION (Please check one)		
I. Closed forest		
II. Woodland		
III. Shrubland	x	
IV Herbaceous		
V. Acquatic		
VI Vineland		
VII. Bare ground		
DOMINANT OR CO-DOMINANT SHRUBS (Please check one)		
A. *Artemisia arbuscula*		
B. *Artemisia. spp.*		
C. *Artemisia arbuscula – Artemisia. spp.*		
D. *Artemisia arbuscula – Purshia tridentata*		
E. *Artemisia. spp. – Purshia tridentata*		
F. Other		
G. Other – *Artemisia arbuscula*		
H. Other – *Artemisia. spp.*	x	
I. Other – *Purshia tridentata*		
J. No (or few) shrubs		
DOMINANT OR CO-DOMINANT HERBACEOUS VEGETATION (Please check one)		
1. Bunchgrasses		
2. Forbs		
3. Annual grasses	x	
4. Bunchgrasses – Forbs		
5. Bunchgrasses – Annual grasses		
6. Forbs – Annual grasses		
7. Other (e.g., bare ground)		

INVASIVE SPECIES (In order of dominance)	
Species name	Dominant or co-dominant (yes / no)
Cheatgrass	yes
Black medick	yes

Form 2B. Data form used for summarizing the findings from an assessment of each metric and for assigning an overall rank to an assessment area.

AA3

Metric Attributes Metric	Assigned Metric Points (M)	Assigned Metric Rank	Average Metric Score	Overall EIA Score (∑M ÷ 5)	Overall EIA Rank*
Buffer					
Edge length	4	B			
Edge width	4	B			
Edge condition	3	C			
		Subtotal	3.666666667	0.733333333	
Landscape Context					
Connectivity	4	B			
Landscape condition model index	3	C			
		Subtotal	3.5	0.7	
Vegetation Composition					
Native plant species cover	1	D			
Native bunchgrass cover	1	D			
Cover of native increasers	4	B			
Invasive species cover	1	D			
		Subtotal	1.75	0.35	
Vegetation Structure					
Biological soil crust	1	D			
Fire-sensitive shrubs	5	A			
		Subtotal	3	0.6	
Physiochemical					
Soil surface condition	3	C			
		Subtotal	3	0.6	
		TOTAL	14.91666667	2.983333333	Overall EIA Rank = C

* Ranking: A = > 4.5; B = 3.5 – 4.4; C = 2.5 – 3.4; D = < 2.4

Form 7B. Data sheet for recording information gathered in the field using the Line Intercept method.

EIA Field Data Sheet

(Line Intercept Data)

Study Location: Chelan PUD Rock Island Dam Property
Date: 12/23/2024
Observer name(s): J. Kay
Line intercept #: A/B
Assessment Area: AA3

	Fire Sensitive Shrub Species											
	Artemisia *arbuscula*	Artemisia *rigida*	Artemisia *tridentata*		Artemisia *tripartita*	*Purshia tridentata*		*Eriogonum spp.*		*Gutierrezia spp.*	*Krascheninnikovia lanata*	
			A	**B**		**A**	**B**	**A**	**B**			
Individual lengths of shrub or cluster of shrubs (cm) along intercept (use other side of this sheet if necessary)			76	61		0	0	0	0			
			0	91		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
Individual Species Lengths Summed	0	0	76	152	0	0	0	0	0	0	0	Summed lengths of all species (S) = 228
(S □0.01) ÷ 91.44m □100 = Total % Canopy Cover												Total % Canopy Cover – 2.49

Data Forms

Form 1B. Form used to assign assessment areas to broad habitat categories. To use the form, the appropriate selection should be checked off for Formation, Shrub, and herbaceous vegetation attributes. Invasive species should also be recorded.

AA4		
FORMATION (Please check one)		
I. Closed forest		
II. Woodland		
III. Shrubland	x	
IV Herbaceous		
V. Acquatic		
VI Vineland		
VII. Bare ground		
DOMINANT OR CO-DOMINANT SHRUBS (Please check one)		
A. *Artemisia arbuscula*		
B. *Artemisia. spp.*		
C. *Artemisia arbuscula – Artemisia. spp.*		
D. *Artemisia arbuscula – Purshia tridentata*		
E. *Artemisia. spp. – Purshia tridentata*	x	
F. Other		
G. Other – *Artemisia arbuscula*		
H. Other – *Artemisia. spp.*		
I. Other – *Purshia tridentata*		
J. No (or few) shrubs		
DOMINANT OR CO-DOMINANT HERBACEOUS VEGETATION (Please check one)		
1. Bunchgrasses		
2. Forbs		
3. Annual grasses	x	
4. Bunchgrasses – Forbs		
5. Bunchgrasses – Annual grasses		
6. Forbs – Annual grasses		
7. Other (e.g., bare ground)		

INVASIVE SPECIES (In order of dominance)	
Species name	Dominant or co-dominant (yes / no)
Cheatgrass	yes

Form 2B. Data form used for summarizing the findings from an assessment of each metric and for assigning an overall rank to an assessment area.

AA4

Metric Attributes Metric	Assigned Metric Points (M)	Assigned Metric Rank	Average Metric Score	Overall EIA Score (∑M ÷ 5)	Overall EIA Rank*
Buffer					
Edge length	4	B			
Edge width	4	B			
Edge condition	3	C			
		Subtotal	3.666666667	0.733333333	
Landscape Context					
Connectivity	4	B			
Landscape condition model index	4	B			
		Subtotal	4	0.8	
Vegetation Composition					
Native plant species cover	1	D			
Native bunchgrass cover	1	D			
Cover of native increasers	3	C			
Invasive species cover	1	D			
		Subtotal	1.5	0.3	
Vegetation Structure					
Biological soil crust	3	C			
Fire-sensitive shrubs	5	A			
		Subtotal	4	0.8	
Physiochemical					
Soil surface condition	3	C			
		Subtotal	3	0.6	
		TOTAL	16.16666667	3.233333333	Overall EIA Rank = C

* Ranking: A = > 4.5; B = 3.5 – 4.4; C = 2.5 – 3.4; D = < 2.4

Form 7B. Data sheet for recording information gathered in the field using the Line Intercept method.

EIA Field Data Sheet (Line Intercept Data)													
Study Location: Chelan PUD Rock Island Dam Property		Date: 12/23/2024			Observer name(s): J. Kay		Line intercept #: A/B		Assessment Area: AA4				
	Fire Sensitive Shrub Species												
	Artemisia *arbuscula*	Artemisia *rigida*	Artemisia *tridentata*		Artemisia *tripartita*	*Purshia tridentata*		*Eriogonum spp.*		*Gutierrezia spp.*	*Krascheninnikovia lanata*		
Individual lengths of shrub or cluster of shrubs (cm) along intercept (use other side of this sheet if necessary)			**A**	**B**		**A**	**B**	**A**	**B**				
			137	91		0	0	30	0				
			168	46		0	0	61	0				
			15	76		0	0	91	0				
			91	61		0	0	46	0				
			122	244		0	0	122	0				
			76	76		0	0	30	0				
			76	152		0	0	0	0				
			107	0		0	0	0	0				
			168	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
			0	0		0	0	0	0				
Individual Species Lengths Summed	0	0	960	746	0	0	0	380	0	0	0		Summed lengths of all species (S) = 2086
(S □0.01) ÷ 91.44m □100 = Total % Canopy Cover													Total % Canopy Cover = 22.81

Data Forms

Form 1B. Form used to assign assessment areas to broad habitat categories. To use the form, the appropriate selection should be checked off for Formation, Shrub, and herbaceous vegetation attributes. Invasive species should also be recorded.

AA5		
FORMATION (Please check one)		
I. Closed forest		
II. Woodland		
III. Shrubland	x	
IV Herbaceous		
V. Acquatic		
VI Vineland		
VII. Bare ground		
DOMINANT OR CO-DOMINANT SHRUBS (Please check one)		
A. *Artemisia arbuscula*		
B. *Artemisia. spp.*		
C. *Artemisia arbuscula – Artemisia. spp.*		
D. *Artemisia arbuscula – Purshia tridentata*		
E. *Artemisia. spp. – Purshia tridentata*	x	
F. Other		
G. Other – *Artemisia arbuscula*		
H. Other – *Artemisia. spp.*		
I. Other – *Purshia tridentata*		
J. No (or few) shrubs		
DOMINANT OR CO-DOMINANT HERBACEOUS VEGETATION (Please check one)		
1. Bunchgrasses		
2. Forbs		
3. Annual grasses		
4. Bunchgrasses – Forbs		
5. Bunchgrasses – Annual grasses	x	
6. Forbs – Annual grasses		
7. Other (e.g., bare ground)		

INVASIVE SPECIES (In order of dominance)	
Species name	Dominant or co-dominant (yes / no)
Cheatgrass	yes
Tumble mustard	no
Yellow salsify	no

Form 2B. Data form used for summarizing the findings from an assessment of each metric and for assigning an overall rank to an assessment area.

AA5

Metric Attributes Metric	Assigned Metric Points (M)	Assigned Metric Rank	Average Metric Score	Overall EIA Score (∑M ÷ 5)	Overall EIA Rank*
Buffer					
Edge length	1	B			
Edge width	3	B			
Edge condition	1	C			
		Subtotal	1.666666667	0.333333333	
Landscape Context					
Connectivity	3	B			
Landscape condition model index	4	B			
		Subtotal	3.5	0.7	
Vegetation Composition					
Native plant species cover	1	D			
Native bunchgrass cover	1	D			
Cover of native increasers	3	C			
Invasive species cover	1	D			
		Subtotal	1.5	0.3	
Vegetation Structure					
Biological soil crust	1	C			
Fire-sensitive shrubs	5	A			
		Subtotal	3	0.6	
Physiochemical					
Soil surface condition	3	C			
		Subtotal	3	0.6	
		TOTAL	12.66666667	2.533333333	Overall EIA Rank = C

* Ranking: A = > 4.5; B = 3.5 – 4.4; C = 2.5 – 3.4; D = < 2.4

Form 7B. Data sheet for recording information gathered in the field using the Line Intercept method.

EIA Field Data Sheet
(Line Intercept Data)

Study Location: Chelan PUD Rock Island Dam Property	Date: 12/23/2024	Observer name(s): J. Kay	Line intercept #: A/B	Assessment Area: AA5

	Fire Sensitive Shrub Species											
	Artemisia *arbuscula*	Artemisia *rigida*	Artemisia *tridentata*		Artemisia *tripartita*	*Purshia tridentata*		*Eriogonum spp.*		*Gutierrezia spp.*	*Krascheninnikovia lanata*	
			A	**B**		**A**	**B**	**A**	**B**			
Individual lengths of shrub or cluster of shrubs (cm) along intercept (use other side of this sheet if necessary)			152	61		0	0	0	0			
			46	168		0	0	0	0			
			15	213		0	0	0	0			
			259	15		0	0	0	0			
			107	107		0	0	0	0			
			0	30		0	0	0	0			
			0	76		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
			0	0		0	0	0	0			
Individual Species Lengths Summed	0	0	579	670	0	0	0	0	0	0	0	Summed lengths of all species (S) = 1249
(S □0.01) ÷ 91.44m □100 = Total % Canopy Cover												Total % Canopy Cover – 13.66

Data Forms

Form 1B. Form used to assign assessment areas to broad habitat categories. To use the form, the appropriate selection should be checked off for Formation, Shrub, and herbaceous vegetation attributes. Invasive species should also be recorded.

AA6		
FORMATION (Please check one)		
I. Closed forest		
II. Woodland		
III. Shrubland		
IV Herbaceous	x	
V. Acquatic		
VI Vineland		
VII. Bare ground		
DOMINANT OR CO-DOMINANT SHRUBS (Please check one)		
A. *Artemisia arbuscula*		
B. *Artemisia. spp.*		
C. *Artemisia arbuscula – Artemisia. spp.*		
D. *Artemisia arbuscula – Purshia tridentata*		
E. *Artemisia. spp. – Purshia tridentata*		
F. Other		
G. Other – *Artemisia arbuscula*		
H. Other – *Artemisia. spp.*		
I. Other – *Purshia tridentata*		
J. No (or few) shrubs	x	
DOMINANT OR CO-DOMINANT HERBACEOUS VEGETATION (Please check one)		
1. Bunchgrasses		
2. Forbs		
3. Annual grasses		
4. Bunchgrasses – Forbs		
5. Bunchgrasses – Annual grasses		
6. Forbs – Annual grasses	x	
7. Other (e.g., bare ground)		

INVASIVE SPECIES (In order of dominance)	
Species name	Dominant or co-dominant (yes / no)
Cheatgrass	yes

Data Forms

Form 1B. Form used to assign assessment areas to broad habitat categories. To use the form, the appropriate selection should be checked off for Formation, Shrub, and herbaceous vegetation attributes. Invasive species should also be recorded.

AA7		
FORMATION (Please check one)		
I. Closed forest		
II. Woodland		
III. Shrubland		
IV Herbaceous	x	
V. Acquatic		
VI Vineland		
VII. Bare ground		
DOMINANT OR CO-DOMINANT SHRUBS (Please check one)		
A. *Artemisia arbuscula*		
B. *Artemisia. spp.*		
C. *Artemisia arbuscula – Artemisia. spp.*		
D. *Artemisia arbuscula – Purshia tridentata*		
E. *Artemisia. spp. – Purshia tridentata*		
F. Other		
G. Other – *Artemisia arbuscula*		
H. Other – *Artemisia. spp.*		
I. Other – *Purshia tridentata*		
J. No (or few) shrubs	x	
DOMINANT OR CO-DOMINANT HERBACEOUS VEGETATION (Please check one)		
1. Bunchgrasses		
2. Forbs		
3. Annual grasses		
4. Bunchgrasses – Forbs		
5. Bunchgrasses – Annual grasses	x	
6. Forbs – Annual grasses		
7. Other (e.g., bare ground)		

INVASIVE SPECIES (In order of dominance)	
Species name	Dominant or co-dominant (yes / no)
Cheatgrass	yes
Tumble mustard	no

Data Forms

Form 1B. Form used to assign assessment areas to broad habitat categories. To use the form, the appropriate selection should be checked off for Formation, Shrub, and herbaceous vegetation attributes. Invasive species should also be recorded.

AA8		
FORMATION (Please check one)		
I. Closed forest		
II. Woodland		
III. Shrubland		
IV Herbaceous	x	
V. Acquatic		
VI Vineland		
VII. Bare ground		
DOMINANT OR CO-DOMINANT SHRUBS (Please check one)		
A. *Artemisia arbuscula*		
B. *Artemisia. spp.*		
C. *Artemisia arbuscula – Artemisia. spp.*		
D. *Artemisia arbuscula – Purshia tridentata*		
E. *Artemisia. spp. – Purshia tridentata*		
F. Other		
G. Other – *Artemisia arbuscula*		
H. Other – *Artemisia. spp.*		
I. Other – *Purshia tridentata*		
J. No (or few) shrubs	x	
DOMINANT OR CO-DOMINANT HERBACEOUS VEGETATION (Please check one)		
1. Bunchgrasses		
2. Forbs		
3. Annual grasses		
4. Bunchgrasses – Forbs		
5. Bunchgrasses – Annual grasses	x	
6. Forbs – Annual grasses		
7. Other (e.g., bare ground)		

INVASIVE SPECIES (In order of dominance)	
Species name	Dominant or co-dominant (yes / no)
Cheatgrass	yes
Tumble mustard	no

APPENDIX D

Selected Photographs

Cryptobiotic crust (typical)

Elk track

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Helion Energy Property
Habitat Management and Mitigation Plan
Chelan County, WA

Selected Site Photos

Figure
D-1

Mule deer track

Elk scat

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Chelan County, WA

Selected Site Photos

Figure
D-2

Mule deer scat

AA1 1E

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Selected Site Photos

Figure
D-3

AA1 1N

AA1 1S

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Chelan County, WA

Selected Site Photos

Figure
D-4

AA1 1W

AA1 plot 1 facing northwest

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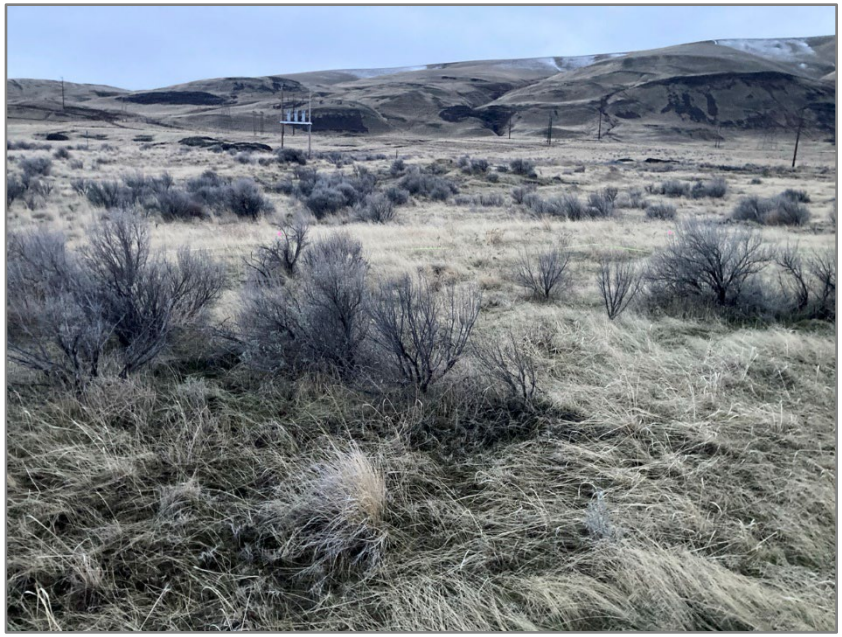
Habitat Management and Mitigation Plan
Chelan County, WA

Selected Site Photos

Figure
D-5

AA1 ungulate kill site



AA1 power poles and talus slopes facing southwest

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Chelan County, WA

Selected Site Photos

Figure
D-6

AA1 mitigation potential facing south

AA1 ungulate kill site

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Selected Site Photos

Figure
D-7

AA1 ungulate kill site

AA2 2NE

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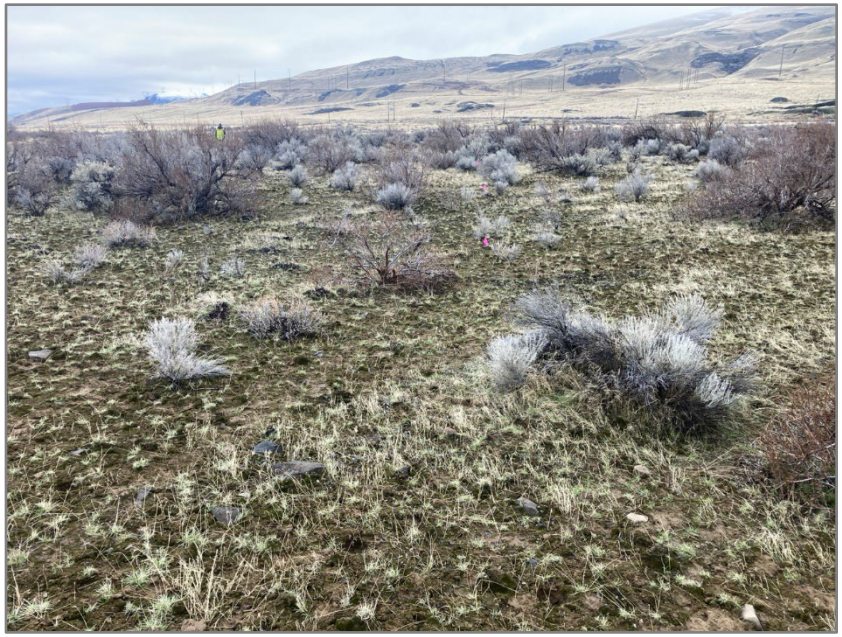
Chelan County, WA

Selected Site Photos

Figure
D-8



AA2 2NW

AA2 2SE

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Selected Site Photos

Figure
D-9

AA2 2SW

AA2 plot 2 facing east

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Figure
D-10

AA2 plot 2 facing west

AA3 3E

AA3 3N

AA3 3S

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Selected Site Photos

Figure
D-12

AA3 3W

AA3 plot 3 facing north

AA3 plot 3 facing south

AA3 dirt road (potential creation and enhancement area)

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Selected Site Photos

Figure
D-14

AA4 4E

AA4 4N

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Selected Site Photos

Figure
D-15

AA4 4S

AA4 4W

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Selected Site Photos

Figure
D-16

AA4 plot 4 facing northwest

AA4 plot 4 facing southeast

AA4 cheatgrass and bluebunch wheatgrass mixture

AA4 enhancement potential in southeast portion of AA

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Chelan County, WA

Selected Site Photos

Figure
D-18

AA4 enhancement potential facing west

AA5 5E

AA5 5N

AA5 5S

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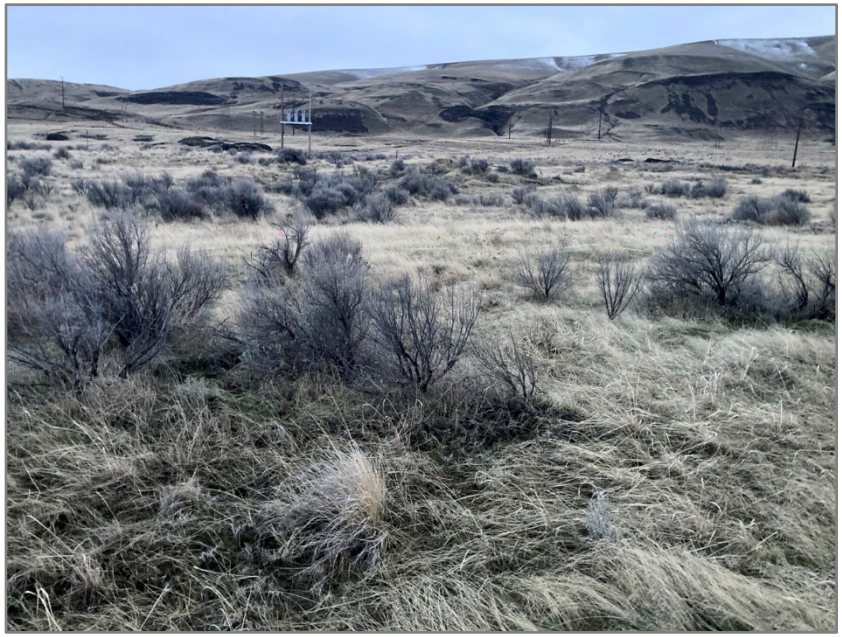
Chelan County, WA

Selected Site Photos

Figure
D-20

AA5 5W

AA5 plot 5 facing northeast



AA5 plot 5 facing southwest

AA6 facing east

AA6 facing north

AA6 facing northwest

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Selected Site Photos

Figure
D-23

AA6 quarry composition

AA7 facing east

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Selected Site Photos

Figure
D-24

AA7 facing west

AA7 tire tracks facing south

AA8 construction debris

AA8 facing north

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Selected Site Photos

Figure
D-26

AA8 facing west